Karlsruher Institut für Technologie

Module Handbook
Industrial Engineering and Management (B.Sc.)

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KIT DEPARTMENT OF BUSINESS AND ECONOMICS

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3.250. Supplement Applied Informatics - T-WIWI-110711 510
3.251. Sustainability in E-Business - T-WIWI-114596 511
3.252. Sustainable Manufacturing Technologies and Production Systems - T-MACH-115180 512
3.253. Systematic Materials Selection - T-MACH-100531 514
3.254. Systems of Remote Sensing, Prerequisite - T-BGU-101637 516
3.255. Tactical and Operational Supply Chain Management - T-WIWI-102714 517
3.256. Team Project Management and Technology - T-WIWI-110968 519
3.257. Team Project Management and Technology (BUS/ENG) - T-WIWI-110977 520
3.258. Time Series Analysis - T-WIWI-114325 521
3.259. Tires and Wheel Development for Passenger Cars - T-MACH-102207 523
3.260. Topics in Human Resource Management - T-WIWI-111858 525
3.261. Tutorial Mathematical Methods in Hydraulics - T-MACH-113913 527
3.262. Tutorial Simulation with Lumped Parameters - T-MACH-113863 528
3.263. Vehicle Drive Technology - T-MACH-113997 529
3.264. Welfare Economics - T-WIWI-102610 530
3.265. Workshop Mechatronical Systems and Products - T-MACH-112648 531

1 Study Program Structure

Mandatory	
Preliminary Exam ***This field will not influence the calculated grade of its parent.***	
Bachelor's Thesis	**15 CP**
Business Administration	**24 CP**
Economics	**19 CP**
Informatics	**24 CP**
Operations Research	**18 CP**
Engineering Sciences	**26 CP**
Mathematics	**21 CP**
Statistics	**10 CP**
Compulsory Elective Modules	**23 CP**

1.1 Preliminary Exam

ID	Name	Language	Term offered	Credits
Mandatory				
M-WIWI-107753	Preliminary Exam	**DE**	**WT+ST**	**0 CP**

1.2 Bachelor's Thesis

Credits
15

ID	Name	Language	Term offered	Credits
Mandatory				
M-WIWI-107751	Bachelor's Thesis	**DE**	**WT+ST**	**15 CP**

1.3 Business Administration

Credits
24

ID	Name	Language	Term offered	Credits
Mandatory				
M-WIWI-105768	Management and Marketing	**DE**	**WT**	**5 CP**
M-WIWI-105769	Financing and Accounting	**DE**	**ST**	**5 CP**
M-WIWI-105770	Production, Logistics and Information Systems	**DE**	**WT**	**5 CP**
Specialisation Program Business Administration (Elective: at least 9 credits)				
M-WIWI-101498	Management Accounting	**EN**	**see notes**	**9 CP**
M-WIWI-101434	eBusiness and Service Management	**DE**	**WT+ST**	**9 CP**
M-WIWI-101402	eFinance	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101464	Energy Economics	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101435	Essentials of Finance	**DE**	**ST**	**9 CP**
M-WIWI-105610	Financial Data Science	**EN**	**ST**	**9 CP**
M-WIWI-107454	Financial Data Science in Practice	**EN**	**WT+ST**	**9 CP**
M-WIWI-102752	Fundamentals of Digital Service Systems	**EN**	**WT+ST**	**9 CP**
M-WIWI-101424	Foundations of Marketing	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105928	HR Management & Digital Workplace	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101437	Industrial Production I	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105981	Information Systems & Digital Business	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-106860	Leadership & Sustainable HR-Management	**DE**	**WT+ST**	**9 CP**
M-WIWI-101425	Strategy and Organization	**DE**	**WT+ST**	**9 CP**
M-WIWI-101465	Topics in Finance I	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101423	Topics in Finance II	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-107451	Entrepreneurial Thinking and Action: Fundamentals of Entrepreneurship	**DE/EN**	**WT+ST**	**9 CP**

1.4 Economics

Credits
19

ID	Name	Language	Term offered	Credits
Mandatory				
M-WIWI-101398	Introduction to Economics		**WT+ST**	**10 CP**
Specialisation Program Economics (Elective: at least 9 credits)				
M-WIWI-101499	Applied Microeconomics	**DE**	**WT+ST**	**9 CP**
M-WIWI-101403	Public Finance	**DE**	**WT+ST**	**9 CP**
M-WIWI-101599	Statistics and Econometrics	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105414	Statistics and Econometrics II	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101668	Economic Policy I	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101501	Economic Theory	**DE/EN**	**WT+ST**	**9 CP**

1.5 Informatics

Credits
24

ID	Name	Language	Term offered	Credits
Mandatory				
M-WIWI-101417	Foundations of Informatics	**DE/EN**	**WT+ST**	**10 CP**
M-WIWI-101581	Introduction to Programming	**DE**	**WT**	**5 CP**
M-WIWI-105112	Applied Informatics		**WT+ST**	**9 CP**

1.6 Operations Research

Credits
18

ID	Name	Language	Term offered	Credits
Mandatory				
M-WIWI-101418	Introduction to Operations Research	**DE**	**ST**	**9 CP**
Specialisation Program Operations Research (Elective: at least 9 credits)				
M-WIWI-101413	Applications of Operations Research	**DE**	**WT+ST**	**9 CP**
M-WIWI-101414	Methodical Foundations of OR	**DE**	**WT+ST**	**9 CP**
M-WIWI-103278	Optimization under Uncertainty	**DE**	**WT+ST**	**9 CP**

1.7 Engineering Sciences

Credits
26

ID	Name	Language	Term offered	Credits
Mandatory				
M-ETIT-101155	Electrical Engineering		**WT**	**3 CP**
M-MACH-101259	Engineering Mechanics	**DE**	**WT**	**3 CP**
M-WIWI-107750	Additional Fundamentals of Engineering	**DE**	**WT+ST**	**8 CP**
M-MACH-101260	Materials Science		**WT**	**3 CP**
Specialisation Program Engineering Sciences (Elective: at least 9 credits)				
M-WIWI-101404	Extracurricular Module in Engineering		**Once**	**9 CP**
M-MACH-106995	Automation and Material Flow in Logistics	**DE**	**WT+ST**	**9 CP**
M-MACH-107658	Data Driven Engineering Fundamentals	**EN**	**WT**	**9 CP**
M-WIWI-104838	Introduction to Natural Hazards and Risk Analysis	**DE**	**WT+ST**	**9 CP**
M-ETIT-106821	Electric Energy Systems and Power Generation	**DE**	**ST**	**9 CP**
M-MACH-101264	Handling Characteristics of Motor Vehicles	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101265	Vehicle Development	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101266	Automotive Engineering	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101276	Manufacturing Technology	**DE**	**WT**	**9 CP**
M-BGU-101004	Fundamentals of Construction	**DE**	**WT+ST**	**9 CP**
M-MACH-101272	Integrated Production Planning	**DE**	**ST**	**9 CP**
M-MACH-106527	Mechanical Design A	**DE**	**WT**	**9 CP**
M-MACH-106236	Mechatronic Product Design	**DE**	**WT**	**9 CP**
M-ETIT-106581	Measurement, Control, and Manufacturing Measurement Technology	**DE**	**ST**	**9 CP**
M-MACH-101287	Microsystem Technology	**DE**	**WT+ST**	**9 CP**
M-MACH-101267	Mobile Machines		**WT**	**9 CP**
M-BGU-101067	Mobility and Infrastructure ***First usage possible until Sep 30, 2027.***	**DE**	**ST**	**9 CP**
M-MACH-106590	Production Engineering	**DE**	**WT+ST**	**9 CP**
M-ETIT-106372	Signals and Systems	**DE**	**WT**	**9 CP**
M-MACH-101275	Combustion Engines I		**WT**	**9 CP**
M-MACH-101303	Combustion Engines II	**DE**	**WT+ST**	**9 CP**
M-MACH-101261	Emphasis in Fundamentals of Engineering		**WT+ST**	**9 CP**
M-MACH-101262	Emphasis Materials Science	**DE**	**WT+ST**	**9 CP**
M-MACH-101286	Machine Tools and Industrial Handling	**DE**	**WT**	**9 CP**

1.8 Mathematics

Credits
21

ID	Name	Language	Term offered	Credits
Mandatory				
M-MATH-107813	Mathematics 1 for WiIng B.Sc. 2026	**DE**	**WT**	**10 CP**
M-MATH-107814	Mathematics 2 for WiIng B.Sc. 2026	**DE**	**ST**	**7 CP**
M-MATH-107815	Mathematics 3 for WiIng B.Sc. 2026	**DE**	**WT**	**4 CP**

1.9 Statistics

Credits
10

ID	Name	Language	Term offered	Credits
Mandatory				
M-WIWI-101432	Introduction to Statistics	**DE**	**WT+ST**	**10 CP**

1.10 Compulsory Elective Modules

Credits
23

Election notes
Within the scope of the elective compulsory area, the seminar module (independent of subject) and two modules are to be taken. One module must be chosen from the subjects Business Administration or Engineering Sciences, the other from the subjects Business Administration, Economics, Informatics, Operations Research, Engineering Sciences, Statistics, Law or Sociology.

ID	Name	Language	Term offered	Credits
Mandatory				
M-WIWI-107749	Seminar Module	**DE/EN**	**WT+ST**	**5 CP**
Business Administration oder Engineering Sciences (Elective: 9 credits)				
M-WIWI-101404	Extracurricular Module in Engineering		**Once**	**9 CP**
M-MACH-106995	Automation and Material Flow in Logistics	**DE**	**WT+ST**	**9 CP**
M-WIWI-101498	Management Accounting	**EN**	**see notes**	**9 CP**
M-WIWI-101434	eBusiness and Service Management	**DE**	**WT+ST**	**9 CP**
M-WIWI-101402	eFinance	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-104838	Introduction to Natural Hazards and Risk Analysis	**DE**	**WT+ST**	**9 CP**
M-ETIT-106821	Electric Energy Systems and Power Generation	**DE**	**ST**	**9 CP**
M-WIWI-101464	Energy Economics	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101435	Essentials of Finance	**DE**	**ST**	**9 CP**
M-MACH-101264	Handling Characteristics of Motor Vehicles	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101265	Vehicle Development	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101266	Automotive Engineering	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101276	Manufacturing Technology	**DE**	**WT**	**9 CP**
M-WIWI-105610	Financial Data Science	**EN**	**ST**	**9 CP**
M-WIWI-107454	Financial Data Science in Practice	**EN**	**WT+ST**	**9 CP**
M-WIWI-102752	Fundamentals of Digital Service Systems	**EN**	**WT+ST**	**9 CP**
M-BGU-101004	Fundamentals of Construction	**DE**	**WT+ST**	**9 CP**
M-WIWI-101424	Foundations of Marketing	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105928	HR Management & Digital Workplace	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101437	Industrial Production I	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105981	Information Systems & Digital Business	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101272	Integrated Production Planning	**DE**	**ST**	**9 CP**
M-WIWI-106860	Leadership & Sustainable HR-Management	**DE**	**WT+ST**	**9 CP**
M-MACH-106527	Mechanical Design A	**DE**	**WT**	**9 CP**
M-ETIT-106581	Measurement, Control, and Manufacturing Measurement Technology	**DE**	**ST**	**9 CP**
M-MACH-101287	Microsystem Technology	**DE**	**WT+ST**	**9 CP**
M-MACH-101267	Mobile Machines		**WT**	**9 CP**
M-BGU-101067	Mobility and Infrastructure ***First usage possible until Sep 30, 2027.***	**DE**	**ST**	**9 CP**
M-MACH-106590	Production Engineering	**DE**	**WT+ST**	**9 CP**
M-ETIT-106372	Signals and Systems	**DE**	**WT**	**9 CP**
M-WIWI-101425	Strategy and Organization	**DE**	**WT+ST**	**9 CP**
M-WIWI-101421	Supply Chain Management	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105447	Team Project Management and Technology (BUS/ENG)	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101465	Topics in Finance I	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101423	Topics in Finance II	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-107451	Entrepreneurial Thinking and Action: Fundamentals of Entrepreneurship	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101275	Combustion Engines I		**WT**	**9 CP**
M-MACH-101303	Combustion Engines II	**DE**	**WT+ST**	**9 CP**
M-MACH-101261	Emphasis in Fundamentals of Engineering		**WT+ST**	**9 CP**
M-MACH-101262	Emphasis Materials Science	**DE**	**WT+ST**	**9 CP**
M-MACH-101286	Machine Tools and Industrial Handling	**DE**	**WT**	**9 CP**
Business Administration (Elective: at most 9 credits)				
M-WIWI-101498	Management Accounting	**EN**	**see notes**	**9 CP**
M-WIWI-101434	eBusiness and Service Management	**DE**	**WT+ST**	**9 CP**

ID	Name	Language	Term offered	Credits
M-WIWI-101402	eFinance	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101464	Energy Economics	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101435	Essentials of Finance	**DE**	**ST**	**9 CP**
M-WIWI-105610	Financial Data Science	**EN**	**ST**	**9 CP**
M-WIWI-107454	Financial Data Science in Practice	**EN**	**WT+ST**	**9 CP**
M-WIWI-102752	Fundamentals of Digital Service Systems	**EN**	**WT+ST**	**9 CP**
M-WIWI-101424	Foundations of Marketing	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105928	HR Management & Digital Workplace	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101437	Industrial Production I	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105981	Information Systems & Digital Business	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-106860	Leadership & Sustainable HR-Management	**DE**	**WT+ST**	**9 CP**
M-WIWI-101425	Strategy and Organization	**DE**	**WT+ST**	**9 CP**
M-WIWI-101421	Supply Chain Management	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101465	Topics in Finance I	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101423	Topics in Finance II	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-107451	Entrepreneurial Thinking and Action: Fundamentals of Entrepreneurship	**DE/EN**	**WT+ST**	**9 CP**
Economics (Elective: at most 9 credits)				
M-WIWI-101499	Applied Microeconomics	**DE**	**WT+ST**	**9 CP**
M-WIWI-101403	Public Finance	**DE**	**WT+ST**	**9 CP**
M-WIWI-101599	Statistics and Econometrics	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105414	Statistics and Econometrics II	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101668	Economic Policy I	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-101501	Economic Theory	**DE/EN**	**WT+ST**	**9 CP**
Informatics (Elective: at most 9 credits)				
M-WIWI-101426	Electives in Informatics	**DE/EN**	**WT+ST**	**9 CP**
Operations Research (Elective: at most 9 credits)				
M-WIWI-101413	Applications of Operations Research	**DE**	**WT+ST**	**9 CP**
M-WIWI-101414	Methodical Foundations of OR	**DE**	**WT+ST**	**9 CP**
M-WIWI-103278	Optimization under Uncertainty	**DE**	**WT+ST**	**9 CP**
Engineering Sciences (Elective: at most 9 credits)				
M-WIWI-101404	Extracurricular Module in Engineering		**Once**	**9 CP**
M-MACH-106995	Automation and Material Flow in Logistics	**DE**	**WT+ST**	**9 CP**
M-MACH-107658	Data Driven Engineering Fundamentals	**EN**	**WT**	**9 CP**
M-WIWI-104838	Introduction to Natural Hazards and Risk Analysis	**DE**	**WT+ST**	**9 CP**
M-ETIT-106821	Electric Energy Systems and Power Generation	**DE**	**ST**	**9 CP**
M-MACH-101264	Handling Characteristics of Motor Vehicles	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101265	Vehicle Development	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101266	Automotive Engineering	**DE/EN**	**WT+ST**	**9 CP**
M-MACH-101276	Manufacturing Technology	**DE**	**WT**	**9 CP**
M-BGU-101004	Fundamentals of Construction	**DE**	**WT+ST**	**9 CP**
M-MACH-101272	Integrated Production Planning	**DE**	**ST**	**9 CP**
M-MACH-106527	Mechanical Design A	**DE**	**WT**	**9 CP**
M-MACH-106236	Mechatronic Product Design	**DE**	**WT**	**9 CP**
M-ETIT-106581	Measurement, Control, and Manufacturing Measurement Technology	**DE**	**ST**	**9 CP**
M-MACH-101287	Microsystem Technology	**DE**	**WT+ST**	**9 CP**
M-MACH-101267	Mobile Machines		**WT**	**9 CP**
M-BGU-101067	Mobility and Infrastructure ***First usage possible until Sep 30, 2027.***	**DE**	**ST**	**9 CP**
M-MACH-106590	Production Engineering	**DE**	**WT+ST**	**9 CP**

ID	Name	Language	Term offered	Credits
M-ETIT-106372	Signals and Systems	**DE**	**WT**	**9 CP**
M-MACH-101275	Combustion Engines I		**WT**	**9 CP**
M-MACH-101303	Combustion Engines II	**DE**	**WT+ST**	**9 CP**
M-MACH-101261	Emphasis in Fundamentals of Engineering		**WT+ST**	**9 CP**
M-MACH-101262	Emphasis Materials Science	**DE**	**WT+ST**	**9 CP**
M-MACH-101286	Machine Tools and Industrial Handling	**DE**	**WT**	**9 CP**
Statistics (Elective: at most 9 credits)				
M-WIWI-101599	Statistics and Econometrics	**DE/EN**	**WT+ST**	**9 CP**
M-WIWI-105414	Statistics and Econometrics II	**DE/EN**	**WT+ST**	**9 CP**
Law or Sociology (Elective: at most 9 credits)				
M-GEISTSOZ-101167	Sociology/Empirical Social Research	**DE**	**WT**	**9 CP**
M-INFO-107555	German and European Public Law	**DE**	**WT+ST**	**6 CP**
M-INFO-101190	Introduction to Civil Law	**DE**	**WT**	**5 CP**
M-INFO-107931	Seminar: Civil Law 2	**DE**	**WT+ST**	**4 CP**
M-INFO-107939	Seminar: Public Law and Computer Science2	**DE/EN**	**WT+ST**	**4 CP**
Team Project (Elective: at most 9 credits)				
M-WIWI-105440	Team Project Management and Technology	**DE/EN**	**WT+ST**	**9 CP**

2 Modules

M 2.1 Module: Additional Fundamentals of Engineering [M-WIWI-107750]

Coordinators: Prof. Dr.-Ing. Alexander Fidlin
PD Dr. Volker Gaukel
Prof. Dr. Michael Hoffmann

Organisation: KIT Department of Business and Economics

Part of: Engineering Sciences (mandatory)

Credits	Grading	Recurrence	Duration	Language	Level	Version
8 CP	graded	Each term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective:)				
T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics	**WT**	**4 CP**	**Fidlin**
T-ETIT-100534	Electrical Engineering for Business Engineers, Part II	**ST**	**5 CP**	**Brodatzki**
T-CIWVT-114347	Fundamentals of Chemical Engineering	**WT**	**3 CP**	**Wehinger**
T-MACH-115180	Sustainable Manufacturing Technologies and Production Systems	**WT**	**4 CP**	**Lanza**
T-MACH-102079	Material Science II for Business Engineers	**ST**	**5 CP**	**Wagner**

Assessment
The module examination consists of partial examinations of the selected courses, which together meet the required credit point requirement. Details of the examination can be found in the respective partial performance description.

Prerequisites
None

Competence Goal
Students acquire a deepened understanding of the engineering fundamentals in the fields of materials science, engineering mechanics, electrical engineering, and chemical engineering.

Upon successful completion of the module, students will be able to:

- Explain the central principles and concepts of dynamics, electrical engineering, and materials science and apply them to engineering problems.
- Analyze current trends and fundamental processes in chemical and bioengineering and assess their significance for industrial practice.
- Develop mathematical-physical models to describe dynamic systems and electrical networks and evaluate their behavior.
- Evaluate the properties and applications of various materials and utilize materials science relationships to solve technical tasks.
- Independently structure subject-specific problems and develop methodically sound solutions using scientific methods.

Content
The module provides in-depth knowledge in central engineering disciplines. Students choose from a broad spectrum of subject areas to individually expand their technological expertise:

- Engineering Mechanics (Dynamics): Analysis of the motion of bodies under the influence of forces, including kinematics and kinetics of particles and rigid bodies as well as vibration theory.
- Electrical Engineering: Deepening of electrical engineering principles for non-electrical engineers, focusing on electrical machines, power engineering, and the analysis of more complex networks.
- Chemical and Bioengineering: Introduction to the fundamentals of material conversion processes. This includes the balancing of material and energy flows as well as insights into modern processes in food and bioprocess engineering.
- Materials Science: Study of the physical and chemical properties of engineering materials. The relationships between microstructural design, manufacturing processes, and mechanical behavior (e.g., strength, corrosion resistance) are covered.

By combining these fields, students learn the methodical approach to complex technical systems, which is characteristic of the interface between business and technology in Industrial Engineering and Management.

Module Grade Calculation
The total grade of the module is formed from the grades of the partial examinations weighted by credit points (cut off after the first decimal place).

Additional Information
Please note that "Materials Science 2" and "Electrical Engineering II for Industrial Engineers" are not offered in the winter semester, but only in the summer semester.

Workload
The total workload for this module is approx. 240 hours (8 CP).

The workload is composed of the following components:

- Attendance of lectures (presence time): approx. 90 hours (based on the selection of courses, e.g., 2 SWS per lecture and exercise).
- Self-study: approx. 150 hours. This comprises preparation and follow-up of the course content, solving exercise tasks, and specific exam preparation.

The actual workload varies depending on the individual choice of courses within the elective area of the module.

M 2.2 Module: Applications of Operations Research (WW3OR5) [M-WIWI-101413]

Coordinators: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Business and Economics
Part of: Operations Research (Specialisation Program Operations Research)
Compulsory Elective Modules (Operations Research)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	3	9

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: between 1 and 2 items)				
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	**WT**	**4,5 CP**	**Nickel**
T-WIWI-102714	Tactical and Operational Supply Chain Management	**ST**	**4,5 CP**	**Nickel**
Supplementary Courses (Elective: at most 1 item)				
T-WIWI-102726	Global Optimization I	**ST**	**4,5 CP**	**Stein**
T-WIWI-106199	Modeling and OR-Software: Introduction	**ST**	**4,5 CP**	**Nickel**
T-WIWI-106545	Optimization under Uncertainty	**WT**	**4,5 CP**	**Rebennack**

Assessment
The assessment is carried out as partial exams (according to § 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
At least one of the courses *Facility Location and strategic Supply Chain Management* and *Tactical and operational Supply Chain Management* has to be taken.

Competence Goal
The student

- is familiar with basic concepts and terms of Supply Chain Management,
- knows the different areas of Supply Chain Management and their respective optimization problems,
- is acquainted with classical location problem models (in the plane, on networks and discrete) as well as fundamental methods for distribution and transport planning, inventory planning and management,
- is able to model practical problems mathematically and estimate their complexity as well as choose and adapt appropriate solution methods.

Content
Supply Chain Management is concerned with the planning and optimization of the entire, inter-company procurement, production and distribution process for several products taking place between different business partners (suppliers, logistics service providers, dealers). The main goal is to minimize the overall costs while taking into account several constraints including the satisfaction of customer demands.

This module considers several areas of Supply Chain Management. On the one hand, the determination of optimal locations within a supply chain is addressed. Strategic decisions concerning the location of facilities like production plants, distribution centers or warehouses are of high importance for the rentability of supply chains. Thoroughly carried out, location planning tasks allow an efficient flow of materials and lead to lower costs and increased customer service. On the other hand, the planning of material transport in the context of Supply Chain Management represents another focus of this module. By linking transport connections and different facilities, the material source (production plant) is connected with the material sink (customer). For given material flows or shipments, it is considered how to choose the optimal (in terms of minimal costs) distribution and transportation chain from the set of possible logistics chains, which asserts the compliance of delivery times and further constraints.

Furthermore, this module offers the possibility to learn about different aspects of the tactical and operational planning level in Suppy Chain Management, including methods of scheduling as well as different approaches in procurement and distribution logistics. Finally, issues of warehousing and inventory management will be discussed.

Additional Information
The planned lectures and courses for the next three years are announced online at https://dol.ior.kit.edu/Lehrveranstaltungen.php.

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.

Recommendations
The courses Introduction to Operations Research I and II are helpful.

M 2.3 Module: Applied Informatics [M-WIWI-105112]

Coordinators: Dr.-Ing. Tobias Käfer
Prof. Dr. Andreas Oberweis
Prof. Dr. Melanie Volkamer

Organisation: KIT Department of Business and Economics

Part of: Informatics

Credits	Grading	Recurrence	Duration	Level	Version
9 CP	graded	Each term	1 term	3	3

ID	Name	Term offered	Credits	Lecturers
Advanced Programming (Elective: 1 item)				
T-WIWI-102747	Advanced Programming - Java Network Programming	**ST**	**4,5 CP**	**Ratz, Zöllner**
T-WIWI-102748	Advanced Programming - Application of Business Software	**WT**	**4,5 CP**	**Klink, Oberweis, Schreiber, Ullrich**
Compulsory Elective Area (Elective: 1 item)				
T-WIWI-110340	Applied Informatics – Applications of Artificial Intelligence	**WT**	**4,5 CP**	**Käfer**
T-WIWI-114156	Applied Informatics – Cybersecurity	**ST**	**4,5 CP**	**Volkamer**
T-WIWI-110341	Applied Informatics – Database Systems	**ST**	**4,5 CP**	**Oberweis**
T-WIWI-113957	Applied Informatics – Mobile Computing	**ST**	**4,5 CP**	**Schiefer**
T-WIWI-110338	Applied Informatics – Modelling	**WT**	**4,5 CP**	**Fritsch, Oberweis**

Assessment
The assessment is carried out as two partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module. For passing the module exam in every singled partial exam the respective minimum requirements has to be achieved.

- Partial exam I: *Advanced Programming - Java Network Programming* or alternativly *Advanced Programming - Application of Business Software*
- Partial exam II: all the rest

The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

When every singled examination is passed, the overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal
The student

- has the capability of dealing with the practical application of the Java programming language (which is the dominating programming language in many application areas) or alternatively the ability to configure, parameterize and deploy enterprise software to enable, support and automate business processes,
- knows in depth methods and systems of a core area or a core application area of Informatics according to the contents dealt with in the lectures,
- can choose these methods and system situation adequately and can furthermore design and employ them for problem solving,
- is able to independently find strategic and creative answers in the finding of solutions to well defined, concrete, and abstract problems.

Content
In this module, object-oriented programming skills using the Java programming language are further deepened. Alternatively important fundamentals of business information systems are conveyed that enable, support and accelerate new forms of business processes and organizational forms. Based on a core application area, basic methods and techniques of computer science are presented.

Workload
The total workload for this module is approximately 270 hours. For further information see German version.

M 2.4 Module: Applied Microeconomics (WW3VWL13) [M-WIWI-101499]

Coordinators: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Business and Economics
Part of: Economics (Specialisation Program Economics)
Compulsory Elective Modules (Economics)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	3	6

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: at least 9 credits)				
T-WIWI-112228	Digital Markets and Market Design	**WT**	**4,5 CP**	**Hillenbrand**
T-WIWI-114598	Digital Markets and Mechanisms	**ST**	**4,5 CP**	**Rosar**
T-WIWI-102892	Economics and Behavior	**WT**	**4,5 CP**	**Rau**
T-WIWI-114622	Introduction to Econometrics	**ST**	**5 CP**	**Schienle**
T-WIWI-102850	Introduction to Game Theory	**ST**	**4,5 CP**	**Puppe, Reiß**
T-WIWI-115079	Experimental Economics (Bachelor)	**Once**	**4,5 CP**	**Rau**
T-WIWI-102844	Industrial Organization	**Irreg.**	**4,5 CP**	**Reiß**
T-WIWI-102739	Public Revenues	**ST**	**4,5 CP**	**Wigger**
T-WIWI-100005	Competition in Networks	**WT**	**4,5 CP**	**Mitusch**

Assessment
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
None.

Competence Goal
Students

- are introduced to the basic theoretical analysis of strategic interaction situations and shall be able to analyze situations of strategic interaction systematically and to use game theory to predict outcomes and give advice in applied economics settings, (course "Introduction to Game Theory");
- are exposed to the basic problems of imperfect competition and its implications for policy making; (course "Industrial Organization");
- are provided with the basic economics of network industries (e.g., telecom, utilities, IT, and transport sectors) and should get a vivid idea of the special characteristics of network industries concerning planning, competition, competitive distortion, and state intervention, (course "Competition in Networks").

Content
The module's purpose is to extend and foster skills in microeconomic theory by investigating a variety of applications. Students shall be able to analyze real-life problems using microeconomics.

Workload
Total workload for 9 credit points: approx. 270 hours.

The exact distribution is based on the credit points of the courses in the module.

Recommendations
Completion of the module Economics is strongly recommended.

M 2.5 Module: Automation and Material Flow in Logistics [M-MACH-106995]

Coordinators: Prof. Dr.-Ing. Kai Furmans
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German	3	2

ID	Name	Term offered	Credits	Lecturers
Automation and material flow in logistics (Elective:)				
T-MACH-113566	Automation and Autonomy in Logistics	**WT**	**4 CP**	**Brenner-Waldhof, Furmans**
T-MACH-113013	Basics of Technical Logistics	**WT**	**4 CP**	**Mittwollen**
T-MACH-112968	Material Flow in Production and Logistics	**ST**	**4 CP**	**Furmans**

Assessment
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
none

Competence Goal
The student

- acquires comprehensive and well-founded knowledge on the main topics of logistics, an overview of different logistic questions in practice and knows the functionality of material handling systems,
- is able to illustrate logistic systems with adequate accuracy by using simple models,
- is able to realize coherences within logistic systems,
- is able to evaluate logistic systems by using the learnt methods.
- has an understanding of the various approaches and possibilities of automation and autonomy in logistics and can describe the associated technical requirements and approaches.

Content
The module Automation and Material Flow in Logistics provides the basics for the main topics in logistics and industrial material flows. The lectures illustrate the interaction of different modules of logistics systems. Depending on the specialisation, the technical features of conveyor technology are discussed in detail on the one hand, and on the other hand, methods for mapping and evaluating logistics systems are taught. The various levels and possibilities of automation and autonomy in logistics are analysed and the technical implementation is discussed and tested using practical experiments, models and approaches.

Workload
The total workload for this module is approximately 270 hours (9 credits). The allocation is based on the credit points of the module's courses.

Recommendations
none

Teaching and Learning Methods
see individual courses

M 2.6 Module: Automotive Engineering (WI4INGMB5) [M-MACH-101266]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	4	9

ID	Name	Term offered	Credits	Lecturers
Automotive Engineering (Elective: at least 9 credits)				
T-MACH-102203	Automotive Engineering I	**WT**	**8 CP**	**Gießler**
T-MACH-112126	Data-Driven Algorithms in Vehicle Technology	**WT**	**4 CP**	**Scheubner**
T-MACH-100092	Automotive Engineering I (in German)	**WT**	**8 CP**	**Gießler**
T-MACH-102117	Automotive Engineering II (in German)	**ST**	**4 CP**	**Gießler**
T-MACH-102116	Fundamentals for Design of Motor-Vehicle Bodies I	**WT**	**2 CP**	**Knoch**
T-MACH-102119	Fundamentals for Design of Motor-Vehicle Bodies II	**ST**	**2 CP**	**Knoch**
T-MACH-110796	Python Algorithms for Vehicle Technology	**ST**	**4 CP**	**Rhode**
T-MACH-102156	Project Workshop: Automotive Engineering	**WT+ST**	**6 CP**	**Frey, Gießler**
T-MACH-111820	Control of Mobile Machines – Prerequisites	**ST**	**1 CP**	**Becker, Geimer**
T-MACH-111821	Control of Mobile Machines	**ST**	**3 CP**	**Becker, Geimer**
T-MACH-114435	Automotive Engineering II	**ST**	**4 CP**	**Gießler**
T-MACH-113912	Mathematical Methods in Hydraulics	**WT**	**5 CP**	**Geimer**
T-MACH-113913	Tutorial Mathematical Methods in Hydraulics	**WT**	**1 CP**	**Geimer**
T-MACH-115202	Autonomous Driving in Practice	**WT**	**6 CP**	**Simon**

Assessment
The assessment is carried out as partial exams.

The partial exams consists of a written exam (duration 90 to 120 minutes) or an oral exam (duration 30 to 40 minutes).

Prerequisites
None

Competence Goal
The student

- knows the most important components of a vehicle,
- knows and understands the functioning and the interaction of the individual components,
- knows the basics of dimensioning the components.

Content
In the module Automotive Engineering the basics are taught, which are important for the development, the design, the production and the operation of vehicles. Particularly the primary important aggregates like engine, gear, drive train, chasis and auxiliary equipment are explained, but also all technical equipment, which make the operation safer and easier. Additionally the interior equipment is examined, which shall provide a preferably comfortable, optimum ambience to the user.

In the module Automotive Engineering the focus is on passenger cars and commercial vehicles, which are designed for road applications.

Workload
The total work load for this module is about 270 Hours (9 Credits). The partition of the work load is carried out according to the credit points of the courses of the module. The work load for courses with 6 credit points is about 180 hours, for courses with 4.5 credit points about 135 hours, for courses with 3 credit points about 90 hours, and for courses with 1.5 credit points about 45 hours. The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam duration and the time that is required to achieve the objectives of the module as an average student with an average performance.

Recommendations
Knowledge of the content of the courses *Engineering Mechanics I* [2161238] and *Engineering Mechanics II* [1262276] is helpful.

Teaching and Learning Methods
The teaching and learning procedures (lecture, lab course, workshop) are described for each course of the module separately.

M 2.7 Module: Bachelor's Thesis [M-WIWI-107751]

Coordinators: Studiendekan des KIT-Studienganges
Organisation: KIT Department of Business and Economics
Part of: Bachelor's Thesis

Credits	Grading	Recurrence	Duration	Language	Level	Version
15 CP	graded	Each term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-115142	Bachelor's Thesis		**15 CP**	**Studiendekan des KIT-Studienganges**

Assessment
The assessment is carried out in accordance with Section 14 of the study and examination regulations. The module examination consists of a written elaboration and a presentation. The presentation should take place no later than four weeks after the submission of the written elaboration. The module grade is derived from the evaluation of the written work and the presentation.

Prerequisites
Prerequisites for admission to the Bachelor Thesis: minimum of 120 credits must be earned. All module examinations of the basic program and the seminar module must be passed.

At the request of the student, the examination committee decides on exceptions to these regulations.

It is recommended to begin the Bachelor Thesis in the 5th or 6th Semester.
A written confirmation of the examiner about supervising the Bachelor's Thesis is required.
Please pay regard to the institute specific rules for supervising a Bachelor Thesis.
The Bachelor Thesis has to contain the following declaration in German:

„Ich versichere wahrheitsgemäß, die Arbeit selbstständig verfasst, alle benutzten Hilfsmittel vollständig und genau angegeben und alles kenntlich gemacht zu haben, was aus Arbeiten anderer unverändert oder mit Abänderungen entnommen wurde sowie die Satzung des KIT zur Sicherung guter wissenschaftlicher Praxis in der jeweils gültigen Fassung beachtet zu haben.“

If this declaration is not given, the Bachelor Thesis will not be accepted.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. You need to have earned at least 120 credits in your study program.
2. The module M-WIWI-101398 - Introduction to Economics must have been passed.
3. The module M-WIWI-101417 - Foundations of Informatics must have been passed.
4. The module M-WIWI-101418 - Introduction to Operations Research must have been passed.
5. The module M-WIWI-101432 - Introduction to Statistics must have been passed.
6. The module M-WIWI-101581 - Introduction to Programming must have been passed.
7. The module M-WIWI-105768 - Management and Marketing must have been passed.
8. The module M-WIWI-105769 - Financing and Accounting must have been passed.
9. The module M-WIWI-105770 - Production, Logistics and Information Systems must have been passed.
10. The module M-MACH-101259 - Engineering Mechanics must have been passed.
11. The module M-MACH-101260 - Materials Science must have been passed.
12. The module M-ETIT-101155 - Electrical Engineering must have been passed.
13. The module M-WIWI-107749 - Seminar Module must have been passed.
14. The module M-MATH-107813 - Mathematics 1 for WIng B.Sc. 2026 must have been passed.
15. The module M-MATH-107814 - Mathematics 2 for WIng B.Sc. 2026 must have been passed.
16. The module M-MATH-107815 - Mathematics 3 for WIng B.Sc. 2026 must have been passed.

Competence Goal
The student can independently work on a relevant topic in accordance with scientific criteria within the specified time frame.

He/she is in a position to research, analyze the information, abstract and identify basic principles and regulations from less structured information.

He/she reviews the task ahead, can select scientific methods and techniques and apply them to solve a problem or identify further potential. This is basically also done under consideration of social and/or ethical aspects.

He/she can interpret, evaluate and if required, graphically present the obtained results.

He/she is in a position to clearly structure a research paper and communicate in writing using the technical terminology.

Content
The Bachelor Thesis is the first major scientific work. The topic of the Bachelor Thesis will be chosen by the student themselves and adjusted with the examinor. The topic has to be related to Industrial Engineering and Management and has to refer to subject-specific or interdisciplinary problems.

Workload
The preparation and presentation of the Bachelor's thesis is expected to take a total of approx. 360 hours. In addition to writing the thesis, this figure includes all necessary activities such as literature research, familiarization with the topic, familiarization with any necessary tools, conducting studies/experiments, supervision meetings, etc.

M 2.8 Module: Combustion Engines I (WW4INGMB34) [M-MACH-101275]

Coordinators: Prof. Dr. Thomas Koch
Dr.-Ing. Heiko Kubach

Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Level	Version
9 CP	graded	Each winter term	1 term	4	6

ID	Name	Term offered	Credits	Lecturers
Wahlpflicht (Elective: between 1 and 2 items)				
T-MACH-111550	CO2-Neutral Combustion Engines and their Fuels I	**WT**	**5 CP**	**Koch**
T-MACH-111585	Hydrogen and reFuels - Energy Conversion in Combustion Engines	**WT**	**4 CP**	**Kubach**

Assessment
The module examination contains of two oral examinations. The module score results from the two scores weighted according to the ECTS.

Prerequisites
None

Competence Goal
The student can name and explain the working princile of combustion engines. He is able to analyse and evaluate the combustion process. He is able to evaluate influences of gas exchange, mixture formation, fuels and exhaust gas aftertreatment on the combustion performance. He can solve basic research problems in the field of engine development.

The student can name all important influences on the combustion process. He can analyse and evaluate the engine process considering efficiency, emissions and potential.

Content
Working Principle og ICE

Characteristic Parameters

Characteristic parameters

Engine parts

Crank drive

Fuels

Gasolien engine operation modes

Diesel engine operation modes

Emissions

Fundamentals of ICE combustion

Thermodynamics of ICE

Flow field

Wall heat losses

Combsution in Gasoline and Diesel engines

Heat release calculation

Waste heat recovery

CO2-free engine technology

Workload
regular attendance: 62 hours
self-study: 208 hours

M 2.9 Module: Combustion Engines II (WW4INGMB35) [M-MACH-101303]

Coordinators: Dr.-Ing. Heiko Kubach
Julia Reichel

Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	4	5

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-111560	CO2-Neutral Combustion Engines and their Fuels II	**ST**	**4 CP**	**Koch**
Verbrennungsmotoren II (Elective: at least 4 credits)				
T-MACH-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines	**ST**	**4 CP**	**Gohl**
T-MACH-105649	Boosting of Combustion Engines	**ST**	**4 CP**	**Kech, Lachenmaier**
T-MACH-105184	Fuels and Lubricants for Combustion Engines	**WT**	**4 CP**	**Kehrwald**
T-MACH-110817	Development of Hybrid Drivetrains	**ST**	**4 CP**	**Koch**
T-MACH-110816	Large Diesel and Gas Engines for Ship Propulsions	**ST**	**4 CP**	**Weisser**
T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment	**ST**	**4 CP**	**Deutschmann, Grunwaldt, Kubach, Lox**
T-MACH-105167	Analysis Tools for Combustion Diagnostics	**ST**	**4 CP**	**Pfeil**
T-MACH-105169	Engine Measurement Techniques	**ST**	**4 CP**	**Bernhardt**
T-MACH-105985	Ignition Systems		**4 CP**	**Toedter**

Assessment
The assessment consists of an oral exam (approx. 60 min) taking place in the recess period (according to §4 (2), 2 of the examination regulation). The exam takes place in every semester. Reexaminations are offered at every ordinary examination date.

Prerequisites
None

Competence Goal
Students gain in-depth knowledge of the design, operation, analysis, and optimization of modern internal combustion engines. They understand the relationships between the combustion process, fuels, turbocharging, ignition systems, measurement technology, and exhaust aftertreatment, and can evaluate their impact on efficiency and emissions. In addition, they are familiar with hybrid and sustainable propulsion concepts as well as applications of large engines, and can compare and evaluate different propulsion systems from technical, economic, and environmental perspectives.

Content
Compulsory:
Supercharging and air management
Engine mapsEmissions and Exhaust gas aftertreatment
Transient engine operationECU application
Electrification and alternative powertrains
Elective:
Fuels and lubricants for ICE
Fundamentals of catalytic EGA
Analysis tools for combustion diagnostics
Engine measurement techniques
Analysis of Exhaust Gas und Lubricating Oil in Combustion Engines

Workload
regular attendance: 62 h
self-study: 208 h

Teaching and Learning Methods
Lecture, Tutorial

M 2.10 Module: Data Driven Engineering Fundamentals [M-MACH-107658]

Coordinators: Prof. Dr.-Ing. Anne Meyer
Organisation: KIT Department of Mechanical Engineering
Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each winter term	2 terms	English	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-114078	Data Science Fundamentals in Engineering	**WT**	**4 CP**	**Meyer**
T-MACH-115104	Python-Basics Course	**WT**	**1 CP**	**Meyer**
Compulsory Elective Area (Elective: at least 4 credits)				
T-MACH-115042	Applied Data Science and Machine Learning in Engineering	**ST**	**4 CP**	**Meyer**
T-MACH-114767	CAD Workshop	**WT+ST**	**4 CP**	**Rönnau**
T-MACH-113507	CAE-Basics	**WT**	**3 CP**	**Düser**
T-MACH-113899	CAE-Basics Workshop	**WT**	**1 CP**	**Düser**
T-MACH-115010	Project: Data-Driven Engineering Fundamentals	**WT+ST**	**4 CP**	**Meyer**

Competence Goal
After successfully completing the module, students will be able to

1. **Explain data and AI strategies in engineering processes**, assess the strategies in addition to simulation and optimization approaches and analyze technical data sources in terms of quality, structure and suitability for machine learning.
2. **Apply exploratory data analysis, statistical models, machine learning and basic deep learning methods** and design and implement complete end-to-end pipelines (data preparation, model training, validation, deployment) with modern Python libraries.
3. **Critically evaluate model performance**, address limitations and uncertainties and present results in written, oral and multimedia formats appropriate to the target audience.
4. **Apply modern CAD and CAE methods for the development of a simple (mechatronic) prototype**, plan, model and analyze digital product development workflows (e.g. FEM, stress analysis) and document and present the results in a technically sound manner using a self-built prototype.
5. **Plan, implement and coordinate team-oriented engineering projects**.

Content
The module provides a comprehensive basic framework for the practical application of data-driven methods in engineering.

Core topics **Data Science Fundamentals in Engineering**
Introduction to data sources, data quality, explorative data analysis, statistical modeling, basic ML methods (regression, classification, clustering) and the fundamentals of deep learning for technical applications.

Core topics **Python-Basics Course**
Practice-oriented self-study course on Python programming, Python syntax, programming environments, Python libraries for data science in engineering

Core topics **Applied Data Science and Machine Learning in Engineering**
In-depth study of technical aspects of industrial data sources (databases, REST APIs), messaging (MQTT), versioning and collaboration tools (GitLab) and scalable cluster computing (HPC at KIT)

Core topics **CAD workshop**
Team project for collaborative product development using modern CAD systems; prototype development, documentation and live demonstration

Core topics **CAE basics & workshop**
Basics of CAD, parametric modeling, finite element analysis (FEA)

Core topics **Project: Data-Driven Engineering Fundamentals**
Team-oriented structuring and solution of a problem from the areas of product development, production systems, logistics and robotics by selecting suitable data-driven methods

Workload
Total workload for 9 credit points: approx. 270 hours. The exact distribution is based on the credit points of the courses in the module.

M 2.11 Module: eBusiness and Service Management (WW3BWLISM1) [M-WIWI-101434]

Coordinators: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	3	13

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: 9 credits)				
T-WIWI-111307	Digital Services: Foundations	**ST**	**4,5 CP**	**Förster, Holtmann**
T-WIWI-110797	eFinance: Information Systems for Securities Trading	**WT**	**4,5 CP**	**Weinhardt**
T-WIWI-113746	Enterprise Systems for Financial Accounting & Controlling	**WT**	**4,5 CP**	**Fleig, Mädche**
T-WIWI-109816	Foundations of Interactive Systems	**ST**	**4,5 CP**	**Mädche**
T-WIWI-107506	Platform Economy	**WT**	**4,5 CP**	**Weinhardt**
T-WIWI-115323	Social Media: Analytics and Applications	**WT**	**4,5 CP**	**Förster**
T-WIWI-109940	Special Topics in Information Systems	**WT+ST**	**4,5 CP**	**Weinhardt**
T-WIWI-114596	Sustainability in E-Business	**WT**	**4,5 CP**	**Heßler, Pfeiffer**

Assessment
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
None

Competence Goal
The students

- understand the strategic and operative design of information and information products,
- analyze the role of information on markets,
- evaluate case studies regarding information products,
- develop solutions in teams.

Content
This module gives an overview of the mutual dependencies of strategic management and information systems. The central role of information is exemplified by the structuring concept of the information life cycle.

The single phases of this life cycle from generation over allocation until dissemination and use of the information are analyzed from a business and microeconomic perspective, applying classical and new theories. The state of the art of economic theory on aspects of the information life cycle are presented. The lecture is complemented by exercise courses. The courses "Platform Economy", "eFinance: Information systems in finance" and "eServices" constitute three different application domains in which the basic principles of the Internet Economy are deepened. In the core lecture "Platform Economy" the focus is set on markets between two parties that act through an intermediary on an Internet platform. Topics discussed are network effects, peer-to-peer markets, blockchains and marketdesign. The course is held in English and teaches parts of the syllabus with the support of a case study in which students analyze a platform.

The course "eFinance: information systems for securities trading" provides theoretically profound and also practical-oriented background about the functioning of international financial markets. The focus is placed on the economic and technical design of markets as information processing systems.

In "eServices" the increasing impact of electronic services compared to the traditional services is outlined. The Information- und Communication Technologies enable the provision of services, which are mainly characterized by interactivity and individuality. This course provides basic knowledge about the development and management of ICT-based servies.

The theoretic fundamentals of Information systems can be enriched by a practical experience in Special Topics in Information Engineering and Management. Any practical Seminar at the IM can be chosen for the course Special Topics in Information systems.

Additional Information
All practical Seminars offered at the IM can be chosen for *Special Topics in Information Systems*. Please update yourself on www.iism.kit.edu/im/lehre

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.

M 2.12 Module: Economic Policy I (WW3VWL10) [M-WIWI-101668]

Coordinators: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Business and Economics
Part of: Economics (Specialisation Program Economics)
Compulsory Elective Modules (Economics)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	11

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-103213	Basic Principles of Economic Policy	**see notes**	**4,5 CP**	**Ott**
Compulsory Elective Courses (Elective: 1 item)				
T-WIWI-114178	HR-Management 2: Organization, Fairness & Leadership	**ST**	**4,5 CP**	**Nieken**
T-WIWI-102739	Public Revenues	**ST**	**4,5 CP**	**Wigger**
T-WIWI-100005	Competition in Networks	**WT**	**4,5 CP**	**Mitusch**

Assessment
The module examination takes place in the form of examinations (§4(2),1 SPO) of the selected partial module performance. The examination is carried out separately for each partial module and is described there. It is possible to repeat examinations at any regular examination date.

The grades of the partial module correspond to the grades of the passed examinations. The overall grade of the module is formed from the grades of the partial performances weighted with LP.

Prerequisites
The course "Introduction to Economic Policy" is mandatory in the module.

Competence Goal
Students shall be given the ability to

- understand and deepen basic concepts of micro- and macroeconomic theories
- apply those theories to economic policy issues
- understand government interventions in the market and their legitimation from the perspective of economic welfare
- learn how theory-based policy recommendations are derived

Content

- Intervention in the market: micro-economic perspective
- Intervention in the market: macroeconomic perspective
- Institutional economic aspects
- Economic policy and welfare economics
- Carriers of economic policy: political-economic aspects

Workload
Total effort for 9 credit points: approx. 270 hours. The distribution is made according to the credit points of the courses of the module.

Recommendations
Basic knowledge of micro- and macroeconomics is strongly recommended, as taught in the courses Economics I [2610012], and Economics II [2600014].

M 2.13 Module: Economic Theory (WW3VWL12) [M-WIWI-101501]

Coordinators: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Business and Economics
Part of: Economics (Specialisation Program Economics)
Compulsory Elective Modules (Economics)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German/English	3	6

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective:)				
T-WIWI-102609	Advanced Topics in Economic Theory	**Irreg.**	**4,5 CP**	**Brumm, Mitusch**
T-WIWI-112723	Computational Macroeconomics	**ST**	**4,5 CP**	**Brumm**
T-WIWI-114598	Digital Markets and Mechanisms	**ST**	**4,5 CP**	**Rosar**
T-WIWI-102892	Economics and Behavior	**WT**	**4,5 CP**	**Rau**
T-WIWI-102850	Introduction to Game Theory	**ST**	**4,5 CP**	**Puppe, Reiß**
T-WIWI-102844	Industrial Organization	**Irreg.**	**4,5 CP**	**Reiß**
T-WIWI-102610	Welfare Economics	**see notes**	**4,5 CP**	**Puppe**

Assessment
The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
None

Competence Goal
Students

- master concepts that are central to (micro-)economic theory and are familiar with their real-world applications,
- will be able to interpret and critically assess microeconomic models,
- attain in-depth knowledge of the theory of strategic decision making and of general equilibrium models,
- can apply methods from welfare economics to analyze issues like distributional fairness and equality of opportunity.

Content
The module covers central concepts in microeconomic theory as well as their applications. This includes an in-depth introduction to the modelling language and the equilibrium concepts (Nash equilibrium, sub-game-perfect Nash equilibrium, etc.) of non-cooperative game theory ("Introduction to Game Theory") as well as its applications to problems of imperfect competition and industrial organization ("Industrieökonomie") and the design of auctions and (incentive-)mechanisms ("Auction & Mechanism Design").

A further focus of the module is on the development of a micro-founded general equilibrium model in order to examine key macroconomic issues such as public dept and labor market as well as monetary policies ("Macroeconomic Theory"). Students may also delve deeper into the basics of behavioral economics and experimental design ("Economics & Behavior") as well as into questions of equality of opportunity and the fairness and efficiency of economic allocations ("Wohlfahrtstheorie").

Additional Information
Please note that the course T-WIWI-102609 "Advanced Topics in Economic Theory" is currently not available.

Workload
The total workload for this module is approximately 270 hours (9 credit points). The distribution is done according to the credit points of the courses of the module. The workload for courses with 4.5 credit points is approx. 135 hours. The total number of hours per course is calculated from the time required for attending lectures and exercises, as well as examination times and the time required for an average student to achieve the learning objectives of the module.

Recommendations
None

M 2.14 Module: eFinance (WW3BWLISM3) [M-WIWI-101402]

Coordinators: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German/English	3	9

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-110797	eFinance: Information Systems for Securities Trading	**WT**	**4,5 CP**	**Weinhardt**
Supplementary Courses (Elective: at least 4,5 credits)				
T-WIWI-102643	Derivatives	**ST**	**4,5 CP**	**Uhrig-Homburg**
T-WIWI-112694	FinTech	**WT**	**4,5 CP**	**Thimme**
T-WIWI-102646	International Finance	**see notes**	**3 CP**	**Uhrig-Homburg**

Assessment
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
The course *eFinance: Information Systems for Securities Trading* [2540454] is compulsory and must be examined.

Competence Goal
The students

- are able to understand and analyse the value creation chain in stock broking,
- are able to adequatly identify, design and use methods and systems to solve problems in finance,
- are able to evaluate and criticize investment decisions by traders,
- are able to apply theoretical methods of econometrics,
- learn to elaborate solutions in a team.

Content
The module "eFinance" addresses current problems in the finance sector. It is investigated the role of information and knowledge in the finance sector and how information systems can solve or extenuate them. Speakers from practice will contribute to lectures with their broad knowledge. Core courses of the module deal with the background of banks and insurance companies and the electronic commerce of stocks in global finance markets. In addtion the course Derivatives offers an insight into future and forward contracts as well as the assesment of options. Exchanges and International Finance are also alternatives which provide a suplementary understanding for capital markets.
Information management topics are the focus of the lecture "eFinance: Information Systems for Securities Trading". For the functioning of the international finance markets, it is necessary that there is an efficient information flow. Also, the regulatory frameworks play an important role. In this context, the role and the functioning of (electronic) stock markets, online brokers and other finance intermediaries and their platforms are presented. Not only IT concepts of German finance intermediaries are presented, but also international system approaches will be compared. The lecture is supplemented by speakers from the practice (and excursions, if possible) coming from the Deutsche Börse and the Stuttgart Stock Exchange.

Additional Information
The current seminar courses for this semester, which are complementary to this module, are listed on following webpage: the http://www.iism.kit.edu/im/lehre

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.

M 2.15 Module: Electives in Informatics (WW3INFO2) [M-WIWI-101426]

Coordinators: Dr.-Ing. Tobias Käfer
Prof. Dr. Andreas Oberweis
Prof. Dr. Melanie Volkamer

Organisation: KIT Department of Business and Economics

Part of: Compulsory Elective Modules (Informatics)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	16

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Area (Elective: between 1 and 2 items)				
T-WIWI-110340	Applied Informatics – Applications of Artificial Intelligence	**WT**	**4,5 CP**	**Käfer**
T-WIWI-114156	Applied Informatics – Cybersecurity	**ST**	**4,5 CP**	**Volkamer**
T-WIWI-110341	Applied Informatics – Database Systems	**ST**	**4,5 CP**	**Oberweis**
T-WIWI-113957	Applied Informatics – Mobile Computing	**ST**	**4,5 CP**	**Schiefer**
T-WIWI-110338	Applied Informatics – Modelling	**WT**	**4,5 CP**	**Fritsch, Oberweis**
T-WIWI-110711	Supplement Applied Informatics	**WT+ST**	**4,5 CP**	**Professorenschaft des Instituts AIFB**
Advanced Labs (Elective: at most 1 item)				
T-WIWI-111127	Advanced Lab Blockchain Hackathon (Bachelor)	**see notes**	**4,5 CP**	**Sunyaev**
T-WIWI-111124	Advanced Lab Sociotechnical Information Systems Development (Bachelor)	**see notes**	**4,5 CP**	**Sunyaev**
T-WIWI-110541	Advanced Lab Informatics (Bachelor)	**WT+ST**	**4,5 CP**	**Professorenschaft des Instituts AIFB**
T-WIWI-114597	Advanced Lab Programming 3	**WT**	**4,5 CP**	**Oberweis**
T-WIWI-112915	Advanced Lab Realization of Innovative Services (Bachelor)	**WT+ST**	**4,5 CP**	**Oberweis**
T-WIWI-108439	Advanced Lab Security, Usability and Society	**WT+ST**	**4,5 CP**	**Volkamer**

Assessment
The assessment is carried out as two partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. For passing the module exam in every singled partial exam the respective minimum requirements has to be achieved.

The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

When every singled examination is passed, the overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
None

Competence Goal
The student

- knows and has mastered methods and systems for core topics and core application areas of computer science,
- can choose these methods and system situation adequately and can furthermore design and employ them for problem solving,
- is able to independently find strategic and creative answers in the finding of solutions to well defined, concrete, and abstract problems.

Content
The elective module conveys advanced knowledge in the area of applied computer science. This includes, for example, the efficient design and optimization of technical systems, the design and management of database applications or the systematic development of large software systems. Moreover, modeling of complex systems, the use of computer science methods to support knowledge management, and the design and implementation of service-oriented architectures are discussed in this module.

Workload
Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

M 2.16 Module: Electric Energy Systems and Power Generation [M-ETIT-106821]

Coordinators: Prof. Dr.-Ing. Marc Hiller
Dr.-Ing. Bernd Hoferer
Prof. Dr.-Ing. Thomas Leibfried

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each summer term	1 term	German	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-ETIT-101924	Power Generation	**ST**	**3 CP**	**Hoferer**
T-ETIT-112850	Electric Energy Systems	**ST**	**6 CP**	**Hiller, Leibfried**

Assessment
Electric Energy Systems:
Success control takes place in the form of a written examination lasting 120 minutes.

Power Generation:
Success control takes place in the form of an overall oral examination (approx. 20 minutes) on the selected course.

Prerequisites
none

Competence Goal
Electric Energy Systems:
Students learn about the main types of electrical machines. They can explain how they work and are able to calculate the operating behavior of electrical machines on the basis of simple models and using the electrical engineering basics they have already learned in the field of alternating current theory.

In addition, students learn about the most important self-controlled power converter circuits for energy and drive applications. This also includes the basic properties of the most important power semiconductors, whereby students are able to describe their behavior using characteristic curves and simple models.

Students will be able to analyze network feedback and the effect of power converters on the electrical machine. They can also recognize the components in energy transmission and drive systems and describe their function. Furthermore, they can calculate the behavior of the system components by coupling the models of the power converter, grid and machine.

Students will also be able to assess the role that power electronics will play in a sustainable energy supply and which technologies are crucial for a sustainable conversion and expansion of the electrical energy supply.

Students learn about the structure of the electrical energy supply network in Europe and especially in Germany. They know the laws of high-voltage direct current and high-voltage three-phase current transmission and can name the respective advantages and disadvantages and know the respective characteristics of active and reactive power transmission and the resulting technical consequences. Students will be familiar with the grid operating equipment, its structure and its mode of operation in the grid and will be able to carry out calculations with regard to the parameters important for grid operation. They will be able to name and calculate important design guidelines and operating characteristics of grid equipment. Using transformers as an example, they can carry out a basic design.

Power Generation:
Students are able to recognize energy technology problems and develop solutions. They have gained an understanding of the physical and theoretical relationships in energy technology. They are also able to describe, analyze and explain the developed solutions in a scientific format.

Content
Electric Energy Systems:

Part Hiller:
In this basic lecture, the section on drive technology and power electronics begins by explaining the mode of operation and operating behavior of the most important electrical machines. The focus is on rotary field machines (asynchronous machines, electrically and permanently excited synchronous machines, synchronous reluctance machines).

The most important power semiconductor components and their basic function are then presented. Building on this, the essential power converter circuits for applications in energy and drive technology (including electromobility) are presented. Their function and operating behavior are described.

In addition, the mode of operation and areas of application of electrical machines and power electronic circuits for grid and drive applications are explained in more detail using practical examples.

Part Leibfried:
The lecture begins with an introduction to the structure of the electrical power supply system and the basics of power calculation in the three-phase system. Furthermore, the basic laws for the transmission of electrical energy with direct and alternating current (high-voltage direct current transmission, HGÜ) and high-voltage three-phase current transmission, HDÜ) are dealt with. Another large chapter deals with electrical grid equipment such as generators, transformers, current and voltage transformers, capacitive and inductive compensators as well as overhead lines and cables.

Power Generation:
Basic lecture on the generation of electrical energy. From the conversion of the earth's primary energy resources in coal-fired power plants and in nuclear power plants to the use of renewable energies, the lecture covers the entire spectrum of generation. The lecture provides an overview of the physical principles, the technical and economic aspects and the development potential of generating electrical energy from both conventional and renewable sources.

Module Grade Calculation
The module grade is calculated from the average value of the written and oral examinations weighted according to CP.

Additional Information
"Erzeugung elektrischer Energie" will take place again in summer term 2026.

Workload
Electric Energy Systems:

- Attendance time in VL and Ü (4 SWS a 15 h): 4 * 15 h = 60 h
- Preparation/follow-up of the lecture: 14 * 2 h = 28 h
- Preparation/follow-up of the exercise: 14 * 2 h = 28 h
- Exam preparation: = 60 h
- Examination time: = 2 h
- **Total: 178 h = 6 LP**

Power Generation:

- Attendance time: 30 h
- Self-study time: 60 h
- **Total 90 h = 3 LP**

M 2.17 Module: Electrical Engineering (WI1ING4) [M-ETIT-101155]

Coordinators: Dr.-Ing. Matthias Brodatzki
Dr. Wolfgang Menesklou
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: Engineering Sciences (mandatory)

Credits	Grading	Recurrence	Duration	Level	Version
3 CP	graded	Each winter term	1 term	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-ETIT-100533	Electrical Engineering for Business Engineers, Part I	**WT**	**3 CP**	**Brodatzki**

Assessment
The assessment takes place in the form of a written examination lasting 90 min.

Competence Goal
The student knows and understands basic terms of electrical engineering and should be able to carry out simple calculations of DC and AC circuits.

Content
Supporting the lecture, assignments to the curriculum are distributed. These are solved into additional (voluntary) tutorials.

Module Grade Calculation
The module grade is the grade of the written exam.

Workload
See German version.

M 2.18 Module: Emphasis in Fundamentals of Engineering (WI3INGMB8) [M-MACH-101261]

Coordinators: Prof. Dr.-Ing. Alexander Fidlin
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Level	Version
9 CP	graded	Each term	1 term	4	2

ID	Name	Term offered	Credits	Lecturers
Specialization in Fundamentals of Engineering (Elective: at least 9 credits)				
T-ETIT-100534	Electrical Engineering for Business Engineers, Part II	**ST**	**5 CP**	**Brodatzki**
T-MACH-102079	Material Science II for Business Engineers	**ST**	**5 CP**	**Wagner**
T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics	**WT**	**4 CP**	**Fidlin**

Assessment
The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations take place at the beginning of the recess period. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is removed from the average of the partial examinations, with at least two partial exams need to be.

Competence Goal
Students acquire and deepen skills in engineering fundamentals and can apply them to technical problems. Specific teaching objectives are agreed with the respective coordinator of the course.

Content
The module content depends on the elected courses.

Additional Information
Starting winter term 2016/1017 the course "Introduction to Engineering Mechanics II : Dynamics" [2162276] will be held in winter term.

Workload
See German version.

M 2.19 Module: Emphasis Materials Science (WW3INGMB9) [M-MACH-101262]

Coordinators: Dr.-Ing. Wilfried Liebig
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	4	5

ID	Name	Term offered	Credits	Lecturers
Specialization Materials Science (Elective: at least 9 credits)				
T-MACH-102141	Constitution and Properties of Wearresistant Materials	**ST**	**4 CP**	**Ulrich**
T-MACH-105179	Functional Ceramics	**WT**	**4 CP**	**Botros**
T-MACH-100287	Introduction to Ceramics	**WT**	**6 CP**	**Pagnan Furlan**
T-MACH-102102	Physical Basics of Laser Technology	**WT**	**5 CP**	**Schneider, Weygand**
T-MACH-102137	Polymer Engineering I	**WT**	**4 CP**	**Liebig, Weidenmann**
T-MACH-102138	Polymer Engineering II	**ST**	**4 CP**	**Liebig, Weidenmann**
T-MACH-102157	High Performance Powder Metallurgy Materials	**ST**	**4 CP**	**Schell**
T-MACH-112106	Fatigue of Materials	**ST**	**4 CP**	**Guth**
T-MACH-102170	Structural and Phase Analysis	**ST**	**4 CP**	**Wagner**
T-MACH-100531	Systematic Materials Selection	**ST**	**4 CP**	**Dietrich, Schulze**
T-MACH-102079	Material Science II for Business Engineers	**ST**	**5 CP**	**Wagner**

Assessment
The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations take place at the beginning of the recess period. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

Prerequisites
None

Competence Goal
Students acquire and deepen skills in fundamentals of materials science and engineering and can apply them to technical problems. Specific teaching objectives are agreed with the respective coordinator of the course.

Content
The module content depends on the elected courses.

Module Grade Calculation
The overall grade of the module is removed from the average of the partial examinations, with at least two partial exams need to be.

Workload
The module requires an average workload of 270 hours.

Teaching and Learning Methods
Lecture, Tutorial.

M 2.20 Module: Energy Economics (WW3BWLIIP2) [M-WIWI-101464]

Coordinators: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	5

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102746	Introduction to Energy Economics	**ST**	**5,5 CP**	**Fichtner**
Supplementary Courses (Elective: 3,5 credits)				
T-WIWI-102607	Energy Policy	**ST**	**3,5 CP**	**Wietschel**
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics	**WT**	**3,5 CP**	**Jochem**

Assessment
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) about the lecture *Introduction into Energy Economics* [2581010] and one optional lecture of the module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
The lecture *Introduction into Energy Economics* [2581010] has to be examined.

Competence Goal
The student

- is able to understand interdependencies in energy economics and to evaluate ecological impacts in energy supply,
- is able to assess the different energy carriers and their characteristics,
- knows the energy political framework conditions,
- gains knowledge about new market-based conditions and the cost and potentials of renewable energies in particular.

Content
Introduction to Energy Economics: Characterisation (reserves, suppliers, cost, technologies) of different energy carriers (coal, gas, oil, electricity, heat etc.)

Renewable Energy - Resources, Technology and Economics: Characterisation of different renewable energy carriers (wind, solar, hydro, geothermal etc.)

Energy Policy: Management of energy flows, energy-political targets and instruments (emission trading etc.)

Additional Information
Additional study courses (E.g. from other universities) can be transferred to the grade of the module on special request at the institute.

Workload
The total workload for this module is approx. 270 hours (9 credits). The allocation is based on the credit points of the courses in the module. The workload for courses with 3.5 credits is approx. 105 hours, for courses with 5.5 credits approx. 165 hours.
The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module for an average performance.

Recommendations
The courses are conceived in a way that they can be attended independently from each other. Therefore, it is possible to start the module in winter and summer term.

M 2.21 Module: Engineering Mechanics (TM-WiWi-ETIT_WI1ING3) [M-MACH-101259]

Coordinators: Prof. Dr.-Ing. Alexander Fidlin
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (mandatory)

Credits	Grading	Recurrence	Duration	Language	Level	Version
3 CP	graded	Each winter term	1 term	German	3	3

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-102208	Introduction to Engineering Mechanics I: Statics and Strength of Materials	**ST**	**3 CP**	**Fidlin**

Assessment
The assessment consists of a written examination taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination takes place in every semester. Re-examinations are offered at eyery ordinary examination date.

Permitted utilities: non-programmable calculator, literature

Prerequisites
None

Competence Goal
Professional competences:

Students will

- know and understand the basic elements of statics;
- be able to carry out simple static calculations on their own;
- know the basic concepts of strength theory: stress, strain and their relationship within the framework of elementary elasticity theory;
- know the most common strength hypotheses;
- be able to calculate independently rods, shafts and beams;
- know the classical cases of stability loss in compressed beams.

Interdisciplinary competences:

Students are familiar with analytical procedures and problem-oriented thinking. They are aware of the complexity of engineering problems and are able to identify and focus on the key issues within them. Students are able to use their acquired knowledge theoretical analysis of practically relevant engineering problems and to develop approaches to their solution.

Content
Statics: force • moment • general equilibrium conditions • center of gravity • inner forces in structure • plane frameworks • adhesion

Additional Information
Starting summer 2016 the course "Introduction to Engineering Mechanics I : Statics and Strength of Materials" [2162238] will be held in summer term.

Workload
The total workload for this module is approximately 90 hours

Teaching and Learning Methods
Lecture and exercises

M 2.22 Module: Entrepreneurial Thinking and Action: Fundamentals of Entrepreneurship [M-WIWI-107451]

Coordinators: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	1

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective:)				
T-WIWI-114637	Entrepreneurship Basics	**WT**	**4,5 CP**	**Terzidis**
T-WIWI-114636	Student2Startup	**WT**	**4,5 CP**	**Terzidis**
T-WIWI-114635	SIL-LaunchLab	**Irreg.**	**9 CP**	**Terzidis**

Assessment
The assessment of success takes place in the form of partial examinations on the courses of the module amounting to a total of 9 CP. The assessment is described for each course in this module.

The overall grade of the module is calculated from the grades of the partial examinations weighted with credit points and cut off after the first decimal place.

Prerequisites
None

Competence Goal
Students will:

- experience experiential learning by independently developing solutions to entrepreneurial challenges, reflecting on them, and understanding the underlying theoretical concepts,
- acquire knowledge about developing and implementing business ideas,
- apply methods such as Lean Startup, Business Model Canvas, and Prototyping,
- analyze real-world problems faced by customers, users, or startups,
- collaboratively develop innovative solutions in teams,
- practice entrepreneurial thinking in a hands-on environment,
- improve their skills in teamwork, communication, and project management.

Content
This module teaches entrepreneurial thinking and action in a project-based and practice-oriented format. In interdisciplinary teams, students tackle real-world challenges and go through key phases of the entrepreneurial process:

In **Entrepreneurship Basics**, participants independently develop a business idea, validate customer needs, and test solutions using modern innovation tools (e.g., Value Proposition Canvas, Business Model Canvas, Rapid Prototyping).

In **Student2Startup**, students collaborate with real pre-seed startups to solve current strategic challenges in teams, supported by experts from the field.

In the **SIL LaunchLab**, students develop solutions for real technical or entrepreneurial challenges proposed by participants from the Student Innovation Lab (SIL). The goal is to contribute to the implementation and potential spin-off of these projects through innovative input.

The module fosters both analytical and creative thinking, collaborative work, and entrepreneurial practice in a real-world setting.

Workload
Total workload for 9 ECTS credits: approx. 270 hours. The workload is distributed according to the credit points assigned to each course in the module.

Recommendations
An interest in entrepreneurial thinking and action, teamwork, and interdisciplinary project work is recommended. Basic knowledge in business administration and/or innovation methods is helpful but not required.

M 2.23 Module: Essentials of Finance (WW3BWLFBV1) [M-WIWI-101435]

Coordinators: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg

Organisation: KIT Department of Business and Economics

Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each summer term	1 term	German	3	3

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102605	Financial Management	**ST**	**4,5 CP**	**Ruckes**
T-WIWI-102604	Investments	**ST**	**4,5 CP**	**Uhrig-Homburg**

Assessment
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
None

Competence Goal
The student

- has fundamental skills in modern finance
- has fundamental skills to support investment decisions on stock, bond and derivative markets
- applies concrete models to assess investment decisions on financial markets as well as corporate investment and financing decisions.

Content
The module *Essentials of Finance* deals with fundamental issues in modern finance. The courses discuss fundamentals of the valuation of stocks. A further focus of this module is on modern portfolio theory and analytical methods of capital budgeting and corporate finance.

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.

M 2.24 Module: Extracurricular Module in Engineering (WW4INGAPL) [M-WIWI-101404]

Coordinators: Prüfungsausschuss der KIT-Fakultät für Wirtschaftswissenschaften
Organisation: KIT Department of Business and Economics
Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Level	Version
9 CP	graded	Once	1 term	3	5

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: between 9 and 12 credits)				
T-WIWI-106291	PH APL-ING-TL01	**Once**	**3 CP**	
T-WIWI-106292	PH APL-ING-TL02	**Once**	**3 CP**	
T-WIWI-106293	PH APL-ING-TL03	**Once**	**3 CP**	
T-WIWI-106294	PH APL-ING-TL04 ub	**Once**	**0 CP**	
T-WIWI-106295	PH APL-ING-TL05 ub	**Once**	**0 CP**	
T-WIWI-106296	PH APL-ING-TL06 ub	**Once**	**0 CP**	
T-WIWI-108384	PH APL-ING-TL07	**Once**	**3 CP**	

Assessment
The assessment of the module is determined by the respective module corrdinator. It can either be in the form of a general exam or partial exams, and must contain at least 9 credit points (max. 12 credits) and at least 6 hours per week (max. 8 hours per week). The examination may contain presentations, experiments, laboratories, term papers, etc. At least 50 percent of the module examination has to be in the form of a written or an oral examination (according to Section 4 (2), 1 or 2 of the examination regulation).

The formation of the overall grade of the module will be determined by the respective module coordinator.

Prerequisites
The current regulations and guidance on the procedure for applying for an extracurricular module in engineering are explained in detail at https://www.wiwi.kit.edu/APIng-Modul.php.

Competence Goal
Through the extracurricular engineering module, the student is able to deal with technical topics and issues in depth.

The concrete learning objectives are coordinated with the respective module supervisor of the module.

Workload
The total workload for this module is about 270 hours (9 credits). The distribution is based on the credit points of the courses completed as part of the module.

M 2.25 Module: Financial Data Science [M-WIWI-105610]

Coordinators: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each summer term	1 term	English	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-111238	Financial Data Science	**ST**	**9 CP**	**Ulrich**

Assessment
The module examination takes the form of an examination of a different type (see partial performance description for details).

Prerequisites
None

Competence Goal
The primary objective of this course is to introduce students to data-driven financial analysis and equip them with a broad set of machine learning techniques for capital markets. The program begins with practical MBA-style case studies on fundamental finance concepts, ensuring that all participants—regardless of prior finance knowledge—establish a strong foundational understanding. In parallel, students develop essential Python programming and data handling skills (e.g., with Pandas, Statsmodels, and scikit-learn).

Building on these fundamentals, the course covers key topics such as forecasting equity and option returns, option pricing (e.g., the Black-Scholes model), and advanced portfolio construction techniques, including distributionally robust optimization and end-to-end reinforcement learning. By integrating financial theory with sophisticated data science methods, students learn to address complex challenges in risk management and empirical asset pricing. Upon completion, they will be able to apply state-of-the-art machine learning approaches to real-world financial data and meet the demands of a rapidly evolving, data-centric financial industry.

Content
This course offers a blend of financial fundamentals and modern data analysis. The content is structured as follows:

- Introduction to Finance
- Introduction to valuation concepts and portfolio theory
- Risk premiums and the CAPM
- Case studies for the practical application of financial theories
- Python Basics and Data Processing
- Efficient data management and cleaning
- Regression analyses and constrained optimization
- Introduction to essential libraries (e.g., NumPy, Pandas, PyTorch)
- Machine Learning in Finance
- Linear vs. non-linear prediction models
- Neural networks, random forests, and other ML methods
- Feature selection and out-of-sample performance
- Options and Volatility Analysis
- Construction and analysis of implied volatility structures
- ML-based option pricing and risk premium models
- Systematic vs. idiosyncratic risks
- Advanced ML Applications
- Deep learning for equity and option return forecasts
- Statistical arbitrage and end-to-end portfolio optimization
- Distributionally robust optimization
- Practical Examples and Case Studies
- Use of modern ML libraries (PyTorch, TensorFlow)
- Real-world datasets and empirical financial analysis
- Discussion of challenges (e.g., big data, computational effort)

Workload
The total workload for this module is approximately 270 hours (equivalent to 9 credit points). This workload includes:

1. Independent study of financial fundamentals (e.g., valuation, CAPM, portfolio theory) and preparation for case studies.
2. Programming exercises in Python (e.g., regression analyses, data cleaning, constrained optimization).
3. Weekly assignments and in-depth questions on the topics covered in class.
4. Preparation and follow-up of lectures, particularly using lecture notes, online videos, and recommended reading materials.
5. Project and case study work applying the learned material to real-world data.
6. Final exam preparation, revisiting essential concepts and practical programming skills.

M 2.26 Module: Financial Data Science in Practice [M-WIWI-107454]

Coordinators: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	English	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-114633	Financial Data Science in Practice	**WT+ST**	**9 CP**	**Ulrich**

Assessment
The examination is structured as an alternative exam assessment and consists of the following components:

- **Interim Presentations (Formative Milestones)**
- **Quality of Implementation** (Reproducibility, Code Documentation, Tests)
- **Final Written Paper** (15 – 20 pages, scientific standard)
- **Final Presentation** (approx. 30 minutes, public research talk)

The overall grade is determined by the weighted evaluation of the individual components of this assessment. The exact weighting of these components for grade calculation will be announced at the beginning of the course.

Prerequisites
The course T-WIWI-111238 "Financial Data Science" must be passed.

Competence Goal
Students

- Select and apply modern ML / financial-data-science techniques to real-world problems,
- work effectively in agile, cross-functional teams,
- extend their technical skill-set and transfer it to live market data,
- solve a finance-oriented research question with DS/ML algorithms,
- document, present and defend their results to a specialist audience.

Content
Targeted at Bachelor students specialising in Data Science, Machine Learning or Quantitative Finance. Teams of 3 – 6 tackle a hands-on research question at the intersection of financial markets, data science and ML. Deliverables include a scientific report and a fully reproducible research codebase (Git). Data typically come from high-frequency prices, intraday options, ESG feeds, etc.

Projects are coached by KABFI PhD researchers; selected topics may be co-supervised by partner universities.

Additional Information
The language of instruction for this module is English. Project supervision can also be provided in German.

Workload
The total workload for this module is approximately 270 hours (equivalent to 9 credit points). This workload includes:

- Team communication & supervision: 30 hours
- Presentations: 10 hours
- Problem analysis & solution design: 70 hours
- Implementation: 110 hours
- Testing & QA: 50 hours
- Total: 270 hours

M 2.27 Module: Financing and Accounting [M-WIWI-105769]

Coordinators: Dr. Torsten Luedecke
Prof. Dr. Martin Ruckes
Prof. Dr. Marcus Wouters

Organisation: KIT Department of Business and Economics

Part of: Business Administration (mandatory)

Credits	Grading	Recurrence	Duration	Language	Level	Version
5 CP	graded	Each summer term	1 term	German	3	3

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-112820	Introduction to Finance and Accounting	**ST**	**5 CP**	**Luedecke, Ruckes, Wouters**

Assessment
Written examination (2.5 hours). The examination takes place as part of the examination course "Financing and Accounting" and covers the content of the two courses "Introduction to Finance and Accounting" and "Annual Financial Statements and Valuation". The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible on every regular examination date.

Competence Goal
The student

- has basic knowledge in financial assessment of important business decisions and the functioning of financial markets,
- has an understanding of problems, interrelationships and solutions of internal accounting of companies,
- knows the structures and functions of external accounting,
- has an overview of important components of the annual financial statements of companies and is able to assess them economically.

With the knowledge acquired in the three basic business administration modules, the prerequisites are created in the area of business administration to expand this knowledge in the specialization program.

Content
The fundamentals for the financial analysis of important business decisions are taught. In addition, the fundamentals of internal and external accounting are laid and an introduction is given to accounting and the annual financial statements.

Workload
Total workload required for 5 credit points: approx. 150 hours

M 2.28 Module: Foundations of Informatics (WW1INFO2) [M-WIWI-101417]

Coordinators: Dr.-Ing. Tobias Käfer
Prof. Dr.-Ing. Sanja Lazarova-Molnar
Organisation: KIT Department of Business and Economics
Part of: Informatics

Credits	Grading	Recurrence	Duration	Language	Level	Version
10 CP	graded	Each term	2 terms	German/English	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102749	Foundations of Informatics I	**ST**	**5 CP**	**Käfer**
T-WIWI-102707	Foundations of Informatics II	**WT**	**5 CP**	**Lazarova-Molnar**

Assessment
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the individual courses of this module.

The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. For a successful module assessment both partial exams have to be passed.

- Foundations of Informatics I: Written exam in the first week of the recess period (60 min)
- Foundations of Informatics II: Written exam in the first week of the recess period (90 min). It is possible to gain 0,3-0.4 additional grading points for a passed exam by successful completion of a bonus exam.

When both partial exams are passed, the overall grade of the module is the average of the grades for each course weighted by the credit points and truncated after the first decimal.

Prerequisites
None

Competence Goal
The student

- knows the main principles, methods and systems of computer science,
- can use this knowledge for applications in advanced computer science courses and other areas for situation-adequate problem solving,
- is capable of finding strategic and creative responses in the search for solutions to well defined, concrete, and abstract problems.

The student can deepen the learned concepts, methods, and systems of computer science in advanced computer science lectures.

Content
This module conveys knowledge about modeling, logic, algorithms, sorting and searching algorithms, complexity theory, problem specifications, and data structures. From the field of theoretical computer science, formal models of automata, languages and algorithms are presented and applied to the architecture of computer systems.

Workload
The total workload for this module is approximately 300 hours.

Recommendations
It is strongly recommended to attend the courses of the core program in the following sequence: *Introduction to Programming with Java*, *Foundations of Informatics I*, *Foundations of Informatics II*

M 2.29 Module: Foundations of Marketing (WW3BWLMAR) [M-WIWI-101424]

Coordinators: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	10

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective:)				
T-WIWI-111367	B2B Sales Management	**WT**	**4,5 CP**	**Klarmann**
T-WIWI-112156	Brand Management	**WT**	**4,5 CP**	**Kupfer**
T-WIWI-114292	Consumer Psychology	**ST**	**4,5 CP**	**Scheibehenne**
T-WIWI-102805	Managing the Marketing Mix	**ST**	**4,5 CP**	**Klarmann**

Assessment
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal
The aim of this module is to prepare students for a job in marketing or sales. Especially in technically oriented companies, employees who have a certain technical background as industrial engineers or business informatics specialists are often fit for this purpose.
Students

- are familiar with the most important concepts, procedures and theories of the four instruments of the marketing mix (product management, price management, communication management and sales management)
- have the knowledge to make decisions regarding current and future products (product innovations, e.g. by using conjoint analysis)
- know how customers perceive brands and how this perception can be influenced by the company
  understand how customers react to prices (e.g. using price-sales functions)
- can determine prices on the basis of conceptual and quantitative considerations
  know the basics of price differentiation
- are familiar with various communication instruments (e.g. TV advertising) and can design them accurately
- make communication decisions systematically (e.g. by means of media planning)
- can segment the market and position the product
- know how to assess the importance and satisfaction of customers.

Additionally when taking the course "B2B Sales Management":

- can shape the relationship with customers and sales partners and know the basics of sales organization as well as essential sales channel decisions
- know about specifics of marketing in B2B
- are able to identify different B2B business types and their peculiarities in marketing and sales
- are able to prioritize customers and calculate B2B customer lifetime value
- are able to determine value-based prices and prepare and conduct B2B sales presentations.

Additionally when taking the course "Consumer Behavior":

- know about the influences of social factors, neuronal processes and cognitive resources on consumer behavior
- know about the influences of evolutionary factors, emotions, individual differences and motivation on consumer behavior.

Content
“Marketing Mix” contains instruments and methods that enable you to goal-oriented decisions in the operative marketing management (product management, pricing, promotion and sales management). In the "B2B Sales Management" course, we impart knowledge about marketing and sales in environments in which companies themselves distribute and market (often technically highly complex) products to other companies ("business-to-business"). In the "Consumer Behavior" course, we provide an understanding of situational, biological, cognitive, and evolutionary factors that influence consumer behavior. This understanding is provided from an interdisciplinary perspective, incorporating relevant theories and empirical research findings from psychology, cognitive science, biology, and economics.

Additional Information
For more information, please contact the Marketing & Sales Research Group directly (https://www.cin.kit.edu/).

Workload
Total effort for 9 credit points: approx. 270 hours.
The exact distribution is done according to the credit points of the courses of the module.

M 2.30 Module: Fundamentals of Construction (bauiEX401-GLBAUBETR) [M-BGU-101004]

Coordinators: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German	3	3

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-BGU-101691	Construction Technology	**WT+ST**	**6 CP**	**Haghsheno**
T-BGU-113454	Examination Prerequisite Project Management	**WT**	**0 CP**	**Haghsheno**
T-BGU-113720	Project Management	**WT**	**3 CP**	**Haghsheno**

Assessment
- module component T-BGU-101691 with written examination according to § 4 Par. 2 No. 1
- module component T-BGU-113454 with not graded coursework according to § 4 Par. 3 as examination prerequisite to module component T-BGU-101675
- module component T-BGU-113720 with examination of another type according to § 4 Par. 2 No. 3

details about the learning controls, see module components

Prerequisites
none

Competence Goal
The student

- is familiar with all substantial domains of construction
- knows and understands substantial construction methods and construction machines
- masters basic construction calculations
- knows and understands the basics and purpose of professional construction project management
- can describe the relevant areas of knowledge and competence elements in construction project management
- can describe the typical course of a project and explain how a construction project is organized by construction project management
- can apply the knowledge acquired in construction operations engineering and project management in a targeted manner for corresponding situations in construction projects.

Content
This module introduces methods and procedures from all areas of construction operations. This includes production planning and control as well as essential parts of building construction and civil engineering process engineering, including auxiliary operations. In addition to the explanation of various machines, equipment and processes and the relevant basic knowledge, performance calculations are also carried out, for example. Further, there is an introduction to the basics of construction project management. Competence elements according to ICB4 in the areas of context, methods and people as well as selected project management methods are taught.

Module Grade Calculation
grade of the module is CP weighted average of grades of the partial exams

Additional Information
IMPORTANT:

As from winter term 2025/26 an examination prerequisite and the written examination Project Management will be replaced by an examination of another type.

We encourage students to deepen their knowledge in construction by building additional customized modules from the courses offered by TMB. Please consult with the tutors of this module. Further information is available at www.tmb.kit.edu.

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- Construction Technology lecture, exercise: 60 h
- Project Management lecture/exercise: 30 h

independent study:

- preparation and follow-up lectures, exercises Construction Technology: 45 h
- examination preparation Construction Technology (partial examination): 75 h
- preparation and follow-up lecture/exercises Project Management: 10 h
- preparation of online tests Project Management (not graded examination prerequisite): 5 h
- preparation opf term paper to Project Management (part of partial examination): 30 h
- examination preparation online test Project Management (part of partial examination): 15 h

total: 270 h

Recommendations
None

M 2.31 Module: Fundamentals of Digital Service Systems (WW3BWLKSR1) [M-WIWI-102752]

Coordinators: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Business and Economics

Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	English	3	8

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: 9 credits)				
T-WIWI-111307	Digital Services: Foundations	**ST**	**4,5 CP**	**Förster, Holtmann**
T-WIWI-109816	Foundations of Interactive Systems	**ST**	**4,5 CP**	**Mädche**
T-WIWI-110888	Practical Seminar: Digital Services	**ST**	**4,5 CP**	**Satzger**
T-WIWI-115323	Social Media: Analytics and Applications	**WT**	**4,5 CP**	**Förster**

Assessment
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO), whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
None

Competence Goal
Students

- understand services from different perspectives and the concept of value creation in service networks
- know about the concepts, methods and tools for the design, modelling, development and management of digital services and are able to use them
- understand the basic characteristics and effects of integrated information system as a an integral element of digital services
- gain experience in group work as well as in the analysis of case studies and the professional presentation of research results
- practice skills in the English language in preparation of jobs in an international environment

Content
Global economy is increasingly determined by services: in industrialized countries nearly 70% of gross value added is achieved in the tertiary sector. Unfortunately, for the design, development and the management of services traditional concepts focused on goods are often insufficient or inappropriate. Besides, the rapid technical advance in the information and communication technology sector pushesthe economic importance of digital services even further thus changing the competition environment. ICT-based interaction and individualization open up completely new dimensions of shared value between clients and providers, dynamic and scalable “service value networks” replace established value chains, digital services are provided globally crossing geographical boundaries. This module establishes a basis for further specialization in service innovation, service economics, service design, service modelling, service analytics as well as the transformation and coordination of service networks.

Workload
Total workload for 9 credit points: approx. 270 hours. The allocation is based on the credit points of the courses in the module.

Recommendations
None

M 2.32 Module: German and European Public Law (IW1JURA3) [M-INFO-107555]

Coordinators: TT-Prof. Dr. Frederike Zufall
Organisation: KIT Department of Informatics
Part of: Compulsory Elective Modules (Law or Sociology)

Credits	Grading	Recurrence	Duration	Language	Level	Version
6 CP	graded	Each term	2 terms	German	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-INFO-110300	Public Law I & II	**ST**	**6 CP**	**Zufall**

Workload
See German version.

M 2.33 Module: Handling Characteristics of Motor Vehicles (WI4INGMB6) [M-MACH-101264]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	4	7

ID	Name	Term offered	Credits	Lecturers
Vehicle Properties (Elective: at least 9 credits)				
T-MACH-105152	Handling Characteristics of Motor Vehicles I	**WT**	**4 CP**	**Weitz**
T-MACH-105153	Handling Characteristics of Motor Vehicles II	**ST**	**4 CP**	**Weitz**
T-MACH-102156	Project Workshop: Automotive Engineering	**WT+ST**	**6 CP**	**Frey, Gießler**

Assessment
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
None

Competence Goal
The student

- knows and understands the characteristics of vehicles, owing to the construction and design tokens,
- knows and understands especially the factors being relevant for comfort and acoustics
- is capable of fundamentally evaluating and rating handling characteristics.

Content
See courses.

Workload
The total work load for this module is about 270 Hours (9 Credits). The partition of the work load is carried out according to the credit points of the courses of the module. The work load for courses with 4.5 credit points is about 135 hours, and for courses with 3 credit points about 90 hours. The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam duration and the time that is required to achieve the objectives of the module as an average student with an average performance.

Recommendations
Knowledge of the content of the courses *Engineering Mechanics I* [2161238], *Engineering Mechanics II* [2162276] and *Basics of Automotive Engineering I* [2113805], *Basics of Automotive Engineering II* [2114835] is helpful.

M 2.34 Module: HR Management & Digital Workplace [M-WIWI-105928]

Coordinators: Prof. Dr. Alexander Mädche
Prof. Dr. Petra Nieken

Organisation: KIT Department of Business and Economics

Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German/English	3	2

ID	Name	Term offered	Credits	Lecturers
Elective Offer (Elective:)				
T-WIWI-113745	HR-Management 1: HR Strategies in the Age of AI	**WT**	**4,5 CP**	**Nieken**
T-WIWI-111858	Topics in Human Resource Management	**WT+ST**	**3 CP**	**Nieken**
T-WIWI-109816	Foundations of Interactive Systems	**ST**	**4,5 CP**	**Mädche**
T-WIWI-111914	Practical Seminar: Interactive Systems	**WT+ST**	**4,5 CP**	**Mädche**
T-WIWI-115269	Practical Seminar: The Future of Work	**WT+ST**	**4,5 CP**	**Nieken**

Assessment
The assessment is carried out as partial exams of the courses in this module. The assessment procedures are described for each course in the module separately.

The overall grade of the module is the average of grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
Please refer to the course descriptions for potential restrictions regarding an individual course.

Competence Goal
The student

- understands and analyses challenges and objectives within organizations
- applies economic models and empirical methods to analyze and solve challenges with a focus on the future of work
- understands the impact of digitalization and new information and communication technology on the work life and HR decisions
- knows how to apply scientific research methods and understands the underlying problems

Content
The module „HR Management & Digital Workplace" offers an interdisciplinary approach and brings together knowledge about Human Resource Management, Leadership and Digitalization. The module specifically focuses on topics related to the future of work in organizations. The topics range from interactive systems at the digital workplace and human-centered design, to recruiting, training and development, as well as (digital) leadership. All courses in the module foster active participation and allow students to learn state-of-the-art concepts and methods and apply them to real-world challenges.

Additional Information
Please refer to the course descriptions for potential restrictions regarding an individual course.

Workload
Total workload for 9 credits: approx. 270 hours.

M 2.35 Module: Industrial Production I (WW3BWLIIP) [M-WIWI-101437]

Coordinators: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German/English	3	4

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102606	Fundamentals of Production Management	**ST**	**5,5 CP**	**Schultmann**
Supplementary Courses (Elective: 3,5 credits)				
T-WIWI-102870	Logistics and Supply Chain Management	**ST**	**3,5 CP**	**Schultmann**
T-WIWI-102820	Production Economics and Sustainability	**WT**	**3,5 CP**	**Schultmann**

Assessment
The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course “Fundamentals of Production Management” [2581950] and one further single course of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
The course “Fundamentals of Production Management” [2581950] and one additional activity have to be chosen.

Competence Goal

- Students shall be aware of the important role of industrial production and logistics for production management.
- Students shall use relevant concepts of production management and logistics in an adequate manner.
- Students shall be able to reflect on decision principles in firms and their circumstances in the light of the production management aspects studied.
- Students shall be proficient in describing essential tasks, difficulties and solutions to problems in production management and logistics
- Students shall be able to describe relevant approaches of modeling production and logistic systems.
- Students shall be aware of the important role of material and energy-flows in production systems.
- Students shall be proficient in using exemplary methods for solving selected problems.

Content
This module is designed to introduce students into the wide area of industrial production and logistics management. It focuses on strategic production management under the aspect of sustainability. The courses use interdisciplinary approaches of systems, also theory to describe the central tasks of industrial production management and logistics. Herein, attention is drawn upon strategic corporate planning, research and development as well as site selection. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

Workload
Total effort will account to 270 hours (9 credit points) and can be allocated according to the credit point rating. Therefore, a course with 3.5 credits requires an effort of approximately 105h and a course with 5.5 credits 165h.

The total effort for each course consists of attending lectures and tutorials, examination times and the time an average student needs to prepare himself in order to pass the exam with an average grade.

M 2.36 Module: Information Systems & Digital Business [M-WIWI-105981]

Coordinators: Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Business and Economics

Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German/English	3	4

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: at least 1 item)				
T-WIWI-111307	Digital Services: Foundations	**ST**	**4,5 CP**	**Förster, Holtmann**
T-WIWI-110797	eFinance: Information Systems for Securities Trading	**WT**	**4,5 CP**	**Weinhardt**
T-WIWI-113746	Enterprise Systems for Financial Accounting & Controlling	**WT**	**4,5 CP**	**Fleig, Mädche**
T-WIWI-109816	Foundations of Interactive Systems	**ST**	**4,5 CP**	**Mädche**
T-WIWI-107506	Platform Economy	**WT**	**4,5 CP**	**Weinhardt**
T-WIWI-115323	Social Media: Analytics and Applications	**WT**	**4,5 CP**	**Förster**
T-WIWI-114596	Sustainability in E-Business	**WT**	**4,5 CP**	**Heßler, Pfeiffer**
Complementary Offer (Elective: at most 1 item)				
T-WIWI-110888	Practical Seminar: Digital Services	**ST**	**4,5 CP**	**Satzger**
T-WIWI-111914	Practical Seminar: Interactive Systems	**WT+ST**	**4,5 CP**	**Mädche**
T-WIWI-112154	Practical Seminar: Platform Economy	**WT+ST**	**4,5 CP**	**Weinhardt**

Assessment
The module examination takes place in the form of partial examinations via courses of the module amounting to a total of at least 9 LP.
The overall score of the module is formed from the credit-weighted scores of the partial examinations and truncated after the first decimal place.

Competence Goal
Students

- understand the basic concepts of interactive systems as well as the economic foundations and key components of platforms
- explore the theoretical grounding of interactive systems leveraging theories from reference disciplines such as psychology
- understand business models, network effects of digital platforms and get to know different market forms and market mechanisms
- gain experience in group work as well as in the analysis of case studies and the professional presentation of research results

Content
The “Information Systems & Digital Business” modules of the research groups of Prof. Dr. Alexander Mädche (Information Systems & Service Design), Prof. Dr. Gerhard Satzger (Digital Service Innovation) and Prof. Dr. Christof Weinhardt (Information & Market Engineering), offer a comprehensive overview on important topics of digitalization – blending aspects of digital interaction, digital services and the platform economy. Courses in this module cover the aspects of interaction between humans and information systems as well as the economic foundations of platform businesses:

Foundations of Interactive Systems:

Advanced information and communication technologies (ICT) make interactive systems ever-present in the users’ private and business life. They are an integral part of E-Commerce portals or social networking sites as well as at the workplace, e.g. in the form of collaboration portals or analytical dashboards. Furthermore, with the ever-increasing capabilities of ICT, the design of human-computer interaction is becoming increasingly important. The aim of this module is to introduce the foundations, related theories, key concepts, and design principles as well as current practice of contemporary interactive systems. The students get the necessary knowledge to guide the successful implementation of interactive systems in business and private life.

Platform Economy:

Apple, Alphabet, Amazon, Microsoft, and Facebook; five of the most valuable companies worldwide create large portions of their profits by employing a digital platform model. This module teaches the key design considerations of digital platforms: their foundations in economic theory, their core components and design aspects, the adequate selection of market mechanisms for achieving certain goals, and the role of user behavior in the context of digital platforms. The theoretic foundations are enriched by discussions of several real-world examples, e.g. from the finance sector. Thus, the students are enabled to a) analyze given platforms and make recommendations for improvements and b) independently design new platforms for given use cases.

Additional Information
The module can no longer be taken as of winter semester 2022/2023.

Workload
Total effort for 9 credit points: approx. 270 hours. The distribution is based on the credit points of the courses of the module (120-135h for courses with 4.5 credit points). The total number of hours per course results from the effort required to attend lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

M 2.37 Module: Integrated Production Planning (WW4INGMB24) [M-MACH-101272]

Coordinators: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each summer term	1 term	German	3	3

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-109054	Integrated Production Planning in the Age of Industry 4.0	**ST**	**9 CP**	**Lanza**

Assessment
Written Exam (120 min)

Prerequisites
none

Competence Goal
The students

- can discuss basic questions of production technology.
- are able to apply the methods of integrated production planning they have learned about to new problems.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques they have learned about for a specific problem.
- can apply the learned methods of integrated production planning to new problems.
- can use their knowledge targeted for efficient production technology.

Content
Within this engineering sciences-oriented module the students will get to learn principle aspects of organization and planning of production systems.

Workload
regular attendance: 63 hours
self-study: 207 hours

Teaching and Learning Methods
Lecture, exercise, excursion

M 2.38 Module: Introduction to Civil Law (IW1JURA1) [M-INFO-101190]

Coordinators: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: Compulsory Elective Modules (Law or Sociology)

Credits	Grading	Recurrence	Duration	Language	Level	Version
5 CP	graded	Each winter term	1 term	German	3	3

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-INFO-103339	Civil Law for Beginners	**WT**	**5 CP**	**Matz**

M 2.39 Module: Introduction to Economics (WI1VWL) [M-WIWI-101398]

Coordinators: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Business and Economics
Part of: Economics (mandatory)

Credits	Grading	Recurrence	Duration	Level	Version
10 CP	graded	Each term	2 terms	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102708	Economics I: Microeconomics	**WT**	**5 CP**	**Puppe, Reiß**
T-WIWI-102709	Economics II: Macroeconomics	**ST**	**5 CP**	**Wigger**

Assessment
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module. The assessment procedures of each course of this module is defined for each course separately.

Competence Goal
The student

- knows and understands basic economic problems,
- understands economic policy in globalized markets,
- is able to develop elementary solution concepts.

The lectures of this module have different focuses: In Economics I, economic problems are seen as decision problems, Economics II treats the dynamics of economic processes.

Content
The basic concepts, methods and models of micro- and macroeconomics are treated. The course *Economics I: Microeconomics [2600012]* deals with micro-economic decision theory, questions of market theory and problems of imperfect competition and with basic principles of game theory and welfare economics. *Economics II: Macroeconomics [2600014]* discusses economic organization models and national accounts as well as the question of international trade and monetary policy. Furthermore, the complex growth, boom and economic speculations are dealed with.

Module Grade Calculation
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Additional Information
Notice: The lecture *Economics I*: *Microeconomics* [2600012] is part of the preliminary examination concerning § 8(1) of the examination regulation in the study programs Industrial Engineering and Management B.Sc. and Economics Engineering B.Sc.. This examination must be passed until the end of the examination period of the second semester. Any Re-examinations has to be passed until the end of the examination period of the third semester. Otherwise the examination claim will be lost.

Workload
See German version.

M 2.40 Module: Introduction to Natural Hazards and Risk Analysis (WW3INGINTER6) [M-WIWI-104838]

Coordinators: apl. Prof. Dr. Michael Kunz
Organisation: KIT Department of Business and Economics
Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	3	4

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: at least 9 credits)				
T-BGU-101500	Introduction to Engineering Geology	**WT**	**5 CP**	**Blum**
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences, Prerequisite	**WT**	**3 CP**	**Wursthorn**
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences	**WT**	**3 CP**	**Wursthorn**
T-BGU-101637	Systems of Remote Sensing, Prerequisite	**ST**	**1 CP**	**Cermak, Hinz, Weidner**
T-BGU-101638	Procedures of Remote Sensing, Prerequisite	**ST**	**1 CP**	**Weidner**
T-BGU-101636	Remote Sensing, Exam	**WT+ST**	**4 CP**	**Cermak, Hinz, Weidner**
T-BGU-103542	Procedures of Remote Sensing		**3 CP**	**Weidner**
T-PHYS-103525	Geological Hazards and Risk	**WT**	**6 CP**	**Rietbrock, Schäfer**
T-BGU-101693	Hydrology	**WT+ST**	**4 CP**	**Zehe**
T-PHYS-101092	Climatology	**ST**	**4 CP**	**Ginete Werner Pinto**
T-BGU-101814	Project in Applied Remote Sensing	**ST**	**1 CP**	**Hinz, Weidner**
T-PHYS-105594	Exam on Climatology		**1 CP**	**Ginete Werner Pinto**
T-BGU-101667	Hydraulic Engineering and Water Management	**WT+ST**	**4 CP**	**Rodrigues Pereira da Franca**

Assessment
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
There are no singular exams for Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66]. Therefore it not possible to choose Remote Sensing [GEOD-BFB-1] and additionally the courses Remote Sensing Systems, Remote Sensing Methods or the project Angewandte Fernerkundung [20267] (because they are already included). See also “Recommendations".

Competence Goal
The student possesses

- knowledge of various extreme events (meteorological, hydrological, geophysical) and their characteristics and causes
- an improved understanding of natural disasters, their causes and effects from an interdisciplinary perspective
- knowledge of methods of early warning and/or prediction of extreme natural events, as well as possible prevention and precautionary measures.

Content
The courses in this module primarily deal with scientific and engineering aspects of extreme events and natural disasters. The overarching aim of the module is to gain a better understanding of risk as a complex interaction of different mechanisms and processes. Contributions from meteorology, geophysics and hydrology enable an interdisciplinary understanding of extreme events and disasters. The teaching of methodological knowledge (e.g. meteorological, hydrological or geophysical measurement methods) is of great importance. These also include methods of hazard analysis and forecasting and/or early warning with the aim of significantly reducing the exposure and vulnerability of people, critical infrastructure and technical or biological systems and thus the impact of extreme events.

Additional Information
As a precaution, we would like to point out that the lecture belonging to the "Climatology" [T-PHYS-101092] has the number 4051111 and is read by Mr. Pinto. The lecture of the same name by Mr. Hogewind (6111031) does not belong to this course and is not creditable in this module.

Information on the course "Geological Hazards and Risk":

Language: English

Content:

- Earthquake Hazards
  - Short introduction to seismology and seismometry (occurrence of tectonic earthquakes, types of seismic waves, magnitude, intensity, source physics)
  - Induced seismicity
  - Engineering seismology, Recurrence intervals, Gutenberg-Richter, PGA, PGV, spectral acceleration, hazard maps
  - Earthquake statistics
  - Liquefaction
- Tsunami Hazards
- Landslide Hazards
- Hazards from Sinkholes
- Volcanic Hazards
  - Short introduction to physical volcanology
  - Types of volcanic hazards
- The Concept of Risk, Damage and Loss
- Data Analysis and the use of GIS in Risk analysis
- Risk Modelling - Scenario Analysis
- Risk Reduction and Risk Management
- Analysis Feedback and Prospects in the Risk Modelling Industry

Learning outcomes:

The students understand basic concepts of hazard and risk. They can explain in detail different aspects of earthquake hazard, volcanic hazard as well as other geological hazards, can compare and evaluate those hazards. The have fundamental knowledge of risk reduction and risk management. They know methods of risk modelling and are able to apply them.

Examination: Active and regular attendance of lecture and practicals. Project work (graded).

Workload:

60 h: active attendance during lectures and exercises
90 h: review, preparation and weekly assignments
90 h: project work

Workload
The total workload for this module is approximately 270 hours.

Recommendations
The courses Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66] may be chosen as a minimal combination for the exam. However, it is recommended to choose the comprehensive combination Remote Sensing [GEOD-BFB-1], which includes Remote Sensing Systems [20241/42], Remote Sensing Methods [20265/66] and the project Angewandte Fernerkundung [20267].

M 2.41 Module: Introduction to Operations Research (WW1OR) [M-WIWI-101418]

Coordinators: Prof. Dr. Stefan Nickel
Prof. Dr. Steffen Rebennack
Prof. Dr. Oliver Stein

Organisation: KIT Department of Business and Economics

Part of: Operations Research (mandatory)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each summer term	2 terms	German	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102758	Introduction to Operations Research I and II	**see notes**	**9 CP**	**Nickel, Rebennack, Stein**

Assessment
The assessment of the module is carried out by a written examination (120 minutes).
In each term (usually in March and August), one examination is held for both courses.

Prerequisites
None

Competence Goal
The student

- names and describes basic notions of the essential topics in Operations Research (Linear programming, graphs and networks, integer and combinatorial optimization, nonlinear programming, dynamic programming and stochastic models),
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve optimization problems independently,
- validates, illustrates and interprets the obtained solutions.

Content
This module treats the following topics: linear programming, network models, integer programming, nonlinear programming, dynamic programming, queuing theory, heuristic models.

This module forms the basis of a series of advanced lectures with a focus on both theoretical and practical aspects of Operations Research.

Module Grade Calculation
The overall grade of the module is the grade of the written examination.

Workload
The total workload for this module is approx. 270 hours (attendance time: 85 hours, other time for preparation and follow-up as well as exam preparation: 185 hours, 9 credit points).

The total workload of 9 credit points is divided into approx. 3.5 credit points in the first semester and 5.5 credit points in the second semester.

The total number of hours per course is calculated from the time required to attend lectures and tutorials, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

M 2.42 Module: Introduction to Programming (WW1INFO1) [M-WIWI-101581]

Coordinators: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Business and Economics
Part of: Informatics

Credits	Grading	Recurrence	Duration	Language	Level	Version
5 CP	graded	Each winter term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102735	Introduction to Programming with Java	**WT**	**5 CP**	**Zöllner**

Assessment
The assessment consists of a written resp. computer-based exam (60 min) according to Section 4 (2),1 of the examination regulation.
The successful completion of the compulsory tests in the computer lab is prerequisited for admission to the written resp. computer-based exam.
The examination takes place every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Competence Goal

- Knowledge of the fundamental principles, methods and systems of informatics.
- Students acquire the ability to independently solve algorithmic problems in the programming language Java, which is predominant in the field of business applications.
- This enables them to find strategic and creative answers in the search for solutions to precisely defined, concrete and abstract problems.

Content
With an introduction to systematic programming, the module provides essential practical foundations for all advanced computer science lectures. Based on considerations on the structured and systematic design of algorithms, the most important constructs of modern higher programming languages and programming methods are explained and illustrated using examples. One focus is on teaching the concepts of object-oriented programming. Java is used as the programming language. Knowledge of this language is assumed in the advanced computer science lectures.

Workload
Total workload for 5 credit points: approx. 150 hours

Attendance time: 45 hours

Preparation and follow-up of the course: 67.5 hours

Exam and exam preparation: 37.5 hours

M 2.43 Module: Introduction to Statistics (WW1STAT) [M-WIWI-101432]

Coordinators: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Business and Economics
Part of: Statistics

Credits	Grading	Recurrence	Duration	Language	Level	Version
10 CP	graded	Each term	2 terms	German	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102737	Statistics I	**ST**	**5 CP**	**Grothe, Schienle**
T-WIWI-102738	Statistics II	**WT**	**5 CP**	**Grothe, Schienle**

Assessment
The assessment of this module consists of two written examinations according to Section 4(2), 1 of the examination regulation (one for each of the courses Statistics I and II).

The overall grade of the module is the average of the grades of these two written examinations.

Prerequisites
Keine

Competence Goal
The student

- knows and understands the basic concepts of statistical data analysis and applies them independently to limited objects of investigation,
- knows and understands the basic definitions and statements of probability theory and applies them independently,
- transfers the theoretical foundations of statistical data analysis and probability theory to the issues of parametric estimation and test theory.

Content
The module contains the fundamental methods and scopes of Statistics.

A. Descriptive Statistics: univariate und bivariate analysis

B. Probability Theory: probability space, conditional and product probabilities, transformation of probabilities, parameters of location and dispersion, most importand discrete and continuous distributions, covariance and correlation, limit distributions

C. Theory of estimation and testing: suffiency of statistics, point estimation (optimality, ML-method), internal estimations, linear regression

Module Grade Calculation
The overall grade of the module is the average of the grades of these two written examinations.

Workload
The total workload for this module is approx. 300 hours (10 credits). The distribution is based on the credit points of the courses of the module.

The total number of hours per course is calculated from the time required to attend the lectures and exercises, the examination time and the time required for an average student to achieve the learning objectives of the module for an average performance.

Recommendations
It is strongly recommended to complete the course *Statistics I* [25008/25009] before the course *Statistics II* [25020/25021].

The lecture is accompanied by an exercise and a tutorial as well as a computer practical course, which are recommended.

M 2.44 Module: Leadership & Sustainable HR-Management [M-WIWI-106860]

Coordinators: Prof. Dr. Petra Nieken
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German	3	4

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-113745	HR-Management 1: HR Strategies in the Age of AI	**WT**	**4,5 CP**	**Nieken**
Elective Offer (Elective:)				
T-WIWI-114178	HR-Management 2: Organization, Fairness & Leadership	**ST**	**4,5 CP**	**Nieken**
T-WIWI-115269	Practical Seminar: The Future of Work	**WT+ST**	**4,5 CP**	**Nieken**
T-WIWI-111858	Topics in Human Resource Management	**WT+ST**	**3 CP**	**Nieken**

Assessment
The assessment is carried out as partial exams according to § 4 paragraph 2 Nr. 1 – Nr. 3 SPO of the examination regulation of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal
The student

- understands and analyzes relevant processes, methods, and instruments in HR management and leadership, evaluating their usefulness,
- analyzes various processes and assesses their strengths and weaknesses, particularly regarding the use of AI in the workplace and sustainability aspects,
- understands the current challenges in HR management and leadership, considering their alignment with corporate strategy,
- evaluates the strengths and weaknesses of existing structures and regulations based on systematic criteria,
- possesses knowledge of the applicability and challenges of different scientific research methods.

Content
The module provides comprehensive knowledge in the areas of sustainable HR management, leadership, fair working conditions, and diversity and inclusion. Students engage deeply with the future of work. Topics range from classic HR themes such as recruiting and employee retention to AI in the workplace, fair working conditions, and sustainability.

Drawing on microeconomic and behavioral economic approaches, we analyze various processes and instruments, evaluating their alignment with corporate strategy. All courses within the module encourage active participation and empower students to learn cutting-edge concepts and methods, applying them to real-world challenges

Workload
Total workload for 9 credits: approx. 270 hours.

Recommendations
Completion of the core module "Management and Marketing" is recommended.
There is no fixed order for the courses of this module.

M 2.45 Module: Machine Tools and Industrial Handling (WW4INGMB32) [M-MACH-101286]

Coordinators: Prof. Dr.-Ing. Jürgen Fleischer
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each winter term	1 term	German	4	5

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-110963	Machine Tools and High-Precision Manufacturing Systems	**WT**	**9 CP**	**Fleischer**

Assessment
Oral exam (approx. 45 minutes)

Prerequisites
None

Competence Goal
The students

- are able to assess the use and application of machine tools and high-precision manufacturing systems and to differentiate between them in terms of their characteristics and design.
- can describe and discuss the essential elements of machine tools and high-precision manufacturing systems (frame, main spindle, feed axes, peripheral equipment, control unit).
- are able to select and dimension the essential components of machine tools and high-precision manufacturing systems.
- are capable of selecting and evaluating machine tools and high-precision manufacturing systems according to technical and economic criteria.

Content
The module gives an overview of the construction, use and application of machine tools and high-precision manufacturing systems. In the course of the module a well-founded and practice-oriented knowledge for the selection, design and evaluation of machine tools and high-precision manufacturing systems is conveyed. First, the main components of the systems are systematically explained and their design principles as well as the integral system design are discussed. Subsequently, the use and application of machine tools and high-precision manufacturing systems will be demonstrated using typical machine examples. Based on examples from current research and industrial applications, the latest developments are discussed, especially concerning the implementation of Industry 4.0 and artificial intelligence.
Guest lectures from industry round off the module with insights into practice.

The individual topics are:

- Structural components of dynamic manufacturing Systems
- Feed axes: High-precision positioning
- Spindles of cutting machine Tools
- Peripheral Equipment
- Machine control unit
- Metrological Evaluation
- Maintenance strategies and condition Monitoring
- Process Monitoring
- Development process for machine tools and high-precision manufacturing Systems
- Machine examples

Workload
regular attendance: 63 hours
self-study: 207 hours

Teaching and Learning Methods
Lecture, exercise, excursions

M 2.46 Module: Management Accounting (WW3BWLIBU1) [M-WIWI-101498]

Coordinators: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	see Annotations	2 terms	English	3	3

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102800	Management Accounting 1	**see notes**	**4,5 CP**	**Wouters**
T-WIWI-102801	Management Accounting 2	**see notes**	**4,5 CP**	**Wouters**

Assessment
The course "Management Accounting 1" and the corresponding assessment for first-time examinees will be offered for the last time in the **summer semester 2026**.

The course "Management Accounting 2" and the corresponding assessment for first-time examinees will be offered for the last time in the **winter semester 2026/2027**.

The assessment is carried out as partial exams (according to Section 4 (2), 13 SPO) of the courses of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits
and truncated after the first decimal.

Competence Goal
Students

• are familiar with various management accounting methods,

• can apply these methods for cost estimation, profitability analysis, and product costing,

• are able to analyze short-term and long-decisions with these methods,

• have the capacity to devise instruments for organizational control.

Content
The module consists of two courses "Management Accounting 1" and "Management Accounting 2". The emphasis is on structured learning of management accounting techniques.

Additional Information
Please note that the module can be taken **for the last time in the winter term of 2026/2027**.

The course "Management Accounting 1" and the corresponding assessment for first-time examinees will be offered for the last time in the **summer semester 2026**.

The course "Management Accounting 2" and the corresponding assessment for first-time examinees will be offered for the last time in the **winter semester 2026/2027**.

Workload
Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

M 2.47 Module: Management and Marketing [M-WIWI-105768]

Coordinators: Prof. Dr. Martin Klarmann
Prof. Dr. Hagen Lindstädt
Prof. Dr. Petra Nieken
Prof. Dr. Orestis Terzidis

Organisation: KIT Department of Business and Economics

Part of: Business Administration (mandatory)

Credits	Grading	Recurrence	Duration	Language	Level	Version
5 CP	graded	Each winter term	1 term	German	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-111594	Management and Marketing	**WT**	**5 CP**	**Klarmann, Lindstädt, Nieken, Terzidis**

Assessment
The module examination is in written form on the two courses "Managemet" and "Marketing". The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

Competence Goal
The student

- has basic knowledge of central issues in business administration,
- has an understanding of problems, interrelationships and solutions in strategic management,
- is able to analyze and evaluate central areas of activity, functions and decisions in a company operating in a market economy,
- has an overview of important marketing-relevant questions and well-founded approaches to their solution.

With the knowledge acquired in the three basic business administration modules, the prerequisites are created in the area of business administration to expand this knowledge in the specialization program.

Content
An understanding of the basic functions of managing businesses is provided. In addition, the basics of marketing are taught.

Workload
Total workload required for 5 credit points: approx. 150 hours

M 2.48 Module: Manufacturing Technology (WW4INGMB23) [M-MACH-101276]

Coordinators: Prof. Dr.-Ing. Volker Schulze
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each winter term	1 term	German	3	7

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-113570	Additive Manufacturing Processes	**ST**	**4 CP**	**Zanger**
T-MACH-114058	Process Design for Machining of Metallic Components	**WT**	**4 CP**	**Schulze**
T-MACH-114686	Overview of Manufacturing Technologies für Industrial Engineers	**WT**	**1 CP**	**Schulze**

Assessment
Siehe einzelne Teilleistungen

Prerequisites
None

Competence Goal
The students

- can name different manufacturing processes, can describe their specific characteristics and are capable to depict the general function of manufacturing processes and are able to assign manufacturing processes to the specific main groups.
- are enabled to identify correlations between different processes and to select a process depending on possible applications.
- are capable to describe the theoretical basics for the manufacturing processes they got to know within the scope of the course and are able to compare the processes.
- are able to correlate based on their knowledge in materials science the processing parameters with the resulting material properties by taking into account the microstructural effects.
- are qualified to evaluate different processes on a material scientific basis.

Content
Within this engineering sciences-oriented module the students will get to learn principle aspects of manufacturing technology. Further information can be found at the description of the lectures.

Workload
regular attendance: 48 hours
self-study: 222 hours

M 2.49 Module: Materials Science (WI1ING2) [M-MACH-101260]

Coordinators: Dr.-Ing. Susanne Wagner
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (mandatory)

Credits	Grading	Recurrence	Duration	Level	Version
3 CP	graded	Each winter term	1 term	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-102078	Materials Science I	**WT**	**3 CP**	**Wagner**

Assessment
The assessment of the module is carried out by a written examination (150 min) about the lecture*Material Science*I[2125760] (according to Section 4(2), 1 of the examination regulation).

The examination is offered every semester. Re-examinations are offered at every ordinary examination date. The examination at the end of the summer term is carried out by a written or oral exam.

The grade of the module corresponds to the grade of this examination.

Prerequisites
None.

Competence Goal
Students are able to specify the basics of materials science and engineering and can apply it to simple problems in various technical areas.

As major part of the module, the students know the correlation between atomic structure and bonding of solids and the macroscopic properties such as mechanical behavior or electrical conductivity. They have basic knowledge with respect to materials characterization. The students are able to analyze phase diagrams with up to two components and can derive simple correlations among composition, processing, microstructure evolution and materials properties.

Content
After an introduction to the atomic structure and interatomic bonding, elementary concepts of crystallography are given. Different types of crystal structures are explained and various types of imperfections in solids. Then, the mechanical behaviour and the physical properties of various types of materials (metals, polymers, ceramics) are discussed. The thermodynamic principles of solidification and the basic types of phase diagrams are given to understand to iron-carbon phase diagram and the manifold microstructures of steel and cast iron.

Workload
The total workload for this module is approximately 90 hours.

M 2.50 Module: Mathematics 1 for WiIng B.Sc. 2026 [M-MATH-107813]

Coordinators: Prof. Dr. Daniel Hug
Organisation: KIT Department of Mathematics
Part of: Mathematics

Credits	Grading	Recurrence	Duration	Language	Level	Version
10 CP	graded	Each winter term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MATH-115204	Mathematics I - Midterm Exam for WiIng B.Sc. 2026		**5 CP**	**Hug, Nestmann, Winter**
T-MATH-115205	Mathematics I - Final Exam for WiIng B.Sc. 2026		**5 CP**	**Hug, Nestmann, Winter**

Assessment
The assessment consists of two written exams of 90 min each (in accordance with §4(2), 1 of the examination regulations). The first (midterm) exam takes place after half of the course, the second (final) exam takes place shortly after the end of the lectures. Auxiliary means such as literature or calculators are not allowed.

Resit exams for both exams are offered in the first weeks of the subsequent semester. Both resit exams will take place on the same day.

Candidates who have not passed the corresponding midterm or final exam, as well as those who have not yet taken a first attempt, will be eligible for the resit exams.

Oral re-examinations (in accordance with $9(1) of the examination regulations) for the midterm or final exam take place as individual examinations.

Both the midterm and final exams must be passed individually.

Prerequisites
none

Competence Goal
Students

- are confident with basic terms and definitions of mathematical language (propositions, sets, number systems, mappings, etc.),
- have a basic knowledge of differentiable calculus for functions of a single variable,
- know basic concepts of matrix theory,
- have a basic knowledge of integral calculus in a single variable.

Content
The course Mathematics 1 is the first part of the three semester basic training in higher mathematics. Topics are

- Propositional logic and basic set theory,
- Combinatorics and principles of counting,
- Number systems and basic arithmetics,
- Convergence of sequences and series,
- Continuous functions,
- Differentiable functions,
- Power series and special functions,
- Taylor's theorem,
- Riemann integral,
- n-dimensional vector spaces,
- Systems of linear equations,
- Scalar product, length and angle,
- Linear mappings and matrices,

Module Grade Calculation
The examination mark for Mathematics 1 is the average of the marks obtained in the midterm exam and final exam.

Workload
Work load: 300 hours (10 ETCS)

Classes: 150 hours

Preparation of courses and examinations: 150 hours

Recommendations
There are no prerequisites. It is strongly recommended to attend the three maths courses in the order Mathematics 1, Mathematics 2, Mathematics 3.

Literature
There are no Prerequisites. We strongly recommend to attend the three maths courses in the order Mathematics 1, Mathematics 2, Mathematics 3.

M 2.51 Module: Mathematics 2 for WiIng B.Sc. 2026 [M-MATH-107814]

Coordinators: Prof. Dr. Daniel Hug
Organisation: KIT Department of Mathematics
Part of: Mathematics

Credits	Grading	Recurrence	Duration	Language	Level	Version
7 CP	graded	Each summer term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MATH-115206	Mathematics II - Midterm Exam for WiIng B.Sc. 2026		**3,5 CP**	**Hug, Nestmann, Winter**
T-MATH-115207	Mathematics II - Final Exam for WiIng B.Sc. 2026		**3,5 CP**	**Hug, Nestmann, Winter**

Assessment
The assessment consists of two written exams of 75 min each (in accordance with §4(2), 1 of the examination regulations). The first exam (**midterm exam**) takes place after half of the course, the second exam (**final exam**) takes place shortly after the end of the lectures. Auxiliary means such as literature or calculators are not allowed.

Resit exams for both exams are offered in the first weeks of the subsequent semester. Both resit exams will take place on the same day.

Eligible for the resit exams are all candidates who either have not passed the corresponding midterm or final exam, or have not yet taken a first attempt.

Oral re-examinations (in accordance with $9(1) of the examination regulations) for the midterm or final exam take place as individual examinations.

Both the midterm and final exam must be passed individually.

Competence Goal
Students

- have a basic knowledge of determinants and eigenvalue theory,
- have a basic knowledge of multivariate differential calculus,
- have a basic knowledge of integrals of functions in several variables

Content
The course Mathematics 2 is the second part of the three semester basic training in higher mathematics. Topics are

- determinants,
- eigenvalue theory,
- multivariate calculus,
- multiple integrals,
- normed vector spaces and Banach's fixed point theorem.

Module Grade Calculation
The examination mark for Mathematics 2 is the average of the marks obtained in the midterm exam and final exam.

Workload
Work load: 210 hours (7 ETCS)

Classes: 120 hours

Preparation of courses and examinations: 90 hours

Recommendations
There are no prerequisites. It is strongly recommended to attend the three maths courses in the order Mathematics 1, Mathematics 2, Mathematics 3.

M 2.52 Module: Mathematics 3 for WiIng B.Sc. 2026 [M-MATH-107815]

Coordinators: Prof. Dr. Daniel Hug
Organisation: KIT Department of Mathematics
Part of: Mathematics

Credits	Grading	Recurrence	Duration	Language	Level	Version
4 CP	graded	Each winter term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MATH-115208	Mathematics III - Final Exam for WiIng B.Sc. 2026		**4 CP**	**Hug, Nestmann, Winter**

Assessment
The assessment consists of a written exam of 75 min (in accordance with §4(2), 1 of the examination regulations). The exam takes place shortly after the end of the lectures. Auxiliary means such as literature or calculators are allowed.

A resit exam is offered in the first weeks of the subsequent semester.

Candidates who have not passed the exam, as well as those who have not yet taken a first attempt, will be eligible for the resit exam.

Oral re-examinations (in accordance with §8(2) of the examination regulations) for the written exam take place as individual examinations.

Competence Goal
Students

- are confident with important concepts in the theory of normed vector spaces,
- have some basic knowledge of ordinary differential equations,
- have some basic knowledge of Fourier analysis.

Content
The course Mathematics 3 is the third part of the three semester basic training in higher mathematics. Topics are

- normed spaces and Banach's fixed point theorem (if not treated in Mathematics 2),
- ordinary differential equations,
- linear differential equations,
- Fourier analysis,
- integral transformations.

Module Grade Calculation
The module grade is the grade of the written exam.

Workload
Work load: 120 hours (4 ETCS)

Classes: 60 hours

Preparation of courses and examinations: 60 hours

Recommendations
There are no prerequisites. It is strongly recommended to attend the three maths courses in the order Mathematics 1, Mathematics 2, Mathematics 3.

M 2.53 Module: Measurement, Control, and Manufacturing Measurement Technology [M-ETIT-106581]

Coordinators: Prof. Dr.-Ing. Michael Heizmann
Prof. Dr.-Ing. Sören Hohmann

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each summer term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-ETIT-112852	Measurement and Control Technology	**ST**	**6 CP**	**Heizmann, Hohmann**
T-ETIT-106057	Manufacturing Measurement Technology	**ST**	**3 CP**	**Heizmann**

Assessment
MRT:

The success control takes place in the form of a written examination of 120 minutes.

FMT:

The success control takes place in the form of a written examination of 90 minutes. If there are less than 20 examinees, an oral examination of approx. 20 minutes can be taken as an alternative. The module grade is the grade of the written or oral examination.

Prerequisites
none

Competence Goal
MRT:

- Students have a sound knowledge of the theoretical fundamentals of measurement technology, including scaling of measured quantities, the SI system of units, model building for measurement systems, description and treatment of systematic and stochastic measurement deviations, obtaining and linearizing measurement characteristics and propagation of measurement uncertainties.
- Students master the procedure for the basic design of measurement systems, taking into account the above knowledge.
- Students are able to analyze tasks in measurement technology, synthesize possible solutions for measurement systems and assess the properties of the solution obtained.
- The aim is to teach the basics of control engineering, therefore students are able to recognize and work on basic control engineering problems. They know the relevant technical terms.
- Students are able to formally describe real processes and to derive requirements for control structures in the time and image domain for fixed value and sequential control systems.
- Students are able to analyze the dynamics of systems using graphical and algebraic methods.
- Students will be able to name controller design methods for single-loop, single-variable systems. They will be able to design perfect closed-loop and open-loop control systems.
- They can perform design steps using the Nyquist criterion and the Wurzelortz curve.
- Students can name structures for disturbance compensation, of multi-loop control loops and two degrees of freedom structures and perform design steps for them.
- Students can digitize closed-loop and open-loop controls designed in the image domain using fast sampling design.
- Students are familiar with computer-aided design procedures and can carry out substeps in them.

FMT:

- Students have sound knowledge of fundamentals, methods and procedures for measuring and testing in industrial manufacturing.
- Students are able to evaluate different measuring principles, methods and devices with regard to their prerequisites, characteristics, areas of application and results.

Students are able to analyze production measurement tasks, derive the resulting requirements for a suitable metrological implementation, find suitable metrological implementations and point out the resulting properties of the measurement result....

Content
MRT:

- Description of measured quantities
  - Metric quantities and their properties
  - SI system of units
- Structure of measuring systems
- Measurement deviations
  - Systematic and stochastic deviations
- Curve fitting
  - Interpolation
  - Approximation
- Characteristic curves and their errors
  - Linearization of characteristic curves
  - Treatment of disturbance variables
- Uncertainty propagation
  - Error propagation
  - Guide to the Expression of Uncertainty in Measurement (GUM)
- Basic concepts of control engineering
  - Control loops
  - Control structures
  - Embedding in automation structures
- Description of systems in time and image domain
  - State space representation
  - Derivation of an I/O representation
  - Signal flow diagrams and control loop elements
  - Realization of controllers (analog and digital)
- Analysis of control loops in time and image domain
  - Stationary accuracy
  - Stability
  - Dynamics (bandwidth)
  - Robustness
- Design of single loop control loops
  - Perfect control
  - Design with the Nyquist criterion
  - Root locus curve
  - Heuristics
- Design of extended control loop structures
  - disturbance compensation
  - Meshing
  - Two degrees of freedom structure

FMT:

Manufacturing metrology plays an essential role in ensuring efficient industrial manufacturing. To a certain extent, it represents the sensory organs for quality assurance and automation technology and encompasses all activities associated with measurement and testing.

Based on the methodological fundamentals, which are the subject of the compulsory lecture "Measurement Technology", the lecture teaches procedures and implementations for measurement and testing in industrial practice. The focus is on geometric properties; most of the concepts presented can also be applied to other properties. Sensor systems for the measurement of geometric properties are presented and discussed with their characteristic properties.

The contents include in detail:

- Fundamentals of FMT
  - Basic terms, definitions
  - Dimensional standards
  - Measurement uncertainties
- Measurement technology in operation and in the measuring room
  - Coordinate metrology
  - Form and position metrology
  - Surface and contour metrology
  - Comparators
  - Micro and nano metrology
  - Measuring rooms
- Production-oriented metrology
  - Measuring equipment and gauges
  - Measuring devices
  - Measuring in the machine
  - Visual inspection
  - Statistical process control (SPC)
- Optical/non-contact measuring methods
  - Integratable optical sensors

    - Stand-alone optical measurement systems
    - Optical 2.5D coordinate measuring technology
    - Optical 3D coordinate metrology
    - Computed tomography
    - System integration and standardization
- Gauge management
    - Significance and correlations
    - Controlled inspection processes
- Inspection planning

Module Grade Calculation
The module grade is the average of both examination grades weighted by credit points.

Workload
MRT:

Total: approx. 180h, of which

1. Attendance time in lectures and exercises: 60h
2. Preparation and follow-up of the lectures and exercises: 60 hours
3. Exam preparation and presence in the same: 60h

FMT:

Total: approx. 90h, of which

1. attendance time in lectures: 23h
2. preparation of lectures: 23h
3. exam preparation and presence in the exam: 44h

Recommendations
MRT:

Knowledge of "Signale und Systeme" is helpful.

FMT:

Knowledge of stochastics and fundamentals of measurement techniques is helpful.

M 2.54 Module: Mechanical Design A [M-MACH-106527]

Coordinators: Prof. Dr.-Ing. Tobias Düser
Prof. Dr.-Ing. Sven Matthiesen

Organisation: KIT Department of Electrical Engineering and Information Technology
KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each winter term	1 term	German	3	4

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-112984	Mechanical Design A	**WT**	**7 CP**	**Düser, Matthiesen**
T-MACH-112981	Mechanical Design A, Workshop	**WT**	**2 CP**	**Düser, Matthiesen**

Assessment
See individual courses

Prerequisites
None

Competence Goal
In mechanical design, students acquire skills in analysis and synthesis using examples. These include both individual machine elements such as bearings or springs and more complicated systems such as gears or couplings. After completing the machine design theory, the students are able to apply the contents learned to other technical systems - even those not known from the lecture - by transferring the principles of action and basic functions learned from examples to other contexts. This enables students to independently analyze unknown technical systems and synthesize suitable systems for given problems.

Content
MD A

- Springs
- Technical Systems
- Bearings
- Sealings
- Component Joints
- Gears

Module Grade Calculation
The module grade ist the grade of the written exam.

Additional Information
None

Workload
MKL A: Total workload: 270 h, thereof attendance 75 h, divided into lecture + exercise: 4 SWS -> 60 h as well as workshop: 1 SWS -> 15 h; self-study 195 h

Recommendations
None

Teaching and Learning Methods
Lectures, exercises and semester-long workshops as well as project work

Literature
Grundlagen der Berechnung und Gestaltung von Maschinenelementen; Steinhilper, Sauer, Springer Verlag, ISBN 3-540-22033-X oder Volltextzugriff über Uni-Katalog der Universitätsbibliothek

Grundlagen von Maschinenelementen für Antriebsaufgaben; Steinhilper, Sauer, Springer Verlag, ISBN 3-540-29629-8

Base For
None

M 2.55 Module: Mechatronic Product Design [M-MACH-106236]

Coordinators: Prof. Dr.-Ing. Sören Hohmann
Prof. Dr.-Ing. Sven Matthiesen

Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each winter term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-112647	Mechatronical Systems and Products	**WT**	**4 CP**	**Hohmann, Matthiesen**
T-MACH-112648	Workshop Mechatronical Systems and Products	**WT**	**5 CP**	**Hohmann, Matthiesen**

Assessment
Success is monitored within the framework of an written examination (60 minutes) and an alternative academic achievement

Prerequisites
None

Competence Goal
The students

- are able to describe the difficulties of interdisciplinary projects.
- are able to coordinate processes, structures, responsibilities and interfaces within a project
- know different solutions for mechanic/electric problems
- know the elements of the treated product development processes, are able to describe different views onto them and execute them
- know the model based systems engineering approaches
- know the basic principles of virtual design and are able to apply the methods of virtual system design
- are able to identify the differences between virtuality and reality
- are able to recognize the advantages of early validation
- Students are able to understand and apply model description with Bond graphs and generalized system elements
- Students are able to synthesize and analyze multi-domain models
- Students are able to apply parameter identification methods

Content
The lecture provides the theoretic basics, which will be applied and enhanced in development project during the semester. The project will take part in small groups, where the students have to organize and distribute the tasks on their own. In the project work - the workshop Mechatronic Systems and Products - they work on a development task in teams. This involves various development phases, from the development of technical solution concepts to the development and validation of virtual prototypes and physical functional prototypes.

Module Grade Calculation
The module grade is composed in equal parts of the grades of the module's sub-services.

Additional Information
All relevant content (scripts, exercise sheets, etc.) for the course can be obtained via the eLearning platform ILIAS. To participate in the course, please complete the survey " Anmeldung und Gruppeneinteilung " in ILIAS before the start of the semester.

Workload
1. Time of presence lecture: 17 * 1.5 h= 25,5 h
2. Prepare/follow-up lecture: 17 * 1.5 h= 25,5 h
3. Time of presence exercise + workshop: 4 * 1,5h + 12 * 7h = 90 h
4. Prepare/follow-up exercise: 4 * 1.5h = 6 h
5. Exam preparation and time of presence: 33 h
Total: 180 h = 6 LP

Recommendations
It is recommended not to take this module with other time-consuming workshops, such as MD, at the same time.

Teaching and Learning Methods
Lecture, exercise and project work

Literature
Janschek, Klaus (2010): Systementwurf mechatronischer Systeme. Methoden - Modelle - Konzepte. Berlin, Heidelberg: Springer.

Weilkiens, Tim (2008): Systems engineering mit SysML/UML. Modellierung, Analyse, Design. 2., aktualisierte u. erw. Aufl. Heidelberg: Dpunkt-Verl.

M 2.56 Module: Methodical Foundations of OR (WW3OR6) [M-WIWI-101414]

Coordinators: Prof. Dr. Oliver Stein
Organisation: KIT Department of Business and Economics
Part of: Operations Research (Specialisation Program Operations Research)
Compulsory Elective Modules (Operations Research)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	3	10

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: at least 1 item as well as between 4,5 and 9 credits)				
T-WIWI-102726	Global Optimization I	**ST**	**4,5 CP**	**Stein**
T-WIWI-103638	Global Optimization I and II	**ST**	**9 CP**	**Stein**
T-WIWI-102724	Nonlinear Optimization I	**WT**	**4,5 CP**	**Stein**
T-WIWI-103637	Nonlinear Optimization I and II	**WT**	**9 CP**	**Stein**
Supplementary Courses (Elective:)				
T-WIWI-106546	Introduction to Stochastic Optimization	**ST**	**4,5 CP**	**Rebennack**
T-WIWI-102727	Global Optimization II	**ST**	**4,5 CP**	**Stein**
T-WIWI-102725	Nonlinear Optimization II	**WT**	**4,5 CP**	**Stein**
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	**WT**	**4,5 CP**	**Nickel**

Assessment
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
At least one of the courses *Nonlinear Optimization I* [2550111] and *Global Optimization I* [2550134] has to be examined.

Competence Goal
The student

- names and describes basic notions for optimization methods, in particular from nonlinear and from global optimization,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve also challenging optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions.

Content
The modul focuses on theoretical foundations as well as solution algorithms for optimization problems with continuous decision variables. The lectures on nonlinear programming deal with local solution concepts, whereas the lectures on global optimization treat approaches for global solutions.

Additional Information
The planned lectures and courses for the next three years are announced online (http://www.ior.kit.edu).

Workload
The total workload for this module is approx. 270 hours (9 credits). The allocation is based on the credit points of the courses in the module.

The total number of hours per course results from the time required to attend the lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

Recommendations
The courses Introduction to Operations Research I and II are helpful.

M 2.57 Module: Microsystem Technology (WW3INGMBIMT1) [M-MACH-101287]

Coordinators: Prof. Dr. Jan Gerrit Korvink
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	4	7

ID	Name	Term offered	Credits	Lecturers
Mikrosystemtechnik (Elective: at least 9 credits)				
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II	**ST**	**4 CP**	**Guber**
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III	**ST**	**4 CP**	**Guber**
T-MACH-111807	Introduction to Bionics	**ST**	**4 CP**	**Hölscher**
T-MACH-114100	Introduction to Microsystem Technology I	**WT**	**4 CP**	**Badilita, Korvink**
T-MACH-114101	Introduction to Microsystem Technology II	**ST**	**4 CP**	**Badilita, Korvink**
T-MACH-108312	Introduction to Microsystem Technology - Practical Course	**WT+ST**	**3 CP**	**Last**
T-MACH-101910	Microactuators	**ST**	**4 CP**	**Kohl**
T-MACH-102152	Novel Actuators and Sensors	**WT**	**4 CP**	**Kohl, Sommer**
T-ETIT-101907	Optoelectronic Components	**ST**	**4 CP**	**Huber-Loyola**
T-MACH-100530	Physics for Engineers	**ST**	**5 CP**	**Nesterov-Müller**

Assessment
The assessment is carried out as partial exams

(according to Section 4 (2), 1-3 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
none

Competence Goal
Upon successful completion of the module, students

- understand the fundamentals of the operation, design, and fabrication of microsystems,
- understand the operating principles of mechanical, optical, fluidic, and sensor-based microsystems,
- are able to apply basic methods for the design and evaluation of microsystem components,
- are able to select suitable microfabrication processes and assess their fields of application, and
- are able to analyze microsystems engineering problems and develop basic solution approaches.

Content
The module offers courses in microsystem technology. Knowledge is imparted in various fields like basics in construction and production of e. g. mechanical, optical, fluidic and sensory microsystems.

Workload
270 hours

M 2.58 Module: Mobile Machines (WI4INGMB15) [M-MACH-101267]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Level	Version
9 CP	graded	Each winter term	2 terms	4	6

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-MACH-105168	Mobile Machines	**ST**	**8 CP**	**Geimer**
Mobile Machines (Elective: at least 1 credit)				
T-MACH-105311	Design and Development of Mobile Machines	**WT**	**4 CP**	**Geimer**
T-MACH-108887	Design and Development of Mobile Machines - Advance	**WT+ST**	**0 CP**	**Geimer, Siebert**
T-MACH-111389	Fundamentals in the Development of Commercial Vehicles	**see notes**	**4 CP**	**Weber**
T-MACH-111821	Control of Mobile Machines	**ST**	**3 CP**	**Becker, Geimer**
T-MACH-111820	Control of Mobile Machines – Prerequisites	**ST**	**1 CP**	**Becker, Geimer**
T-MACH-113997	Vehicle Drive Technology	**WT**	**4 CP**	**Geimer**
T-MACH-113862	Simulation with Lumped Parameters	**ST**	**3 CP**	**Geimer**
T-MACH-113863	Tutorial Simulation with Lumped Parameters	**ST**	**1 CP**	**Geimer**
T-MACH-113912	Mathematical Methods in Hydraulics	**WT**	**5 CP**	**Geimer**
T-MACH-113913	Tutorial Mathematical Methods in Hydraulics	**WT**	**1 CP**	**Geimer**

Assessment
The assessment is carried out as a general oral exam (duration approx. 60 mins) (according to Section 4(2), 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

The examination is offered every semester. Re-examinations are offered at every ordinary examination date.

The overall grade of the module is the grade of the oral examination.

The assessment may be carried out as partial oral exams (according to Section 4(2), 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.In this case the overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

The assessment procedures are described for each course of the module seperately.

Prerequisites
None

Competence Goal
The student is able to

- describe the basic structure of various mobile machines,
- describe key componentsand subsystems as well as their functions,
- identify process-related characteristics,
- develop and evaluate technical concepts for selected machines,
- apply basic design and development methods.

Content
In the module of *Mobile Machines* [WI4INGMB15] the students will learn the structure of the machines and deepen the knowledge of the subject for developing the machines. After conclusion the module the student will know the latest developments in mobile machines and is able to evaluate the concepts and the trends of developments. The module is practically orientated and supported by industry partners.

Workload
The total workload for this module is approximately 270 hours. For further information see German version.

Recommendations
A basic understanding of fluid mechanics is helpful; otherwise, it is recommended that students take the course "Mathematical Methods in Hydraulics" [2113090].

M 2.59 Module: Mobility and Infrastructure (bauiBFP5-MOBIN) [M-BGU-101067]

Coordinators: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: Engineering Sciences (Specialisation Program Engineering Sciences) (Usage until 9/30/2027)
Compulsory Elective Modules (Business Administration oder Engineering Sciences) (Usage until 9/30/2027)
Compulsory Elective Modules (Engineering Sciences) (Usage until 9/30/2027)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each summer term	1 term	German	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-BGU-101791	Mobility and Infrastructure	**WT+ST**	**9 CP**	**Vortisch**

Assessment
- module component T-BGU-101791 with written examination according to § 4 Par. 2 No. 1

details about the learning control, see module component

Prerequisites
none

Competence Goal
Students will be able to name and explain the basic methods and procedures for dealing with general issues in spatial planning, transport studies and highway engineering. They will be able to carry out basic calculations in relation to the specialist areas mentioned and use the necessary tools methodically and appropriately. Furthermore, they can argue, find, develop and evaluate solutions.

Content
The module is divided into 3 parts:

The spatial planning and planning law part of the module covers fundamental tasks and issues at different planning levels such as land use and land use conflicts, development and infrastructure including their costs, urban land use planning, regional and state planning and planning at European level.

The basics of transport planning (analysis conventions, surveys, algorithms) as well as the basics of traffic engineering are covered in the transport studies part of the module.

The module part Design principles in road engineering covers road network design, road routing including the basics of driving dynamics, earthworks as well as roadway constructions and their design.

Module Grade Calculation
grade of the module is grade of the exam

Additional Information
none

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- Spatial Planning and Planning Law lecture, exercise: 45 h
- Transportation lecture, exercise: 45 h
- Design Basics in Highway Engineering lecture, exercise:45 h

independent study:

- preparation and follow-up lectures, exercises Spatial Planning and Planning Law: 30 h
- preparation and follow-up lectures, exercises Transportation: 30 h
- preparation and follow-up lectures, exercises Design Basics in Highway Engineering: 30 h
- examination preparation: 90 h

total: 355 h

Recommendations
None

M 2.60 Module: Optimization under Uncertainty [M-WIWI-103278]

Coordinators: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Business and Economics
Part of: Operations Research (Specialisation Program Operations Research)
Compulsory Elective Modules (Operations Research)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	3	5

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: between 1 and 2 items)				
T-WIWI-106546	Introduction to Stochastic Optimization	**ST**	**4,5 CP**	**Rebennack**
T-WIWI-106545	Optimization under Uncertainty	**WT**	**4,5 CP**	**Rebennack**
Supplementary Courses (Elective: at most 1 item)				
T-WIWI-102724	Nonlinear Optimization I	**WT**	**4,5 CP**	**Stein**
T-WIWI-102714	Tactical and Operational Supply Chain Management	**ST**	**4,5 CP**	**Nickel**

Assessment
The assessment is carried out as partial exams (according to § 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
At least one of the courses *Introduction to Stochastic Optimization*and *Optimization approaches under uncertainty*has to be taken.

Competence Goal
The student

- denominates and describes basic notions for optimization methods under uncertainty, in particular from stochastic optimization,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems under uncertainty and chooses the appropriate solution methods to solve also challenging optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions, in particular of
- stochastic optimization problems.

Content
The module focuses on modeling and analyzing mathematical optimization problems where certain data is not fully present at the time of decision-making. The lectures on the introduction to stochastic optimization deal with methods to integrate distribution information into the mathematical model. The lectures on the optimization approaches under uncertainty offer alternative approaches such as robust optimization.

Additional Information
The curriculum, planned for three years in advance, can be found on the Internet at http://sop.ior.kit.edu/28.php.

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.

Recommendations
Knowledge from the lectures "Introduction to Operations Research I" and "Introduction to Operations Research II" are helpful.

M 2.61 Module: Preliminary Exam [M-WIWI-107753]

Organisation: University
Part of: Preliminary Exam

Credits	Grading	Recurrence	Duration	Language	Level	Version
0 CP	pass/fail	Each term	2 terms	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-102708	Economics I: Microeconomics	**WT**	**5 CP**	**Puppe, Reiß**
T-WIWI-102737	Statistics I	**ST**	**5 CP**	**Grothe, Schienle**

Modeled Deadline
This module must be passed until the end of the **3. semester**.

Prerequisites
none

M 2.62 Module: Production Engineering [M-MACH-106590]

Coordinators: Prof. Dr.-Ing. Volker Schulze
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German	3	6

ID	Name	Term offered	Credits	Lecturers
Production Engineering (Elective: at least 9 credits)				
T-MACH-115251	Additive Manufacturing of Metallic and Ceramic Components	**WT**	**8 CP**	**Zanger**
T-MACH-113647	Digitalization from Product Concept to Production	**WT**	**4 CP**	**Wawerla**
T-MACH-114800	Global Production	**WT**	**5 CP**	**Lanza, Martin**
T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars	**ST**	**4 CP**	**Schlichtenmayer**
T-MACH-112115	Artificial Intelligence in Production	**WT**	**4 CP**	**Fleischer**
T-MACH-105783	Learning Factory “Global Production“	**WT**	**6 CP**	**Lanza**
T-MACH-108878	Laboratory Production Metrology	**ST**	**4 CP**	**Benfer, Lanza**
T-MACH-110318	Product- and Production-Concepts for Modern Automobiles	**WT**	**4 CP**	**Kienzle, Steegmüller**
T-MACH-110984	Production Technology for E-Mobility	**ST**	**4 CP**	**Fleischer**
T-MACH-113575	Project Course Additive Manufacturing: Design Optimization and Production of Metallic Components	**ST**	**4 CP**	**Zanger**
T-MACH-115056	Quality Management	**WT**	**4 CP**	**Lanza**
T-MACH-113031	Rapid Industrialization of Immature Products using the Example of Electric Mobility	**WT**	**4 CP**	**Bauer**
T-MACH-112121	Seminar Application of Artificial Intelligence in Production	**ST**	**4 CP**	**Fleischer**
T-MACH-105185	Control Technology	**ST**	**4 CP**	**Gönnheimer**
T-MACH-114969	Strategic Decision-Making in Global Production Networks through Optimization and Simulation	**ST**	**4 CP**	**Lanza, Martin**
T-MACH-105177	Metal Forming	**ST**	**4 CP**	**Herlan**
T-MACH-102148	Gear Cutting Technology	**WT**	**4 CP**	**Hoffmeister**

Assessment
Oral exams: duration approx. 5 min per credit point

Written exams: duration approx. 20 - 25 min per credit point

Amount, type and scope of the success control can vary according to the individually choice.

Prerequisites
The module M-MACH-101284 -Production Technology must not have been started.

Competence Goal
The students

- are able to apply the methods of production science to new problems.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques for a specific problem.
- are able to use their knowledge target-oriented to achieve an efficient production technology.
- are able to analyze new situations and choose methods of production science target-oriented based on the analyses, as well as justifying their selection.
- are able to describe and compare complex production processes exemplarily.

Content
Within this module the students will get to know and learn about production science. Manifold lectures and excursions as part of several lectures provide specific insights into the field of production science.

Workload
The work load is about 270 hours, corresponding to 9 credit points.

Teaching and Learning Methods
Lectures, seminars, workshops, excursions

M 2.63 Module: Production, Logistics and Information Systems [M-WIWI-105770]

Coordinators: Dr.-Ing. Hannah Bakker
Prof. Dr. Wolf Fichtner
Prof. Dr. Andreas Geyer-Schulz
Prof. Dr. Alexander Mädche
Prof. Dr. Frank Schultmann
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Business and Economics

Part of: Business Administration (mandatory)

Credits	Grading	Recurrence	Duration	Language	Level	Version
5 CP	graded	Each winter term	1 term	German	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-111602	Production, Logistics and Information Systems	**WT**	**5 CP**	**Fichtner, Mädche, Nickel, Schultmann, Weinhardt**

Assessment
The module examination (90 min) is in written form. The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

Competence Goal
The student

- has basic knowledge of the interaction of information technologies, people and organizational structures,
- is familiar with the structures of information systems,
- masters the essential concepts, theories and methods of production management,
- has an understanding of problems, interrelationships and solutions of logistics processes of enterprises.

With the knowledge acquired in the three basic modules BWL, the prerequisites are created in the area of BWL to expand this knowledge in the specialization program.

Content
The basics of business informatics are taught. In addition, the area of production management and logistics is introduced.

Workload
Total workload required for 5 credit points: approx. 150 hours

M 2.64 Module: Public Finance (WW3VWL9) [M-WIWI-101403]

Coordinators: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Business and Economics
Part of: Economics (Specialisation Program Economics)
Compulsory Elective Modules (Economics)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German	3	7

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: 9 credits)				
T-WIWI-102877	Introduction to Public Finance	**WT**	**4,5 CP**	**Wigger**
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	**WT**	**4,5 CP**	**Gutekunst, Wigger**
T-WIWI-102739	Public Revenues	**ST**	**4,5 CP**	**Wigger**

Assessment
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The exams are offered at the beginning of the recess period about the subject matter of the latest held lecture. Re-examinations are offerd at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade for the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal
The student

- has advanced knowledge of the theory and policy of taxation and public debt.
- understand the scope, structure and forms of government borrowing.
- is familiar with the structure of German and international tax law
- is able to interpret and motivate fiscal policy issues.

Content
As a branch of Economics, Public Finance is concerned with the theory and policy of the public sector and its interrelations with the private sector. It analyzes the economic role of the state from a normative as well as from a positive point of view. The normative view examines efficiency- and equity-oriented motives for government intervention and develops fiscal policy guidelines. The positive view explains the actual behavior of economic agents in public sector affairs. Special fields of Public Finance are public revenues, i.e. taxes and public debt, public expenditures for publicly provided goods, and welfare programs.

Additional Information
The course T-WIWI-102790 "Specific Aspects in Taxation" will no longer be offered in the module as of winter semester 2018/2019.

Workload
Total workload for 9 credit points: approx. 270 hours

The exact distribution is based on the credit points of the courses in the module.

Recommendations
It is recommended to attend the course 2560129 after having completed the course 2560120.

M 2.65 Module: Seminar Module [M-WIWI-107749]

Coordinators: Studiendekan des KIT-Studienganges
Organisation: KIT Department of Business and Economics
Part of: Compulsory Elective Modules (mandatory)

Credits	Grading	Recurrence	Duration	Language	Level	Version
5 CP	graded	Each term	1 term	German/English	3	2

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: 4 credits)				
T-WIWI-103486	Seminar in Business Administration (Bachelor)	**WT+ST**	**4 CP**	**Professorenschaft des Fachbereichs Betriebswirtschaftslehre**
T-WIWI-103485	Seminar in Informatics (Bachelor)	**WT+ST**	**4 CP**	**Professorenschaft des Instituts AIFB**
T-MATH-102265	Seminar in Mathematics (Bachelor)		**4 CP**	**Hug, Nestmann, Winter**
T-WIWI-103488	Seminar in Operations Research (Bachelor)	**WT+ST**	**4 CP**	**Nickel, Rebennack, Stein**
T-WIWI-103489	Seminar in Statistics (Bachelor)	**WT+ST**	**4 CP**	**Grothe, Schienle**
T-WIWI-108763	Seminar in Engineering Science Master (approval)	**WT+ST**	**4 CP**	**Fachvertreter ingenieurwissenschaftlicher Fakultäten**
T-WIWI-103487	Seminar in Economics (Bachelor)	**WT+ST**	**4 CP**	**Professorenschaft des Fachbereichs Volkswirtschaftslehre**
T-MACH-102135	Conveying Technology and Logistics	**ST**	**4 CP**	**Furmans**
T-MACH-109062	Seminar Production Technology	**WT+ST**	**4 CP**	**Fleischer, Lanza, Schulze**
T-INFO-115354	Seminar: Civil Law 2	**WT+ST**	**4 CP**	**Sattler**
T-INFO-115382	Seminar: Public Law and Computer Science 2	**WT+ST**	**4 CP**	**Zufall**
Interdisciplinary Qualifications (Elective: at least 1 credit)				
T-WIWI-111438	Self-Booking-HOC-SPZ-FORUM-STK-Graded		**1 CP**	
T-WIWI-111439	Self-Booking-HOC-SPZ-FORUM-STK-Graded		**2 CP**	
T-WIWI-111440	Self-Booking-HOC-SPZ-FORUM-STK-Graded		**3 CP**	
T-WIWI-111441	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded		**1 CP**	
T-WIWI-111442	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded		**2 CP**	
T-WIWI-111443	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded		**3 CP**	
T-WIWI-113294	Self-Booking-HOC-SPZ-FORUM-STK-Graded		**1 CP**	
T-WIWI-113352	Self-Booking-HOC-SPZ-FORUM-STK-Graded		**1 CP**	
T-WIWI-113353	Self-Booking-HOC-SPZ-FORUM-STK-Graded		**2 CP**	
T-WIWI-113354	Self-Booking-HOC-SPZ-FORUM-STK-Graded		**3 CP**	
T-WIWI-113355	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded		**1 CP**	
T-WIWI-113356	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded		**2 CP**	
T-WIWI-113357	Self-Booking-HOC-SPZ-FORUM-STK-Ungraded		**3 CP**	

Assessment
The modul examination consists of one seminar and at least one key qualification. A detailed description of the assessment is given in the specific course characerization.

Prerequisites
All modules of the core or foundation program should be successfully completed. The following can be taken:

- Business administration, economics, INFO, OR and statistics seminars.
- Seminars offered for WiWi degree programs at the KIT Department of Mathematics.
- Law and sociology seminars, provided that a law or sociology module is taken as an elective module (subject to approval).
- Engineering science seminars that match an ING module taken in the compulsory ING specialization (exception: module "Specialization in engineering fundamentals") or the compulsory elective area. Coherence of content is deemed to be given if the seminar and module are taken at the same ING institute. If this is not the case, it is necessary for the ING module coordinator of an engineering module taken to certify that the planned ING seminar matches the content of his/her module. Engineering seminars of the WBK (Production Engineering) and IFL (Logistics) do not have to fulfill this requirement. The seminar must meet the performance standards of the KIT Department of Economics and Management (seminar course of 2 SWS, regular and active participation, seminar paper on one aspect of the seminar topic, presentation, total workload approx. 120 hours). Engineering seminars for the seminar module are generally **subject to approval** and must be applied for at the Examination Office. The application for admission is made via the corresponding engineering seminar form on the department's download page. (Seminars of the wbk and the IFL are exempt from this approval requirement).

Competence Goal

- Students are able to independently deal with a defined problem in a specialized field based on scientific criteria.
- They are able to research, analyze the information, abstract and derive basic principles and regularities from unstructured information.
- They can solve the problems in a structured manner using their interdisciplinary know-how.
- They know how to validate the obtained results.
- Finally, they are able to logically and systematically present the results both orally and in written form in accordance with scientific guidelines (structuring, technical terminology, referencing). They can argue and defend the results professionally in the discussion.
- Students are familiar with the DFG´s Code of Conduct "Guidelines for Safeguarding Good Research Practice" and base their scientific work on it.

Content
Competences which are gained in the seminar module especially prepare the student for composing the final thesis. Within the term paper and the presentation the student exercises himself in scientific working techniques supported by the supervisor.

Beside advancing skills in techniques of scientific working there are gained integrative key qualifications as well. A detailled description o these qualifications is given in the section “Key Qualifications” of the module handbook.

Furthermore, the module also includes additional key qualifications provided by the KQ-courses.

Additional Information
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

Workload
The total workload for this module is approx. 150 hours (5 CP).

M 2.66 Module: Seminar: Civil Law 2 [M-INFO-107931]

Coordinators: Prof. Dr. Andreas Sattler
Organisation: KIT Department of Informatics
Part of: Compulsory Elective Modules (Law or Sociology)

Credits	Grading	Recurrence	Duration	Language	Level	Version
4 CP	graded	Each term	1 term	German	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-INFO-115354	Seminar: Civil Law 2	**WT+ST**	**4 CP**	**Sattler**

Assessment
See Partial Achievements (Teilleistung).

Prerequisites
See Partial Achievements (Teilleistung).

Competence Goal
The student

- examines a specific problem in the division of law
- analyzes and discusses issues within the context of the courses and in the final seminar papers
- discusses, presents, and defends subject-specific arguments within the framework of a given assignment
- organizes the preparation of the final seminar papers largely independently.

The skills acquired in this seminar module are specifically designed to prepare students for their thesis. With guidance from the respective instructors, students gain experience in independent scholarly work through the writing and presentation of their final seminar papers.
Students are familiar with the DFG Code of Conduct “Guidelines for Ensuring Good Research Practice” and successfully apply these guidelines when preparing their scholarly work.

Content
The module consists of a seminar that falls under the field of law. A list of approved courses will be posted online.

Workload
The total workload for this module is approximately 120 hours (4 credits) for 1. attendance, preparatory and follow-up work, and the course examination.
The specific workload varies depending on the particular seminar selected and is described in the course description for each individual course.

M 2.67 Module: Seminar: Public Law and Computer Science2 [M-INFO-107939]

Coordinators: TT-Prof. Dr. Frederike Zufall
Organisation: KIT Department of Informatics
Part of: Compulsory Elective Modules (Law or Sociology)

Credits	Grading	Recurrence	Duration	Language	Level	Version
4 CP	graded	Each term	1 term	German/English	3	1

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-INFO-115382	Seminar: Public Law and Computer Science 2	**WT+ST**	**4 CP**	**Zufall**

Assessment
See Partial Achievements (Teilleistung).

Prerequisites
See Partial Achievements (Teilleistung).

Competence Goal
The student

- examines a specific problem in the division of law
- analyzes and discusses issues within the context of the courses and in the final seminar papers
- discusses, presents, and defends subject-specific arguments within the framework of a given assignment
- organizes the preparation of the final seminar papers largely independently.

The skills acquired in this seminar module are specifically designed to prepare students for their thesis. With guidance from the respective instructors, students gain experience in independent scholarly work through the writing and presentation of their final seminar papers.
Students are familiar with the DFG Code of Conduct “Guidelines for Ensuring Good Research Practice” and successfully apply these guidelines when preparing their scholarly work.

Content
The module consists of a seminar that falls under the field of law. A list of approved courses will be posted online.

Workload
The total workload for this module is approximately 120 hours (4 credits) for 1. attendance, preparatory and follow-up work, and the course examination.
The specific workload varies depending on the particular seminar selected and is described in the course description for each individual course.

M 2.68 Module: Signals and Systems [M-ETIT-106372]

Coordinators: Dr.-Ing. Mathias Kluwe
Prof. Dr.-Ing. Sander Wahls

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each winter term	2 terms	German	3	3

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-ETIT-112860	Signals and Systems	**WT**	**7 CP**	**Kluwe, Wahls**
T-ETIT-112861	Signals and Systems - Workshop	**ST**	**2 CP**	**Wahls**

Assessment
The assessment of success takes place in the form of a written examination lasting 180 minutes. In addition, the completion of the written work in the workshop is a prerequisite for passing the module.

Prerequisites
none

Competence Goal

- Students are familiar with the elementary properties of signals and systems in the time domain and can analyze existing signals and systems with regard to these properties.
- They are familiar with the Fourier, Laplace and Z transforms with their definitions and calculation rules and can apply these to given signals and systems.
- Students are able to describe given signals and systems using the resulting transforms and analyze their respective properties in the frequency domain.
- They determine e.g. continuous-time low-pass filters that fulfill given specifications.
- They are able to design anti-aliasing and interpolation filters for A/D and D/A conversion.
- Students are able to realize given continuous-time systems digitally.

Content

- Introduction, complex numbers, continuous-time signals, signal space L∞
- Signal spaces L1 and L2 (Lebesgue integral, Hilbert space)
- Continuous-time systems in the time domain (linearity, time invariance, stability, convolution representation)
- Fourier series
- Fourier transform I (derivation & existence, pairs)
- Fourier transform II (properties, description of time-continuous systems)
- Meaning of phase (group delay, all-pass, minimum phase)
- Low-pass filter (Butterworth, Chebyshev)
- Uncertainty principle (mean time/frequency/duration/bandwidth)
- Complex analysis I (basics of complex functions, differentiation, holomorphic functions, Cauchy Riemann differential equations, curve integrals)
- Complex Analysis II (Cauchy integral theorem, Laurent expansions, isolated singularities, meromorphic functions, residue theorem)
- Hilbert transform (Bedrosian/envelope, Kramers-Kronig, phase gain)
- Two-sided Laplace transform and systems with rational transfer function
- Bode plots
- Discrete-time signals and spaces, sampling theorem, interpolation filters, aliasing
- Discrete Fourier series and transformation
- Z-transform and discrete-time systems
- Discrete-time processing of continuous-time signals (anti-aliasing filters with oversampling and undersampling)
- One-sided Laplace transform (def. incl. some properties and calculation rules) c
- Solution of ordinary differential equations, back transformation via partial fraction decomposition
- Alternatives of the Laplace inverse transform (convolution, complex inverse formula)
- One-sided z-transformation
- Solving difference equations with the z-transform

Module Grade Calculation
The module grade is the grade of the written exam.

Workload
Total approx. 240h, of which

1. Attendance time in lectures and exercises: 75h
2. Preparation/follow-up of the lectures and exercises: 130h
3. Exam preparation and presence in the same: 40h
4. Preparation time for the workshop: 5h
5. Presence time in the workshop: 15h
6. Preparation of the protocol for the workshop: 5h

Total: 270 LP = 9 LP

Recommendations
Knowledge of higher mathematics (e.g. M-MATH-101731, M-MATH-101732 and M-MATH-101738) is required. Fundamentals of electrical circuits and networks (e.g. M-ETIT-106417 - Lineare Elektrische Netze) are helpful.

M 2.69 Module: Sociology/Empirical Social Research (WW3SOZ) [M-GEISTSOZ-101167]

Coordinators: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: Compulsory Elective Modules (Law or Sociology)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each winter term	2 terms	German	3	2

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-GEISTSOZ-109047	Analalysis of Social Structurs (WiWi)	**WT**	**3 CP**	**Nollmann**
T-GEISTSOZ-109048	Social Science A (WiWi)	**WT**	**3 CP**	**Nollmann**
T-GEISTSOZ-109049	Social Science B (WiWi)	**WT**	**3 CP**	**Nollmann**

Competence Goal
The student

- Gains theoretical and methodical knowledge of social processes and structures
- Is able to apply acquired knowledge practically
- Is able to present work results in a precise and clear way

Content
This module offers students the possibility to get to know research problems and to answer these theoretically as well as empirically. For example: Who does earn how much in his job and why? How do subcultures emerge? Why are boys' grades in school always worse than those of girls? Do divorces have negative influences on the development of children? How does mass consumption influence the individual? Is there a world society emerging? In addition, this module contains courses on sociological methods that are essential to answer such questions scientifically.

The lecture on social structure analysis gives an overview of large social structures such as the education system, labour market, institutions, demography, etc. for Germany and in international comparison. The content of the social research seminars is determined individually by the lecturers. Students are free to choose one seminar each for Social Research A/B.

M 2.70 Module: Statistics and Econometrics (WW3STAT1) [M-WIWI-101599]

Coordinators: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Business and Economics

Part of: Economics (Specialisation Program Economics)
Compulsory Elective Modules (Economics)
Compulsory Elective Modules (Statistics)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	8

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-114622	Introduction to Econometrics	**ST**	**5 CP**	**Schienle**
Supplementary Courses (Elective: between 1 and 2 items)				
T-WIWI-103063	Analysis of Multivariate Data	**Irreg.**	**4,5 CP**	**Grothe**
T-WIWI-110939	Financial Econometrics II	**ST**	**4,5 CP**	**Schienle**
T-WIWI-115240	Health Statistics	**WT**	**4,5 CP**	**Bracher**
T-WIWI-112153	Microeconometrics	**Irreg.**	**4,5 CP**	**Krüger**
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	**WT**	**4,5 CP**	**Heller**
T-WIWI-114325	Time Series Analysis	**WT**	**4,5 CP**	**Schienle**

Assessment
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
The course "Introduction in Econometrics“ is compulsory and must be examined. In case the course „Economics III: Introduction in Econometrics“ has already been examined within the module „Applied Microeconomics“, the course „Economics III: Introduction in Econometrics“ is not compulsory.

Competence Goal
The student

- shows an advanced understanding of Econometric techniques and statistical model building.
- is able to develop Econometric models for applied problems based on available data
- is able to apply techniques and models with statistical software, to interpret results and to judge on different approaches with appropriate statistical criteria.

Content
The courses provide a solid Econometric and statistical foundation of techiques necessary to conduct valid regression, time series and multivariate analysis.

Workload
The total workload for this module is approximately 270 hours.

M 2.71 Module: Statistics and Econometrics II [M-WIWI-105414]

Coordinators: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Business and Economics
Part of: Economics (Specialisation Program Economics)
Compulsory Elective Modules (Economics)
Compulsory Elective Modules (Statistics)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	6

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective:)				
T-WIWI-103063	Analysis of Multivariate Data	**Irreg.**	**4,5 CP**	**Grothe**
T-WIWI-114622	Introduction to Econometrics	**ST**	**5 CP**	**Schienle**
T-WIWI-110939	Financial Econometrics II	**ST**	**4,5 CP**	**Schienle**
T-WIWI-115240	Health Statistics	**WT**	**4,5 CP**	**Bracher**
T-WIWI-112153	Microeconometrics	**Irreg.**	**4,5 CP**	**Krüger**
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	**WT**	**4,5 CP**	**Heller**
T-WIWI-114325	Time Series Analysis	**WT**	**4,5 CP**	**Schienle**

Assessment
The assessment is carried out as partial exams of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
The following module must have been started: Statistics and Econometrics [M-WIWI-101599].

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module M-WIWI-101599 - Statistics and Econometrics must have been started.

Competence Goal
The student

- shows an advanced understanding of Econometric techniques and statistical model building.
- is able to develop advanced Econometric models for applied problems based on available data
- is able to apply techniques and models efficiently with statistical software, to interpret results and to judge on different approaches with appropriate statistical criteria.

Content
The courses provide foundations of advanced Econometric and statistical techiques for regression, time series and multivariate analysis.

Workload
The total workload for this module is approximately 270 hours.

M 2.72 Module: Strategy and Organization (WW3BWLUO1) [M-WIWI-101425]

Coordinators: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Business and Economics
Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	2 terms	German	3	7

ID	Name	Term offered	Credits	Lecturers
Strategy and Organization (Elective: at least 9 credits)				
T-WIWI-102630	Managing Organizations	**WT**	**4,5 CP**	**Lindstädt**
T-WIWI-113090	Strategic Management	**ST**	**4,5 CP**	**Lindstädt**

Assessment
The module examination takes the form of written partial examinations (according to §4(2), 1 SPO) on the individual courses of the module. The examinations are offered every semester and can be repeated at any regular examination date.

The competence certificate is described for each course in this module. The grade of the individual partial examinations corresponds to the respective examination grade. The overall grade of the module is calculated from the CP-weighted grades of the partial examinations and cut off after the first decimal place.

Competence Goal

- Students can prepare strategic decisions along the ideal-typical strategy process and classify them strategically.
- Students evaluate the strengths and weaknesses of existing organizational structures and regulations using systematic criteria and can review the management of organizational change.
- Students can make effective decisions by structuring problems and communicating solutions, taking into account the situation and the personalities involved.
- Students learn to apply and discuss the theoretical content of the course to real-life situations through intensive engagement with a variety of practice-relevant case studies.

Content
The module has a practical and action-oriented structure. Students learn about central frameworks of strategic management along the ideal-typical strategy process. The aim is to provide an overview of basic models and to achieve action-oriented integration by transferring theory to practical issues. Students also learn concepts for designing organizational structures, regulating organizational processes and managing organizational change. This enables a well-founded assessment of existing organizational structures and regulations. Participants are also enabled to identify, structure, analyze and effectively communicate problems.

Workload
The total workload for this module is approx. 270 hours (9 credit points). The allocation is based on the credit points of the courses in the module. The workload for courses with 4.5 credit points is approx. 135 hours. The total number of hours per course results from the time required to attend the lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

M 2.73 Module: Supply Chain Management (WW3BWLISM2) [M-WIWI-101421]

Coordinators: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Business and Economics
Part of: Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	11

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-107506	Platform Economy	**WT**	**4,5 CP**	**Weinhardt**
Supplementary Courses (Elective: 1 item)				
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	**WT**	**4,5 CP**	**Nickel**
T-WIWI-102714	Tactical and Operational Supply Chain Management	**ST**	**4,5 CP**	**Nickel**

Assessment
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
The courseT-WIWI-107506 "Platform Economy"has to be taken.

Competence Goal
The students

- are able to understand and evaluate the control of cross-company supply chains based on a strategic and operative view,
- are able to analyse the coordination problems within the supply chains,
- are able to identify and integrate adequate information system infrastructures to support the supply chains,
- are able to apply theoretical methods from the operations research and the information management,
- learn to elaborate solutions in a team

Content
The module "Supply Chain Management" gives an overview of the mutual dependencies of information systems and of supply chains spanning several enterprises. The specifics of supply chains and their information needs set new requirements for the operational information management. In the core lecture "Platform Economy" the focus is set on markets between two parties that act through an intermediary on an Internet platform. Topics discussed are network effects, peer-to-peer markets, blockchains and market design. The course is held in English and teaches parts of the syllabus with the support of a case study in which students analyze a platform.

The module is completed by an elective course addressing appropriate optimization methods for the Supply Chain Management and for modern logistic approaches.

Additional Information
The planned lectures in the next terms can be found on the websites of the respective institutes IISM, IFL and IOR.

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.

M 2.74 Module: Team Project Management and Technology [M-WIWI-105440]

Coordinators: Prof. Dr. Martin Klarmann
Prof. Dr. Alexander Mädche
Organisation: KIT Department of Business and Economics
Part of: Compulsory Elective Modules (Team Project)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	1

Election Notes
The team project can only be credited within the elective area. Accordingly, it can be credited either in the elective block 'Business Administration or Engineering Sciences' or in the elective block 'Team Project'.

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-110968	Team Project Management and Technology	**WT+ST**	**9 CP**	**Klarmann, Mädche**

Assessment
Alternative exam assessment. The basis for grading is the documents produced, the presentations during the course of the project, the artifact to be produced (e.g. algorithm, method, model, software, component) and the final presentation.

Prerequisites
The team project can only be credited within the elective area. Accordingly, it can be credited either in the elective block 'Business Administration or Engineering Sciences' or in the elective block 'Team Project'.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module M-WIWI-105447 - Team Project Management and Technology (BUS/ENG) must not have been started.

Competence Goal
After successful completion of the team project, the students can:

- select and apply the methods, techniques and tools required for problem solving
- systematically analyze a given problem in an interdisciplinary team and develop and evaluate an artifact-centered solution
- constructively solve challenges and conflicts that arise in teamwork.

Content
The team project "Management and Technology" aims to prepare students for working in heterogeneously composed teams.
A team of 4-5 students will work on defined interdisciplinary questions at the interface of economics and MINT subjects. The result of the projects should typically not only be a presentation or a report, but an artifact, e.g. a method, an algorithm, a model, a software or a component.
The team projects already implement the concept of research-oriented teaching in the Bachelor's degree and aim to build up problem-solving competence in the students.

Additional Information
Participation in the "Team Project Management and Technology " course is subject to **limited capacity**. Mandatory registration must be completed through the **WIWI-Portal** at the following address: https://portal.wiwi.kit.edu/ys

Workload
The total of 270 working hours (9 credit points) per team member (4-5 members per team) are divided into the following tasks:

- communication:
  - Team meetings: 30 h (2h per week, 15 weeks),
  - Electronic exchange: 20 h,
  - Final presentation: 10
- Documentation and development:
  - Analysis and design: 70 h,
  - Development: 90 h,
  - Tests and quality assurance: 50 h

M 2.75 Module: Team Project Management and Technology (BUS/ENG) [M-WIWI-105447]

Organisation: KIT Department of Business and Economics
Part of: Compulsory Elective Modules (Business Administration oder Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	1

Election Notes
The team project can only be credited within the elective area. Accordingly, it can be credited either in the elective block 'Business Administration or Engineering Sciences' or in the elective block 'Team Project'.

ID	Name	Term offered	Credits	Lecturers
Mandatory				
T-WIWI-110977	Team Project Management and Technology (BUS/ENG)	**WT+ST**	**9 CP**	**Klarmann, Mädche**

Assessment
Alternative exam assessment. The basis for grading is the documents produced, the presentations during the course of the project, the artifact to be produced (e.g. algorithm, method, model, software, component) and the final presentation.

Prerequisites
The team project can only be credited within the elective area. Accordingly, it can be credited either in the elective block 'Business Administration or Engineering Sciences' or in the elective block 'Team Project'.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module M-WIWI-105440 - Team Project Management and Technology must not have been started.

Competence Goal
After successful completion of the team project, the students can:

- select and apply the methods, techniques and tools required for problem solving
- systematically analyze a given problem in an interdisciplinary team and develop and evaluate an artifact-centered solution
- constructively solve challenges and conflicts that arise in teamwork.

Content
The team project "Management and Technology" is carried out by a business administration or engineering institute. It aims to prepare students for working in heterogeneously composed teams.
A team of 4-5 students will work on defined interdisciplinary questions at the interface of economics and MINT subjects. The result of the projects should typically not only be a presentation or a report, but an artifact, e.g. a method, an algorithm, a model, a software or a component.
The team projects already implement the concept of research-oriented teaching in the Bachelor's degree and aim to build up problem-solving competence in the students.

Additional Information
Participation in the "Team Project Management and Technology " course is subject to **limited capacity**. Mandatory registration must be completed through the **WIWI-Portal** at the following address: https://portal.wiwi.kit.edu/ys

Workload
The total of 270 working hours (9 credit points) per team member (4-5 members per team) are divided into the following tasks:

- communication:
  - Team meetings: 30 h (2h per week, 15 weeks),
  - Electronic exchange: 20 h,
  - Final presentation: 10
- Documentation and development:
  - Analysis and design: 70 h,
  - Development: 90 h,
  - Tests and quality assurance: 50 h

M 2.76 Module: Topics in Finance I (WW3BWLFBV5) [M-WIWI-101465]

Coordinators: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg

Organisation: KIT Department of Business and Economics

Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	12

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective:)				
T-WIWI-102643	Derivatives	**ST**	**4,5 CP**	**Uhrig-Homburg**
T-WIWI-110797	eFinance: Information Systems for Securities Trading	**WT**	**4,5 CP**	**Weinhardt**
T-WIWI-102623	Financial Intermediation	**WT**	**4,5 CP**	**Ruckes**
T-WIWI-112694	FinTech	**WT**	**4,5 CP**	**Thimme**
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	**WT**	**4,5 CP**	**Gutekunst, Wigger**
T-WIWI-102646	International Finance	**see notes**	**3 CP**	**Uhrig-Homburg**
T-WIWI-114340	Quantitative Finance	**WT**	**4,5 CP**	**Thimme**

Assessment
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
Students may only start the module *Topics in Finance I* after they have successfully completed the module *Essentials of Finance*. Exceptions are subject to approval by the examination committee; for this purpose, students must contact the examination office of the KIT Department of Economics and Management.

Competence Goal
The student

- has advanced skills in modern finance
- is able to apply these skills in practice in the fields of finance and accounting, financial markets and banking

Content
The module *Topics in Finance I* is based on the module *Essentials of Finance*. The courses deal with advanced issues concerning the fields of finance and accounting, financial markets and banking from a theoretical and practical point of view.

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.

M 2.77 Module: Topics in Finance II (WW3BWLFBV6) [M-WIWI-101423]

Coordinators: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg

Organisation: KIT Department of Business and Economics

Part of: Business Administration (Specialisation Program Business Administration)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Business Administration)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	3	13

ID	Name	Term offered	Credits	Lecturers
Compulsory Elective Courses (Elective: 9 credits)				
T-WIWI-102643	Derivatives	**ST**	**4,5 CP**	**Uhrig-Homburg**
T-WIWI-110797	eFinance: Information Systems for Securities Trading	**WT**	**4,5 CP**	**Weinhardt**
T-WIWI-102623	Financial Intermediation	**WT**	**4,5 CP**	**Ruckes**
T-WIWI-112694	FinTech	**WT**	**4,5 CP**	**Thimme**
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	**WT**	**4,5 CP**	**Gutekunst, Wigger**
T-WIWI-102646	International Finance	**see notes**	**3 CP**	**Uhrig-Homburg**
T-WIWI-114340	Quantitative Finance	**WT**	**4,5 CP**	**Thimme**

Assessment
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites
Students may only start the module *Topics in Finance II* after they have successfully completed the module *Essentials of Finance*. Exceptions are subject to approval by the examination committee; for this purpose, students must contact the examination office of the KIT Department of Economics and Management.

Competence Goal
The student

- has advanced skills in modern finance
- is able to apply these skills in practice in the fields of finance and accounting, financial markets and banking

Content
The module *Topics in Finance II* is based on the module *Essentials of Finance.* The courses deal with advanced issues concerning the fields of finance and accounting, financial markets and banking from a theoretical and practical point of view.

Workload
The total workload for this module is approximately 270 hours.

M 2.78 Module: Vehicle Development (WI4INGMB14) [M-MACH-101265]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: Engineering Sciences (Specialisation Program Engineering Sciences)
Compulsory Elective Modules (Business Administration oder Engineering Sciences)
Compulsory Elective Modules (Engineering Sciences)

Credits	Grading	Recurrence	Duration	Language	Level	Version
9 CP	graded	Each term	1 term	German/English	4	11

ID	Name	Term offered	Credits	Lecturers
Vehicle Development (Elective: at least 9 credits)				
T-MACH-102207	Tires and Wheel Development for Passenger Cars	**ST**	**4 CP**	**Leister**
T-MACH-111389	Fundamentals in the Development of Commercial Vehicles	**see notes**	**4 CP**	**Weber**
T-MACH-102156	Project Workshop: Automotive Engineering	**WT+ST**	**6 CP**	**Frey, Gießler**
T-MACH-110796	Python Algorithms for Vehicle Technology	**ST**	**4 CP**	**Rhode**
T-MACH-102148	Gear Cutting Technology	**WT**	**4 CP**	**Hoffmeister**
T-MACH-112126	Data-Driven Algorithms in Vehicle Technology	**WT**	**4 CP**	**Scheubner**
T-MACH-113862	Simulation with Lumped Parameters	**ST**	**3 CP**	**Geimer**
T-MACH-113863	Tutorial Simulation with Lumped Parameters	**ST**	**1 CP**	**Geimer**
T-MACH-115202	Autonomous Driving in Practice	**WT**	**6 CP**	**Simon**

Assessment
The assessment is carried out as partial exams.

The partial exams consists of a written exam (90 to 120 minutes) or an oral exam (duration 30 to 40 minutes).

Prerequisites
None

Competence Goal
The student

- knows and understands the procedures in automobile development,
- knows and understands the technical specifications at the development procedures,
- is aware of notable boundaries like legislation.

Content
By taking the module Vehicle Development the students get to know the methods and processes applied in the automobile industry. They learn the technical particularities which have to be considered during the vehicle development and it is shown how the numerous single components cooperate in a harmoniously balanced complete vehicle. There is also paid attention on special boundary conditions like legal requirements.

Workload
The total work load for this module is about 270 Hours (9 Credits). The partition of the work load is carried out according to the credit points of the courses of the module. The work load for courses with 6 credit points is about 180 hours, for courses with 4.5 credit points about 135 hours, for courses with 3 credit points about 90 hours, and for courses with 1.5 credit points about 45 hours. The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam duration and the time that is required to achieve the objectives of the module as an average student with an average performance.

Recommendations
Knowledge of the content of the courses *Engineering Mechanics I* [2161238], *Engineering Mechanics II* [2162276] and *Basics of Automotive Engineering I* [2113805], *Basics of Automotive Engineering II* [2114835] is helpful.

Teaching and Learning Methods
The teaching and learning procedures (lecture, lab course, workshop) are described for each course of the module separately.

3 Module components

T 3.1 Module component: Additive Manufacturing of Metallic and Ceramic Components [T-MACH-115251]

Coordinators: Prof. Dr.-Ing. Frederik Zanger
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Expansion	Version
Oral examination	8 CP	graded	Each winter term	1 semesters	1

Courses					
WT 26/27	**2149682**	Additive Manufacturing of Metallic and Ceramic Components	**6 SWS**	**Lecture / Practice /** 🗣	**Zanger**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral examination, duration approx. 40 minutes

Prerequisites
The following module components may not have started:

- T-MACH-114019 - Additive Fertigung metallischer Bauteile: Designoptimierung und Herstellung
- T-MACH-113985 - Additive Fertigung metallischer Bauteile

Additional Information
The course is offered in German.

Workload
240 hours

Below you will find excerpts from courses related to this module component:

V Additive Manufacturing of Metallic and Ceramic Components

2149682, WS 26/27, 6 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The course “Additive Manufacturing of Metallic and Ceramic Components” covers the theoretical fundamentals of metallic and ceramic additive manufacturing. As such, it provides the ideal foundation for the courses “Additive Manufacturing Project Laboratory: Design Optimization and Fabrication of Metallic Components” and “Additive Manufacturing Project Laboratory: Design Optimization and Fabrication of Ceramic Components.”

The course covers the underlying mechanisms as well as the necessary steps in the additive manufacturing process chain.

Students will learn about the following topics:

- The processes of selective laser melting (PBF-LB), directed energy deposition (DED), binder jetting (BJT), and vat-based photopolymerization (VPP)
- Design and operation of systems for the additive manufacturing of metallic and ceramic components
- Influence of process parameters on the quality of manufactured components
- Design of additive components for manufacturability
- Options for simulation-based support in the process chain
- Process monitoring and quality control in additive manufacturing
- Post-processing steps to achieve the required component properties.

Learning Outcomes:

Students ...

- are able to explain the basic principles of the laser-based additive manufacturing processes Powder Bed Fusion and Directed Energy Deposition, as well as the two processes Binder Jetting and vat-based photopolymerization
- can describe the characteristics and applications of the four aforementioned processes
- can describe the creation of a product along the entire additive manufacturing process chain (CAD, simulation, build job preparation, CAM) from the initial idea through to production
- are able to discuss the development process for components optimized for additive manufacturing
- can explain in detail the mechanisms behind the processes covered and derive measures to improve the process
- can evaluate and select options for post-processing additively manufactured components based on their requirements
- are able to name the most important methods for quality assurance in additive manufacturing as well as the relevant standards.

Workload:

regular attendance: 63 hours
self-study: 177 hours

Organizational issues
Vorlesungstermine dienstags und mittwochs, Übungstermine donnerstags.
Lectures are held on Tuesdays and Wednesdays; seminars are held on Thursdays.

Literature
Medien:
Skript zur Veranstaltung wird über ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in ilias (https://ilias.studium.kit.edu/).

T 3.2 Module component: Additive Manufacturing Processes [T-MACH-113570]

Coordinators: Prof. Dr.-Ing. Frederik Zanger
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101276 - Manufacturing Technology

Type	Credits	Grading	Term offered	Expansion	Version
Oral examination	4 CP	graded	Each summer term	1 semesters	1

Courses					
ST 2026	**2150702**	Additive Manufacturing Processes	**3 SWS**	**Lecture /** 🗣	**Zanger**
Exams					
ST 2026	**76-T-MACH-113570**	Additive Manufacturing Processes			**Zanger**
WT 26/27	**76-T-MACH-113570**	Additive Manufacturing Processes			**Zanger**

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral examination, duration approx. 20 minutes

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Additive Manufacturing Processes** — **Lecture (V) On-Site**
2150702, SS 2026, 3 SWS, Language: German, Open in study portal

Content
The course “Additive Manufacturing Processes” provides participants with in-depth knowledge of industrially relevant additive manufacturing processes and their process chains. During the course, students learn the theoretical principles and practical application aspects of the following processes:

MEX: Material extrusion
MJT: Material jetting
PBF: Powder bed fusion
BJT: Binder jetting
DED: Directed energy deposition
VPP: Vat photopolymerization.

In addition, the following topics are covered:

Holistic view of the process chain
Materials for additive manufacturing processes (production and characterisation)
Design methods and simulation in additive manufacturing
Future trends and innovative technologies.

The acquired knowledge is supplemented by practical lectures from industry, which offer valuable insights into current applications, challenges and innovations in additive manufacturing.

Learning Outcomes:

Students ...

can describe the principles and special features of industrially relevant additive manufacturing technologies
are able to explain the process of layer formation in additive manufacturing processes and evaluate it in terms of manufacturing possibilities
can describe the various methods of powder production and assess their advantages and disadvantages in relation to additive manufacturing
can name the essential materials for additive manufacturing, explain their properties and analyse their fields of application
are able to explain additive process chains, including heat treatment, post-processing and quality assurance, and to evaluate their significance for component quality.
can take into account the design requirements and process-specific features of additive manufacturing in component development
are able to classify current research and development topics in the field of additive manufacturing in the context of industrial applications

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Bekanntgabe von möglichen Praxisvorlesungen erfolgt in der ersten Vorlesung

Literature
Medien:
Skript zur Veranstaltung wird über ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in ilias (https://ilias.studium.kit.edu/).

T 3.3 Module component: Advanced Lab Blockchain Hackathon (Bachelor) [T-WIWI-111127]

Coordinators: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	see Annotations	1

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.4 Module component: Advanced Lab Informatics (Bachelor) [T-WIWI-110541]

Coordinators: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each term	1

Courses					
ST 2026	**2512204**	Lab Realisation of innovative services (Bachelor)	**3 SWS**	**Practical course /** 🗣	**Schiefer, Toussaint, Kruse**
ST 2026	**2512206**	Lab Agentic AI im Smart IoT Office (Bachelor)	**3 SWS**	**Practical course /** 🗣	**Oberweis, Rybinski, Ullrich**
ST 2026	**2512554**	Practical Course: Security, Usability and Society	**3 SWS**	**Practical course /** 💮	**Volkamer, Strufe, Hennig, Länge, Fallahi, Hilt, Reimer, Algedri, Mack**
WT 26/27	**2512554**	Praktikum Security, Usability and Society (Bachelor)	**3 SWS**	**Practical course /** 💮	**Volkamer, Strufe, Berens, Fallahi, Ballreich, Hennig, Länge, Hilt, Algedri, Mack, Matheis, Reimer**
Exams					
ST 2026	**7900029**	Practical lab Security, Usability and Society (Bachelor)			**Volkamer, Strufe**
ST 2026	**7900032**	Advanced Lab Agentic AI im Smart IoT Office (Bachelor)			**Oberweis**
ST 2026	**7900085**	Advanced Lab Realization of innovative services (Bachelor)			**Schiefer**
WT 26/27	**7900116**	Advanced Lab Security, Usability and Society (Bachelor)			**Volkamer**

Legend: 📱 Online, 💮 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The alternative exam assessment consists of:

- a practical work
- a presentation and
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

Prerequisites
None

Additional Information
The title of this course is a generic one. Specific titles and the topics of offered seminars will be announced before the start of a semester in the internet at https://portal.wiwi.kit.edu.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Lab Realisation of innovative services (Bachelor)

2512204, SS 2026, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
As part of the lab, the participants should work together in small groups to realize innovative services (mainly for students).

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Informationen zu Themen und die Anmeldung erfolgt bis Mitte März im Wiwi-Portal
https://portal.wiwi.kit.edu/ys

V Lab Agentic AI im Smart IoT Office (Bachelor)

2512206, SS 2026, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
As part of the lab, various topics on everyday automation are offered. During the lab, the participants will gain an insight into problem-solving oriented project work and work on a project together in small groups.

In case of questions, please contact fabian.rybinski@kit.edu.

Organizational issues
Informationen zu Themen und die Anmeldung erfolgt vor Praktikumsbeginn im Wiwi-Portal
https://portal.wiwi.kit.edu/ys

Bei Fragen bitte an fabian.rybinski@kit.edu wenden.

V Practical Course: Security, Usability and Society

2512554, SS 2026, 3 SWS, Language: English, Open in study portal

Practical course (P)
Blended (On-Site/Online)

Content
In the lab-course “Security, Usability and Society”, students deal with practical and interdisciplinary topics from the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two mandatory attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second to last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course is the work on the respective topic, a final presentation and a final report. After consultation with the supervisor, all components can be either completed in German or English.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course as well as the registration is organized via the WiWi-Portal. To reserve a place and choose a topic, students register for the course in the WiWi-Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited and topics are allocated in the order of registration.

V Praktikum Security, Usability and Society (Bachelor)

2512554, WS 26/27, 3 SWS, Language: English, Open in study portal

Practical course (P)
Blended (On-Site/Online)

Content
In the lab course “Security, Usability and Society”, students explore practical and interdisciplinary topics in the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two **mandatory** attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second-to-last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course are the work on the respective topic, a final presentation, and a final report. After consultation with the supervisor, all components can be completed in either German or English.

Please note: In-person attendance at the kick-off and final presentation is mandatory to be allocated a topic.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course, as well as the registration, are organized via the WiWi Portal. To reserve a place and select a topic, students register for the course in the WiWi Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited, and topics are allocated in the order of registration.

Workload
The total workload for this course depends on your module and is structured as follows:

For 4 LP:
- Attendance at lectures/exercises (presence time): 30 h
- Working on the topic and participation in the assessment: 90 h
- Total workload: 120 h (corresponds to 4,0 ECTS credits)

For 4,5 LP:
- Attendance at lectures/exercises (presence time): 30 h
- Working on the topic and participation in the assessment: 105 h
- Total workload: 135 h (corresponds to 4,5 ECTS credits)

T 3.5 Module component: Advanced Lab Programming 3 [T-WIWI-114597]

Coordinators: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2512208**	Lab Programming 3 (Bachelor)	**3 SWS**	**Practical course /** 🗣	**Oberweis, Fritsch, Rybinski, Kruse**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment of this course are practical work, presentations and a written thesis according to §4(2), 3 of the examination regulation. Practical work, presentations and a written thesis are weighted according to the course.

Prerequisites
None

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Lab Programming 3 (Bachelor)

2512208, WS 26/27, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
Registration information and the content of the lab will be announced on the WIWI-portal. Only bachelor students are allowed to attend.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

T 3.6 Module component: Advanced Lab Realization of Innovative Services (Bachelor) [T-WIWI-112915]

Coordinators: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each term	1

Courses					
ST 2026	**2512204**	Lab Realisation of innovative services (Bachelor)	**3 SWS**	**Practical course /** 🗣	**Schiefer, Toussaint, Kruse**
Exams					
ST 2026	**7900085**	Advanced Lab Realization of innovative services (Bachelor)			**Schiefer**

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
The alternative exam assessment consists of:

- a practical work
- a presentation and
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

Additional Information
As part of the lab, the participants should work together in small groups to produce innovative services (mainly for students).
Further information can be found on the ILIAS page of the lab.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Lab Realisation of innovative services (Bachelor)

2512204, SS 2026, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
As part of the lab, the participants should work together in small groups to realize innovative services (mainly for students).
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h
• Preparation and follow-up of course content: 50 h
• Exam preparation and participation in the assessment: 40 h
Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Informationen zu Themen und die Anmeldung erfolgt bis Mitte März im Wiwi-Portal
https://portal.wiwi.kit.edu/ys

T 3.7 Module component: Advanced Lab Security, Usability and Society [T-WIWI-108439]

Coordinators: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each term	4

Courses					
ST 2026	**2512554**	Practical Course: Security, Usability and Society	**3 SWS**	**Practical course /**	**Volkamer, Strufe, Hennig, Länge, Fallahi, Hilt, Reimer, Algedri, Mack**
ST 2026	**2512555**	Praktikum Security, Usability and Society (Master)	**3 SWS**	**Practical course /**	**Volkamer, Strufe, Hennig, Fallahi, Länge, Hilt, Algedri, Reimer, Mack**
WT 26/27	**2512554**	Praktikum Security, Usability and Society (Bachelor)	**3 SWS**	**Practical course /**	**Volkamer, Strufe, Berens, Fallahi, Ballreich, Hennig, Länge, Hilt, Algedri, Mack, Matheis, Reimer**
WT 26/27	**2512555**	Praktikum Security, Usability and Society (Master)	**3 SWS**	**Practical course /**	**Volkamer, Strufe, Berens, Fallahi, Ballreich, Hennig, Länge, Hilt, Mack, Matheis, Algedri, Reimer**
Exams					
ST 2026	**7900029**	Practical lab Security, Usability and Society (Bachelor)			**Volkamer, Strufe**
ST 2026	**7900178**	Practical Lab Security, Usability and Society (Master)			**Volkamer, Strufe**
WT 26/27	**7900116**	Advanced Lab Security, Usability and Society (Bachelor)			**Volkamer**
WT 26/27	**7900307**	Advanced Lab Security, Usability and Society (Master)			**Volkamer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Assessment takes the form of an alternative exam. It consists of a practical assignment, a presentation, and, if required, a written report. The lectures and the presentations will be in English. The written report can be written in either English or German after consultation with the supervisor.
Practical work, presentation, and written thesis are weighted according to the course.

Prerequisites
None

Recommendations
Knowledge from the lecture "Applied Informatics - Cybersecurity" is recommended.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Practical Course: Security, Usability and Society

2512554, SS 2026, 3 SWS, Language: English, Open in study portal

Practical course (P)
Blended (On-Site/Online)

Content
In the lab-course “Security, Usability and Society”, students deal with practical and interdisciplinary topics from the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two mandatory attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second to last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course is the work on the respective topic, a final presentation and a final report. After consultation with the supervisor, all components can be either completed in German or English.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course as well as the registration is organized via the WiWi-Portal. To reserve a place and choose a topic, students register for the course in the WiWi-Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited and topics are allocated in the order of registration.

V **Praktikum Security, Usability and Society (Master)** **Practical course (P)**
2512555, SS 2026, 3 SWS, Language: English, Open in study portal **Blended (On-Site/Online)**

Content
In the lab-course “Security, Usability and Society”, students deal with practical and interdisciplinary topics from the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two mandatory attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second to last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course is the work on the respective topic, a final presentation and a final report. After consultation with the supervisor, all components can be either completed in German or English.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course as well as the registration is organized via the WiWi-Portal. To reserve a place and choose a topic, students register for the course in the WiWi-Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited and topics are allocated in the order of registration.

V **Praktikum Security, Usability and Society (Bachelor)** **Practical course (P)**
2512554, WS 26/27, 3 SWS, Language: English, Open in study portal **Blended (On-Site/Online)**

Content
In the lab course “Security, Usability and Society”, students explore practical and interdisciplinary topics in the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two **mandatory** attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second-to-last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course are the work on the respective topic, a final presentation, and a final report. After consultation with the supervisor, all components can be completed in either German or English.

Please note: In-person attendance at the kick-off and final presentation is mandatory to be allocated a topic.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course, as well as the registration, are organized via the WiWi Portal. To reserve a place and select a topic, students register for the course in the WiWi Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited, and topics are allocated in the order of registration.

Workload
The total workload for this course depends on your module and is structured as follows:

For 4 LP:
- Attendance at lectures/exercises (presence time): 30 h
- Working on the topic and participation in the assessment: 90 h
- Total workload: 120 h (corresponds to 4,0 ECTS credits)

For 4,5 LP:
- Attendance at lectures/exercises (presence time): 30 h
- Working on the topic and participation in the assessment: 105 h
- Total workload: 135 h (corresponds to 4,5 ECTS credits)

V **Praktikum Security, Usability and Society (Master)** **Practical course (P)**
2512555, WS 26/27, 3 SWS, Language: English, Open in study portal **Blended (On-Site/Online)**

Content
In the lab course “Security, Usability and Society”, students explore practical and interdisciplinary topics in the field of IT security and privacy at the cutting edge of society. In addition to the programming of data-saving apps, the development or implementation of user studies can also be possible tasks in this course.

The course can be credited towards the KASTEL certificate. Further information about the KASTEL certificate can be found on the SECUSO website: https://secuso.aifb.kit.edu/Studium_und_Lehre.php

Prerequisites:

The internship is aimed at Bachelor's and Master's students from the Industrial Engineering and Management, Business Informatics and Computer Science degree programs as well as related degree programs.

Organization:

There are two **mandatory** attendance dates: The kick-off is scheduled for the first week of the lectures, and the final presentations will take place in the second-to-last week of lectures. Additional dates will be arranged individually with the supervisors. All in-person lectures will be held in English. The main components of the course are the work on the respective topic, a final presentation, and a final report. After consultation with the supervisor, all components can be completed in either German or English.

Please note: In-person attendance at the kick-off and final presentation is mandatory to be allocated a topic.

If you have any questions about the course or the registration, please contact contact@secuso.org.

Registration:

The topics for the course, as well as the registration, are organized via the WiWi Portal. To reserve a place and select a topic, students register for the course in the WiWi Portal. A description of the current topics as well as important dates and deadlines can also be found there.

Please note that the number of topics is limited, and topics are allocated in the order of registration.

Workload
The total workload for this course depends on your module and is structured as follows:

For 4 LP:
- Attendance at lectures/exercises (presence time): 30 h
- Working on the topic and participation in the assessment: 90 h
- Total workload: 120 h (corresponds to 4,0 ECTS credits)

For 4,5 LP:
- Attendance at lectures/exercises (presence time): 30 h
- Working on the topic and participation in the assessment: 105 h
- Total workload: 135 h (corresponds to 4,5 ECTS credits)

T 3.8 Module component: Advanced Lab Sociotechnical Information Systems Development (Bachelor) [T-WIWI-111124]

Coordinators: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	see Annotations	1

Assessment
The examination will no longer be offered from summer semester 2025.

Prerequisites
None

Additional Information
The course is no longer offered.

Workload
135 hours

T 3.9 Module component: Advanced Programming - Application of Business Software [T-WIWI-102748]

Coordinators: Prof. Dr. Stefan Klink
Prof. Dr. Andreas Oberweis
Dr.-Ing. Clemens Schreiber
Dr.-Ing. Meike Ullrich

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-105112 - Applied Informatics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	3

Courses					
WT 26/27	**2511026**	Advanced Programming - Application of Business Software	**2 SWS**	**Lecture /** 🗣	**Ullrich**
WT 26/27	**2511027**	Exercises Advanced Programming - Application of Business Software	**1 SWS**	**Practice /** 🗣	**Ullrich**
WT 26/27	**2511028**	Computer lab Advanced Programming - Application of Business Software	**2 SWS**	**Practice /** 🖥	**Ullrich**
Exams					
ST 2026	**7900049**	Advanced Programming - Application of Business Software			**Ullrich**
WT 26/27	**7900019**	Advanced Programming - Application of Business Software			**Ullrich**

Legend: 🖥 Online, 🌀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The success control takes place in the form of a written examination. The duration of the exam is 60 minutes. The examination is offered every semester and can be repeated at any regular examination date.
The prerequisite for taking the exam is successful participation in a computer lab during the lecture in the winter semester. Attendance is compulsory for individual dates of the computer lab. More detailed information on registration to the computer lab and exercise sessions will be announced in the first lecture and on the lecture homepage on ILIAS.
Admission to take the exam can only be acquired in the winter semester and is valid indefinitely.

Prerequisites
This course cannot be taken together with *Advanced Programming - Java Network Programming.*

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-102747 - Advanced Programming - Java Network Programming must not have been started.

Recommendations
Knowledge of the course "Foundations of Informatics I und II" are helpful.

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V Advanced Programming - Application of Business Software

2511026, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Business (or Enterprise) Information Systems (BIS), which are often implemented as standard software, form the backbone of modern organizations. They enable, support, and accelerate digital business processes and new forms of collaboration. In an era of platform economies, data-driven decision-making, and hybrid work models, BIS constitute a central infrastructure for economic activity.

This course provides theoretical and practical foundations for the design, adaptation, and implementation of enterprise information systems. Through lectures, exercises, and practical computer sessions, students acquire in-depth knowledge in the following areas:

- Advantages and disadvantages of business standard software, as well as selection criteria
- Modeling and analysis of business processes with standard software
- Types and application areas of business information systems
- Methods and challenges related to the introduction of standard software
- Sustainability in the context of of business information systems

This course cannot be taken together with *Advanced Programming - Java Network Programming* [2511020].

Learning objectives:

Students

- explain fundamental concepts, criteria, and application areas of information systems,
- identify and describe types and components of information systems,
- apply standard software to model, analyze, and evaluate business processes using exemplary scenarios,
- analyze the implementation, use, and impact of business standard software.

Recommendations:

Knowledge of the courses "Grundlagen der Informatik I und II" are helpful.

Notes:

- No registration is required for the lecture
- An registration is required for the exercises for participation in the Computer Lab and the subsequent exam admission
- The registration phase for the exercises starts in the first week after lecture begin and ends with the first exercise session
- Important informations regarding the registration, exact dates and deadlines will be communicated on the lecture website (ILIAS)

Workload:

- Lecture 30h
- Exercise course 15h
- Review and preparation of lectures 23h
- Review and preparation of exercises 10h
- Computer Lab 30h
- Exam preparation 26h
- Exam 1h
- Total 135h
- Exercise courses are done by student tutors

Literature

- Schönthaler, Vossen, Oberweis, Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.
- Hasenkamp, Stahlknecht: Einführung in die Wirtschaftsinformatik. Springer 2012.
- Hansen, Neumann: Wirtschaftsinformatik I. Grundlagen betrieblicher Informationsverarbeitung. UTB 2009.
- Mertens et al.: Grundzüge der Wirtschaftsinformatik. Springer 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T 3.10 Module component: Advanced Programming - Java Network Programming [T-WIWI-102747]

Coordinators: Prof. Dr. Dietmar Ratz
Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-105112 - Applied Informatics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	6

Courses					
ST 2026	**2511020**	Advanced Programming - Java Network Programming	**2 SWS**	**Lecture /** 🗣	**Ratz**
ST 2026	**2511021**	Übungen zu Programmierung kommerzieller Systeme - Anwendungen in Netzen mit Java	**1 SWS**	**Practice /** 🗣	**Ratz, Stegmaier, Boualili**
ST 2026	**2511023**	Rechnerpraktikum zu Programmierung kommerzieller Systeme - Anwendungen in Netzen mit Java	**2 SWS**	**/** 🗣	**Ratz, Stegmaier, Boualili**
Exams					
ST 2026	**7900041**	Advanced Programming - Java Network Programming			**Ratz**
WT 26/27	**7900020**	Advanced Programming - Java Network Programming			**Ratz**

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
At the end of the lecture period, a written examination (90 min.) is offered (according to §4(2), 1 SPO), for which - through successful participation in the exercises during the semester - admission must be obtained. The exact details will be announced in the lecture. The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be earned through successful participation in the exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). Details will be announced in the lecture

Prerequisites
This course cannot be taken together with Advanced Programming - Application of Business Software [2511026].

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-102748 - Advanced Programming - Application of Business Software must not have been started.

Additional Information
The registration for the participation in the computer lab (precondition for the exam participation) already takes place in the first lecture week!

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Advanced Programming - Java Network Programming

2511020, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
In the lecture, the exercises and computer labs to this course the practical handling with the programming language Java dominating within the range of economical applications is obtained. The basis for this is the current language standard. The knowledge from the lecture Introduction to Programming with Java will be deepened and extended. This is done, among other things, by addressing commercially relevant topics such as object-oriented modeling and programming, class hierarchy and inheritance, threads, applications and applets, AWT and Swing components for graphical user interfaces, exception and event processing, lambda expressions, input/output via streams, applications in networks, Internet communication, client and server programming, remote method invocation, servlets, Java Server Pages and Enterprise Java Beans.

This course cannot be taken together with *Advanced Programming - Application of Business Software* [2540886/2590886].

Learning objectives:

- Students learn the practical use of the object-oriented programming language Java and are enabled to design and implement component-based Internet applications using the latest technologies and tools.
- The ability to select and design these methods and systems appropriate to the situation and to use them for solving problems is imparted.
- Students are empowered to find strategic and creative answers in the search for solutions to well-defined, concrete and abstract problems.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (5 SWS × 15 weeks): 75 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Die Anmeldung zur Teilnahme am Rechnerpraktikum (Vorbedingung zur Klausurteilnahme) findet bereits in der ersten Vorlesungswoche statt!

Literature
Ratz, D. Schulmeister-Zimolong, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. 9. Aktualisierte und erweiterte Auflage, Hanser 2024.

Weiterführende Literatur:

- S. Zakhour, S. Hommel, J. Royal. Das Java Tutorial. Addison Wesley 2007
- W. Eberling, J. Lessner. Enterprise JavaBeans 3. Hanser Verlag 2007.
- R. Oechsle. Parallele und verteilte Anwendungen. 2. Auflage. Hanser Verlag 2007.
- Weitere Literatur wird in der Vorlesung bekannt gegeben.

T 3.11 Module component: Advanced Topics in Economic Theory [T-WIWI-102609]

Coordinators: Prof. Dr. Johannes Brumm
Prof. Dr. Kay Mitusch

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101501 - Economic Theory

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Irregular	1

Assessment
The assessment consists of a written exam (60min) (following §4(2), 1 of the examination regulation) at the end of the lecture period or at the beginning of the following semester.

Prerequisites
None

Recommendations
This course is designed for advanced Master students with a strong interest in economic theory and mathematical models. Bachelor students who would like to participate are free to do so, but should be aware that the level is much more advanced than in other courses of their curriculum.

T 3.12 Module component: Analalysis of Social Structurs (WiWi) [T-GEISTSOZ-109047]

Coordinators: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: M-GEISTSOZ-101167 - Sociology/Empirical Social Research

Type	Credits	Grading	Term offered	Version
Written examination	3 CP	graded	Each winter term	1

Courses					
WT 26/27	**5011004**	Analysis of Social Structures	**2 SWS**	**Lecture /**	**Nollmann**
WT 26/27	**5011007**	Analysis of Social Structures	**2 SWS**	**Practice /**	**Nollmann**
Exams					
WT 26/27	**7400029**	Analalysis of Social Structurs (WiWi)			**Nollmann**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

T 3.13 Module component: Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines [T-MACH-105173]

Coordinators: Dr.-Ing. Marcus Gohl
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2134150**	Gas, lubricating oil and operating media analysis in drive train development	**2 SWS**	**Lecture /** 🗣	**Gohl**
Exams					
ST 2026	**76-T-Mach-105173**	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines			**Gohl**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral examination, duration approx. 25 min, no aids

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Gas, lubricating oil and operating media analysis in drive train development

Lecture (V) On-Site

2134150, SS 2026, 2 SWS, Language: German, Open in study portal

Literature
Die Vorlesungsunterlagen werden vor jeder Veranstaltung an die Studenten verteilt.

T 3.14 Module component: Analysis of Multivariate Data [T-WIWI-103063]

Coordinators: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Irregular	1

Assessment
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites
None

Recommendations
Attendance of the courses Statistics 1 [2600008] and Statistics 2 [2610020] is recommended.

Additional Information
The lecture is not offered regularly. The courses planned for three years in advance can be found online.

Workload
135 hours

T 3.15 Module component: Analysis Tools for Combustion Diagnostics [T-MACH-105167]

Coordinators: Jürgen Pfeil
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2134134**	Analysis tools for combustion diagnostics	**2 SWS**	**Lecture / 🗣**	**Pfeil**
Exams					
ST 2026	**76-T-MACH-105167**	Analysis Tools for Combustion Diagnostics			**Pfeil**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral examination, Duration: 25 min., no auxiliary means

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Analysis tools for combustion diagnostics

2134134, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

T 3.16 Module component: Applied Data Science and Machine Learning in Engineering [T-MACH-115042]

Coordinators: Prof. Dr.-Ing. Anne Meyer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-107658 - Data Driven Engineering Fundamentals

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	4 CP	graded	Each summer term	1 semesters	1

Courses					
ST 2026	**2122352**	Applied Data Science and Machine Learning in Engineering	**4 SWS**	**Others / 🗣**	**Meyer**
Exams					
ST 2026	**76-T-MACH-115042**	Applied Data Science and Machine Learning in Engineering			**Meyer**

Legend: 💻 Online, 🎭 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Graded examination of another type; for further information, see ILIAS.

Prerequisites
“Data Science Fundamentals in Engineering”, “Grundlagen der Künstlichen Intelligenz ” or a comparable course must be passed.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Applied Data Science and Machine Learning in Engineering

2122352, SS 2026, 4 SWS, Language: English, Open in study portal

Others (sonst.)
On-Site

Content
Data-driven methods are transforming modern engineering, enabling smarter product design, more efficient production systems, and intelligent robotics. To prepare students for these challenges, this course emphasizes the applied, technical aspects of data-driven engineering.

Building on prior courses introducing data science and machine learning (see prerequisites), core content includes technical aspects of industrial data sources (e.g., database technologies, REST APIs), messaging technologies (e.g., MQTT), version control (e.g., git with GitLab), and server or cluster-based computations for scalable data processing (e.g., HPC at KIT). Students practice through guided exercises and work in small groups on applied machine learning case studies using real-world engineering data from our lab. The module also covers methods for model explainability and interpretability to support transparent decision-making in engineering applications.

The course is designed as an on-site project with regular in-person collaboration and close supervision, offering students continuous, structured, and individualized feedback on their code and technical implementation.

Prerequisite

“Data Science Fundamentals in Engineering”, “Grundlagen der Künstlichen Intelligenz ” or a comparable course must be passed.

Learning Objectives

After successful completion of the module, students are able to:

- **Apply** advanced data science and machine learning methods to engineering data sets, including data from industrial sources and streaming technologies.
- **Design and implement** data analysis and machine learning workflows using collaborative tools, version control, and cluster-based computing.
- **Analyze, interpret, and evaluate** the performance and limitations of machine learning models in applied engineering scenarios.

Additional Information

The number of participants is limited. Information on the application process is available in ILIAS.

Organizational Information

See further details on course organization at: lehre.imi.kit.edu and in ILIAS.

Workload

120 hours

Organizational issues
See ILIAS for time and location

T 3.17 Module component: Applied Informatics – Applications of Artificial Intelligence [T-WIWI-110340]

Coordinators: Dr.-Ing. Tobias Käfer
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics
M-WIWI-105112 - Applied Informatics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2511314**	Applied Informatics - Applications of Artificial Intelligence	**2 SWS**	**Lecture /**	**Käfer, Kinder, Li**
WT 26/27	**2511315**	Exercises to Applied Informatics - Applications of Artificial Intelligence	**1 SWS**	**Practice /**	**Käfer, Kinder, Li**
Exams					
ST 2026	**791-AIFB-AIAKI-HK**	Applied Informatics - Applications of AI (Registration extended until 26.07.2026)			**Käfer**
WT 26/27	**79AIFB_AKI_C2**	Applied Informatics – Applications of Artificial Intelligence (Registration until 08.02.2027)			**Käfer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Examination (60 min) according to §4, Abs. 2, 1 of the examination regulations or oral examination of approx. 20 minutes according to §4, Abs. 2, 2 of the examination regulations. The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites
None.

Recommendations
Basics in logic, e.g. from lecture Foundations of Informatics 1 are important.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Applied Informatics - Applications of Artificial Intelligence

2511314, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
The lecture provides insights into the fundamentals of artificial intelligence. Basic methods of artificial intelligence and their applications in industry are presented.

Applications of the AI is a sub-area of computer science dealing with the automation of intelligent behavior. In general, it is a question of mapping human intelligence. Methods of artificial intelligence are presented in various areas such as, for example, question answering systems, speech recognition and image recognition.

The lecture gives an introduction to the basic concepts of artificial intelligence. Essential theoretical foundations, methods and their applications are presented and explained.

This lecture aims to provide students with a basic knowledge and understanding of the structure, analysis and application of selected methods and technologies on artificial intelligence. The topics include, among others, knowledge modeling, machine learning, text mining, uninformed search, and intelligent agents.

Learning objectives:

The students

- consider current research topics in the field of artificial intelligence and in particular learn about the topics of knowledge modeling, machine learning, text mining and uninformed search.
- interdisciplinary thinking.
- technological approaches to current problems.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 60 hours
- Exam and exam preperation: 30 hours

V

Exercises to Applied Informatics - Applications of Artificial Intelligence

Practice (Ü)
On-Site

2511315, WS 26/27, 1 SWS, Language: German, Open in study portal

Content
The exercises are oriented on the lecture applications of AI.

Multiple exercises are held that capture the topics, held in the lecture Applications of AI and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

This lecture aims to provide students with a basic knowledge and understanding of the structure, analysis and application of selected methods and technologies on artificial intelligence. The topics include, among others, knowledge modeling, machine learning, text mining, uninformed search, and intelligent agents.

Learning objectives:

The students

- consider current research topics in the field of artificial intelligence and in particular learn about the topics of knowledge modeling, machine learning, text mining and uninformed search.
- interdisciplinary thinking.
- technological approaches to current problems.

T 3.18 Module component: Applied Informatics – Cybersecurity [T-WIWI-114156]

Coordinators: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics
M-WIWI-105112 - Applied Informatics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	2

Courses					
ST 2026	**2511550**	Applied Informatics – Cybersecurity	**2 SWS**	**Lecture /** 🗣	**Volkamer**
ST 2026	**2511551**	Exercise Applied Informatics – Cybersecurity	**1 SWS**	**Practice /** 🗣	**Volkamer, Berens, Ballreich**
Exams					
ST 2026	**79AIFB_CS_A1**	Applied Informatics – Cybersecurity (Registration until 14.09.2026)			**Volkamer**
WT 26/27	**79AIFB_CS_A2**	Applied Informatics – Cybersecurity (Registration until 08.02.2027)			**Volkamer**

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation, for which admission must be obtained through successful participation in the exercise during the semester.

The exam takes place every semester and can be repeated at every regular examination date.

Additional Information
Competence Goal

The student

- can explain and apply the basics of information security
- knows appropriate measures to achieve different protection goals and can implement these measures
- can assess the quality of organizational protective measures, i.e. among other things
- knows what has to be taken intoaccount when using the individual measures
- understands the differences between information security in the enterprise and in the private context
- knows the areas of application of a variety of relevant standards and knows their weaknesses
- knows and can explain the problems of information security which may arise from human-machine interaction
- can assess messages about detected security problems in a critical way
- can structure a software project in the field of information security and explain and present results in oral and written form
- can use the techniques of Human Centred Security and Privacy by Design to create user-friendly software.

Content

- Basics and concepts of information security
- Understanding the protection objectives of information security and various attack models (including associated assumptions)
- introduction of measures to achieve the respective protection goals, taking into account different attack models
- Note: In contrast to the IT Security lecture, measures such as encryption algorithms are treated only abstractly, i.e. the idea of the measure, assumptions to the attacker and the deployment environment.
- Presentation and analysis of problems of information security arising from human-machine interaction and presentation of the Human Centered Security by Design approach.
- Introduction into organizational protective measures and standards to be observed for companies.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Applied Informatics – Cybersecurity **Lecture (V) On-Site**
2511550, SS 2026, 2 SWS, Language: German, Open in study portal

Content

- Basics and concepts of information security
- Understanding the protection objectives of information security and various attack models (including associated assumptions)
- introduction of measures to achieve the respective protection goals, taking into account different attack models
- Note: In contrast to the IT Security lecture, measures such as encryption algorithms are treated only abstractly, i. e. the idea of the measure, assumptions to the attacker and the deployment environment.
- Presentation and analysis of problems of information security arising from human-machine interaction and presentation of the Human Centered Security by Design approach.
- Introduction into organisational protective measures and standards to be observed for companies

Learing objectives:

The student

- can explain the basics of information security
- knows suitable measures to achieve different protection goals
- can assess the quality of organisational protective measures, i. e. among other things knows what has to be taken into account when using the individual measures
- understands the differences between information security in the organisational and in the private context
- knows the areas of application of different standards and knows their weaknesses
- knows and can explain the problems of information security that which arise from human-machine interaction
- is able to deal with messages concerning found security problems in a critical way.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php).

Literature

- P. Gerber, M. Ghiglieri, B. Henhapl, O. Kulyk, K. Marky, P. Mayer, B. Reinheimer, and M. Volkamer, *Human Factors in Security*. Springer, Jan. 2018, pp. 83–98.
- C. Eckert, *IT-Sicherheit: Konzepte-Verfahren-Protokolle*. Walter de Gruyter, 2013

V Exercise Applied Informatics – Cybersecurity

Practice (Ü)
On-Site

2511551, SS 2026, 1 SWS, Language: German, Open in study portal

Content

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php).

T 3.19 Module component: Applied Informatics – Database Systems [T-WIWI-110341]

Coordinators: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics
M-WIWI-105112 - Applied Informatics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	2

Courses					
ST 2026	**2511200**	Applied Informatics - Database Systems	**2 SWS**	**Lecture / 🗣**	**Sommer**
ST 2026	**2511201**	Exercises Applied Informatics - Database Systems	**1 SWS**	**Practice / 🗣**	**Sommer**
Exams					
ST 2026	**791-AIFB-DBS-HK**	Applied Informatics - Database Systems (Registration extended until 26.07.2026)			**Sommer**
WT 26/27	**79AIFB_DBS_C5**	Applied Informatics – Database Systems (Registration until 08.02.2027)			**Sommer**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 minutes) in the first week after lecture period.

Additional Information
Replaces from summer semester 2020 T-WIWI-102660 "Database Systems".

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Applied Informatics - Database Systems

2511200, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
As the foundation of business information systems, database systems (DBS) play a central role in companies. Internal and external data are stored and processed in the company's databases. Proper management and organization of this data helps resolve numerous issues, enables simultaneous queries by multiple users, and serves as the organizational and operational foundation for all of the company's workflows and processes. The course introduces students to the field of database theory, covers the fundamentals of database languages and database systems, examines basic concepts of object-oriented and XML databases, and teaches the principles of multi-user database control and physical data organization. In addition, it provides an overview of database problems frequently encountered in business practice, such as those related to data correctness (operational and semantic integrity), restoring a consistent database state, and synchronizing parallel transactions.

Learning objectives:

Students

- explain the concepts and principles of database models, languages, and systems, as well as their potential applications,
- design relational databases based on a solid theoretical foundation,
- create queries for relational database systems,
- gain an overview of advanced database issues in business practice.

Workload:

- Attendance time – Lecture (2 SWS × 15 weeks): 30 h
- Attendance time – Tutorial (1 SWS × 15 weeks): 15 h
- Self-study – Lecture: 45 h
- Self-study – Tutorial: 25 h
- Exam preparation: 20 h
- Total workload: 135 h

Literature

- Gunter Schlageter, Wolffried Stucky: Datenbanksysteme: Konzepte und Modelle. 2., neubearb. u. erw. Aufl. Teubner, Stuttgart 1983.
- Alfons Kemper, André Eickler: Datenbanksysteme: Eine Einführung. 10., erw. und aktual. Aufl. De Gruyter Oldenbourg, Berlin, 2015.
- Ramez Elmasri, Sham Navathe: Fundamentals of Database Systems. 7. ed. Pearson, Harlow, 2016.
- Gunter Saake, Kai-Uwe Sattler, Andreas Heuer: Datenbanken. Konzepte und Sprachen. 6. Aufl. mitp, Heidelberg u. a., 2018.
- Weitere Literatur wird in der Vorlesung bekannt gegeben. / Additional reading material will be announced during the lecture.

V Exercises Applied Informatics - Database Systems

Practice (Ü)
On-Site

2511201, SS 2026, 1 SWS, Language: German, Open in study portal

Content

As the foundation of business information systems, database systems (DBS) play a central role in companies. Internal and external data are stored and processed in the company's databases. Proper management and organization of this data helps resolve numerous issues, enables simultaneous queries by multiple users, and serves as the organizational and operational foundation for all of the company's workflows and processes. The course introduces students to the field of database theory, covers the fundamentals of database languages and database systems, examines basic concepts of object-oriented and XML databases, and teaches the principles of multi-user database control and physical data organization. In addition, it provides an overview of database problems frequently encountered in business practice, such as those related to data correctness (operational and semantic integrity), restoring a consistent database state, and synchronizing parallel transactions.

Learning objectives:

Students

- explain the concepts and principles of database models, languages, and systems, as well as their potential applications,
- design relational databases based on a solid theoretical foundation,
- create queries for relational database systems,
- gain an overview of advanced database issues in business practice.

Workload:

- Attendance time – Lecture (2 SWS × 15 weeks): 30 h
- Attendance time – Tutorial (1 SWS × 15 weeks): 15 h
- Self-study – Lecture: 45 h
- Self-study – Tutorial: 25 h
- Exam preparation: 20 h
- Total workload: 135 h

Literature

- Gunter Schlageter, Wolffried Stucky: Datenbanksysteme: Konzepte und Modelle. 2., neubearb. u. erw. Aufl. Teubner, Stuttgart 1983.
- Alfons Kemper, André Eickler: Datenbanksysteme: Eine Einführung. 10., erw. und aktual. Aufl. De Gruyter Oldenbourg, Berlin, 2015.
- Ramez Elmasri, Sham Navathe: Fundamentals of Database Systems. 7. ed. Pearson, Harlow, 2016.
- Gunter Saake, Kai-Uwe Sattler, Andreas Heuer: Datenbanken. Konzepte und Sprachen. 6. Aufl. mitp, Heidelberg u. a., 2018.
- Weitere Literatur wird in der Vorlesung bekannt gegeben. / Additional reading material will be announced during the lecture.

T 3.20 Module component: Applied Informatics – Mobile Computing [T-WIWI-113957]

Coordinators: Dr.-Ing. Gunther Schiefer
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics
M-WIWI-105112 - Applied Informatics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2511226**	Applied Informatics - Mobile Computing	**2 SWS**	**Lecture /** 🗣	**Schiefer, Kruse**
ST 2026	**2511227**	Exercises Applied Informatics - Mobile Computing	**1 SWS**	**Practice /** 🗣	**Schiefer**
Exams					
ST 2026	**791-AIFB-AIMC-HK**	Applied Informatics – Mobile Computing (Registration extended until 26.07.2026)			**Schiefer**

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written (60 min) or oral examination.

Prerequisites
None

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Applied Informatics - Mobile Computing

2511226, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture covers the basics of mobile computing. These are interlinked with the economic background in Germany.

Contents are:

1. organizational matters
2. introduction & definitions
3. mobile devices
4. mobile radio technologies
5. mobile communications market
6. mobile applications
7. digital radio technologies
8. location & context

Note: The teaching units listed above each have a different scope.

Learning objectives:

If you are confronted with a question in your job which affects "Mobile Computing", you should be able to provide answers quickly and competently:

Market structures
technique
Possibilities for applications
lawsuits
issues

Workload:

The total workload for this course unit is approx. 135 hours (4.5 credit points).

Organizational issues
Vorlesung und Übung werden integriert angeboten.

Literature

- Jochen Schiller: Mobilkommunikation (2. Aufl. 2003)
  http://www.mi.fu-berlin.de/inf/groups/ag-tech/teaching/resources/ Mobile_Communications/course_Material/index.html
- Martin Sauter: Grundkurs Mobile Kommunikationssysteme (6. Aufl. 2015)
  http://link.springer.com/book/10.1007%2F978-3-658-08342-7
- Küpper, A.: Location-based Services. Fundamentals and Operation. Wiley & Sons, 2005.
- Roth, J.: Mobile Computing. Grundlagen, Technik, Konzepte. Dpunkt.verlag, 2. Auflage, 2005.
- Mansfeld, W.: Satellitenortung und Navigation:
  Grundlagen, Wirkungsweise und Anwendung globaler Satellitennavigationssysteme
- Dodel, H., Häupler, D.: Satellitennavigation

Einige relevante Informationen im Web

- Bundesnetzagentur http://www.bundesnetzagentur.de
  u.a. Jahresbericht und Marktbeobachtung
- VATM-Marktstudien
  http://www.vatm.de/vatm-marktstudien.html
- Verbände, bspw. BITKOM (bitkom.org), eco e.V. (eco.de)
- Presse, bspw. Teltarif, Heise, Golem, …
- Statistiken (Statista Lizenz des KIT)

T 3.21 Module component: Applied Informatics – Modelling [T-WIWI-110338]

Coordinators: Dr.-Ing. Andreas Fritsch
Prof. Dr. Andreas Oberweis

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101426 - Electives in Informatics
M-WIWI-105112 - Applied Informatics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2511030**	Applied Informatics - Modelling	**2 SWS**	**Lecture / 🗣**	**Fritsch**
WT 26/27	**2511031**	Exercises to Applied Informatics - Modelling	**1 SWS**	**Practice / 🗣**	**Rybinski**
Exams					
ST 2026	**791-AIFB-AIM-NK**	Applied Informatics - Modelling (Registration extended until 26.07. – Late registration: Waitlist only, seat not guaranteed))			**Fritsch**
WT 26/27	**79AIFB_AI1_C4**	Applied Informatics – Modelling (Registration until 08.02.2027)			**Oberweis**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written examination (60 min) in the first week after lecture period (according to Section 4 (2),1 of the examination regulation).

Prerequisites
None

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Applied Informatics - Modelling

2511030, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
In the context of complex information systems, modelling is of central importance, e.g. – in the context of systems to be developed – for a better understanding of their functionality or in the context of existing systems for supporting maintenance and further development.

Modelling, in particular modelling of information systems, forms the core part of this lecture. The lecture is organized in two parts. The first part mainly covers the modelling of static aspectes, the second part covers the modelling of dynamic aspects of information systems.

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

Learning objectives:

Students

- explain the strengths and weaknesses of various modeling approachesfor Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- modelling given situations in propositional and predicate logic and can interpret them,
- analyze various properties in propositional and predicate logic,
- create and evaluate a relational database schema and express queries in relational algebra.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature

- Bernhard Rumpe. Modellierung mit UML, Springer-Verlag, 2004.
- R. Elmasri, S. B. Navathe. Fundamentals of Database Systems. Pearson Education 2009.
- W. Reisig. Petrinetze, Springer-Verlag, 2010.

Weiterführende Literatur:

- U. Kastens, H. Kleine Büning. Modellierung – Grundlagen und Formale Methoden. Carl Hanser Verlag, 2014
- J.L. Peterson. Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
- U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag, 2000

V **Exercises to Applied Informatics - Modelling** **Practice (Ü) On-Site**
2511031, WS 26/27, 1 SWS, Language: German, Open in study portal

Content
In the context of complex information systems, modelling is of central importance, e.g. – in the context of systems to be developed – for a better understanding of their functionality or in the context of existing systems for supporting maintenance and further development.

Modelling, in particular modelling of information systems, forms the core part of this lecture. The lecture is organized in two parts. The first part mainly covers the modelling of static aspectes, the second part covers the modelling of dynamic aspects of information systems.

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

Learning objectives:

Students

- explain the strengths and weaknesses of various modeling approachesfor Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- modelling given situations in propositional and predicate logic and can interpret them,
- analyze various properties in propositional and predicate logic,
- create and evaluate a relational database schema and express queries in relational algebra.

Workload:

- Total effort: 120-135 hours
- Presence time: 45 hours
- Self study: 75-90 hours

Literature

- ◦ Bernhard Rumpe. Modellierung mit UML, Springer-Verlag, 2004.
  ◦ R. Elmasri, S. B. Navathe. Fundamentals of Database Systems. Pearson Education 2009.
  ◦ W. Reisig. Petrinetze, Springer-Verlag, 2010.

  Weiterführende Literatur:
  ◦ U. Kastens, H. Kleine Büning. Modellierung – Grundlagen und Formale Methoden. Carl Hanser Verlag, 2014
  ◦ J.L. Peterson. Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
  ◦ U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag, 2000

T 3.22 Module component: Artificial Intelligence in Production [T-MACH-112115]

Coordinators: Prof. Dr.-Ing. Jürgen Fleischer
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each winter term	1

Courses					
WT 26/27	**2149921**	Artificial Intelligence in Production	**3 SWS**	**Lecture /** 🗣	**Fleischer**
Exams					
ST 2026	**76-T-MACH-112970**	Artificial Intelligence in Production			**Fleischer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Exam (90 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Artificial Intelligence in Production** — **Lecture (V) On-Site**
2149921, WS 26/27, 3 SWS, Language: German, Open in study portal

Content
The module AI in Production is designed to teach students the practical, holistic integration of machine learning and artificial intelligence methods in production. The course is oriented towards the phases of the CRISP-DM process with the aim of developing a deep understanding of the necessary steps and content-related aspects (methods) within the individual phases. In addition to teaching the practical aspects of integrating the most important machine learning methods, the focus is primarily on the necessary steps for data generation and data preparation as well as the implementation and validation of the methods in an industrial environment.

The lecture"Artificial Intelligence in Production" deals with the theoretical basics in a practical context. Here, the six phases of the CRISP-DM process are run through sequentially and the necessary basics for the implementation of the respective phases are taught. The course first deals with the data sources that are prevalent in the production environment. Subsequently, possibilities for target-oriented data acquisition as well as data transfer and data storage are introduced. Possibilities for data filtering and data preprocessing are discussed and production-relevant aspects are pointed out. The course then covers in detail the necessary algorithms and procedures for implementing AI in production, before techniques and fundamentals for making the models permanent in production (deployment) are discussed.

Learning Outcomes:

The students

- understand the relevance for the application of AI in production and know the main drivers and challenges.
- will understand the CRISP-DM process for implementing AI projects in manufacturing. Students will be able to name the main data sources, data ingestion methods, communication architectures, models and methods for data processing.
- will understand the main machine learning techniques and be able to contrast and select them in the context of industrial issues.
- are able to assess whether a specific problem in the context of production can be solved in a target-oriented manner using machine learning methods, as well as what the necessary steps are for implementation.
- are able to assess the most important challenges and name possible approaches to solve them.
- are able to apply the phases of the CRISP-DM to a problem in production. Students will know the steps necessary to build a data pipeline and will be able to do so theoretically in the context of a real-world use case.
- are able to evaluate the results of common deep learning methods and, based on this, to theoretically elaborate and theoretically apply proposed solutions (from the field of machine learning).

Workload:

MACH:
regular attendance: 31,5 hours
self-study: 88,5 hours
WING:
regular attendance: 31,5 hours
self-study: 118,5 hours

Organizational issues
Vorlesungstermine begleitet durch Online-Programmierübungen.

Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Skript zur Veranstaltung wird über Ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.23 Module component: Automation and Autonomy in Logistics [T-MACH-113566]

Coordinators: Dr.-Ing. Carolin Brenner-Waldhof
Prof. Dr.-Ing. Kai Furmans

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106995 - Automation and Material Flow in Logistics

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	4 CP	graded	Each winter term	1 semesters	2

Courses					
WT 26/27	**2117050**	Automation and Autonomy in Logistics	**3 SWS**	**Lecture /** 🗣	**Brenner-Waldhof**
Exams					
WT 26/27	**76-T-MACH-113566**	Automation and Autonomy in Logistics			**Brenner-Waldhof**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written exam, duration 60 minutes

Prerequisites
none

Recommendations
none

Additional Information
The course is offered in English.

Workload 120 hours

In-class study 45 hours

Independent study 75 hours

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Automation and Autonomy in Logistics

2117050, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The course provides application-oriented knowledge on automated- and autonomous systems in logistics. The focus is on technologies such as mobile robots, humanoid robots, AI and control systems. The lecture is supplemented by practical exercises and impulses from industry in the form of guest lectures by companies. In a creative group exercise, students develop concepts for integrating autonomous/automated systems into logistics processes and evaluate their feasibility. In addition, participants program their own applications. The aim is to convey a deep understanding of the possibilities and limits of modern robotics in logistics and to gain practical experience with automated systems.

Organizational issues
Zusätzlich finden im Selmayr-Hörsaal (Geb. 50.38, Raum 0.22) folgende Termine statt:

26.11.2026 13-15 Uhr
1.12.2026 9-10.30 Uhr
7.12.2026 11.30-13.30 Uhr
10.12.2026 13-15 Uhr
14.12.2026 11.30-13.30 Uhr
17.12.2026 13-15 Uhr
21.12.2026 11.30-13.30 Uhr
04.02.2027 13-15Uhr
18.02.2027 13Uhr

T 3.24 Module component: Automotive Engineering I [T-MACH-102203]

Coordinators: Dr.-Ing. Martin Gießler
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Version
Written examination	8 CP	graded	Each winter term	4

Courses					
WT 26/27	**2113809**	Automotive Engineering I	**4 SWS**	**Lecture /** 🗣	**Gießler**
Exams					
ST 2026	**76-T-MACH-102203**	Automotive Engineering I			**Gießler**
WT 26/27	**76-T-MACH-102203**	Automotive Engineering I			**Gießler**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written examination

Duration: 120 minutes

Auxiliary means: none

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-100092 - Automotive Engineering I (in German) must not have been started.

Additional Information
The course is offered in English.

Below you will find excerpts from courses related to this module component:

V Automotive Engineering I

2113809, WS 26/27, 4 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
1. History and future of the automobile

2. Driving mechanics: driving resistances and driving performances, mechanics of longitudinal and lateral forces, active and passive safety

3. Drive systems: combustion engine, hybrid and electric drive systems

4. Transmission: clutches (e.g. friction clutch, visco clutch), transmission (e.g. mechanical transmission, hydraulic fluid transmission)

5.Power transmission and distribution: drive shafts, cardon joints, differentials

Learning Objectives:

The students know the movements and the forces at the vehicle and are familiar with active and passive safety. They have proper knowledge about operation of engines and alternative drives, the necessary transmission between engine and drive wheels and the power distribution. They have an overview of the components necessary for the drive and have the basic knowledge, to analyze, to evaluate, and to develop the complex system "vehicle".

Organizational issues
You will find the lecture material on ILIAS. To get the ILIAS password, KIT students refer to https://fast-web-01.fast.kit.edu/PasswoerterIlias/, students from eucor universities send an e-mail to martina.kaiser@kit.edu

Kann nicht mit LV Grundlagen der Fahrzeugtechnik I [2113805] kombiniert werden.

Can not be combined with lecture [2113805] Grundlagen der Fahrzeugtechnik I.

Literature
1. Robert Bosch GmbH: Automotive Handbook, 9th Edition, Wiley, Chichister 2015

2. Onori, S. / Serrao, L: / Rizzoni, G.: Hybrid Electric Vehicles - Energy Management Strategies, Springer London, Heidelberg, New York, Dordrecht 2016

3. Reif, K.: Brakes, Brake Control and Driver Assistance Systems - Function, Regulation and Components, Springer Vieweg, Wiesbaden 2015

4. Gauterin, F. / Gießler, M. / Gnadler, R.: Scriptum zur Vorlesung 'Automotive Engineering I', KIT, Institut für Fahrzeugsystemtechnik, Karlsruhe, jährlich aktualisiert

T 3.25 Module component: Automotive Engineering I (in German) [T-MACH-100092]

Coordinators: Dr.-Ing. Martin Gießler
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Expansion	Language	Version
Written examination	8 CP	graded	Each winter term	1 semesters		4

Courses					
WT 26/27	**2113805**	Automotive Engineering I	**4 SWS**	**Lecture /** 🗣	**Gießler**
Exams					
ST 2026	**76-T-MACH-100092**	Automotive Engineering			**Gießler**
WT 26/27	**76-T-MACH-100092**	Automotive Engineering			**Gießler**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written examination

Duration: 120 minutes

Auxiliary means: none

Prerequisites
The module component "T-MACH-102203 - Automotive Engineering I" is not started or finished. The module components "T-MACH-100092 - Grundlagen der Fahrzeugtechnik I" and "T-MACH-102203 - Automotive Engineering I" can not be combined.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-102203 - Automotive Engineering I must not have been started.

Additional Information
The course is offered in German.

Workload
240 hours

Below you will find excerpts from courses related to this module component:

V Automotive Engineering I

2113805, WS 26/27, 4 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. History and future of the automobile

2. Driving mechanics: driving resistances and driving performance, mechanics of longitudinal and lateral forces, active and passive safety

3. Drive systems: combustion engine, hybrid and electric drive systems

4. Transmission: clutches (e.g. friction clutch, visco clutch), transmission (e.g. mechanical transmission, hydraulic fluid transmission)

5. Power transmission and distribution: drive shafts, cardon joints, differentials

Learning Objectives:

The students know the movements and the forces at the vehicle and are familiar with active and passive safety. They have proper knowledge about operation of engines and alternative drives, the necessary transmission between engine and drive wheels and the power distribution. They have an overview of the components necessary for the drive and have the basic knowledge, to analyze, to evaluate, and to develop the complex system "vehicle".

Organizational issues
Das Vorlesungsmaterial wird auf ILIAS bereitgestellt. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/PasswoerterIlias/

Kann nicht mit der Veranstaltung [2113809] kombiniert werden.

Can not be combined with lecture [2113809].

Literature
1. Mitschke, M. / Wallentowitz, H.: Dynamik der Kraftfahrzeuge, Springer Vieweg, Wiesbaden 2014

2. Pischinger, S. / Seiffert, U.: Handbuch Kraftfahrzeugtechnik, Springer Vieweg, Wiesbaden 2016

3. Gauterin, F. / Unrau, H.-J. / Gnadler, R.: Scriptum zur Vorlesung "Grundlagen der Fahrzeugtechnik I", KIT, Institut für Fahrzeugsystemtechnik, Karlsruhe, jährlich aktualisiert

T 3.26 Module component: Automotive Engineering II [T-MACH-114435]

Coordinators: Dr.-Ing. Martin Gießler
Organisation: KIT Department of Mechanical Engineering

KIT Department of Business and Economics
Part of: M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	2

Courses					
ST 2026	**2114855**	Automotive Engineering II	**2 SWS**	**Lecture / 🗣**	**Gießler**
Exams					
ST 2026	**76-T-MACH-114435**	Automotive Engineering II			**Gießler**
ST 2026	**76-T-MACH-114435_oralexam**	Automotive Engineering II			**Gießler**
WT 26/27	**76-T-MACH-114435**	Automotive Engineering II			**Gießler**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written Examination

Duration: 90 minutes

Auxiliary means: none

Prerequisites
Only one out of the two moduls "M-MACH-102117 - Grundlagen der Fahrzeugtechnik II"and "M-MACH-114435 - Automotive Engineering II" is allowed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-102117 - Automotive Engineering II (in German) must not have been started.

Additional Information
The course is offered in English.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Automotive Engineering II

2114855, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

1. Chassis: Wheel suspensions (rear axles, front axles, kinematics of axles), tyres, springs, damping devices
2. Steering elements: Manual steering, servo steering, steer by wire
3. Brakes: Disc brake, drum brake, comparison of the designs

Learning Objectives:

The students have an overview of the modules which are necessary for the tracking of a motor vehicle and the power transmission between vehicle and roadway. They have knowledge of different wheel suspensions, tyres, steering elements, and brakes. They know different design versions, functions and the influence on driving and braking behavior. They are able to correctly develop the appropriate components. They are ready to analyze, to evaluate, and to optimize the complex interaction of the different components under consideration of boundary conditions.

Literature
Elective literature:

1. Robert Bosch GmbH: Automotive Handbook, 9th Edition, Wiley, Chichester 2015
2. Heißing, B. / Ersoy, M.: Chassis Handbook - fundamentals, driving dynamics, components, mechatronics, perspectives, Vieweg+Teubner, Wiesbaden 2011
3. Gießler, M. / Gnadler, R.: Script to the lecture "Automotive Engineering II", KIT, Institut of Vehicle System Technology, Karlsruhe, annual update

T 3.27 Module component: Automotive Engineering II (in German) [T-MACH-102117]

Coordinators: Dr.-Ing. Martin Gießler
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	3

Courses					
ST 2026	**2114835**	Automotive Engineering II	**2 SWS**	**Lecture /** 🗣	**Gießler**
ST 2026	**2114855**	Automotive Engineering II	**2 SWS**	**Lecture /** 🗣	**Gießler**
Exams					
ST 2026	**76-MACH-102117_mdl**	Automotive Engineering II (in German)			**Gießler**
ST 2026	**76-T-MACH-102117**	Automotive Engineering II			**Gießler**
WT 26/27	**76-T-MACH-102117**	Automotive Engineering II			**Gießler**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Examination

Duration: 90 minutes

Auxiliary means: none

Prerequisites
Only one out of the two moduls "M-MACH-102117 - Grundlagen der Fahrzeugtechnik II"and "M-MACH-114435 - Automotive Engineering II" is allowed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-114435 - Automotive Engineering II must not have been started.

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Automotive Engineering II

2114835, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Chassis: Wheel suspensions (rear axles, front axles, kinematics of axles), tyres, springs, damping devices
2. Steering elements: Manual steering, servo steering, steer by wire
3. Brakes: Disc brake, drum brake, comparison of designs

Learning Objectives:

The students have an overview of the modules which are necessary for the tracking of a motor vehicle and the power transmission between vehicle bodywork and roadway. They have knowledge of different wheel suspensions, tyres, steering elements, and brakes. They know different design versions, functions and the influence on driving and braking behavior. They are able to correctly develop the appropriate components. They are ready to analyze, to evaluate, and to optimize the complex interaction of the different components under consideration of boundary conditions.

Organizational issues
Kann nicht mit der Veranstaltung [2114855] kombiniert werden.

Can not be combined with lecture [2114855]

Literature
1. Heißing, B. / Ersoy, M.: Fahrwerkhandbuch: Grundlagen, Fahrdynamik, Komponenten, Systeme, Mechatronik, Perspektiven, Springer Vieweg, Wiesbaden, 2013

2. Breuer, B. / Bill, K.-H.: Bremsenhandbuch: Grundlagen - Komponenten - Systeme - Fahrdynamik, Springer Vieweg, Wiesbaden, 2017

3. Unrau, H.-J. / Gnadler, R.: Scriptum zur Vorlesung 'Grundlagen der Fahrzeugtechnik II', KIT, Institut für Fahrzeugsystemtechnik, Karlsruhe, jährliche Aktualisierung

V Automotive Engineering II

Lecture (V)
On-Site

2114855, SS 2026, 2 SWS, Language: English, Open in study portal

Content

1. Chassis: Wheel suspensions (rear axles, front axles, kinematics of axles), tyres, springs, damping devices
2. Steering elements: Manual steering, servo steering, steer by wire
3. Brakes: Disc brake, drum brake, comparison of the designs

Learning Objectives:

The students have an overview of the modules which are necessary for the tracking of a motor vehicle and the power transmission between vehicle and roadway. They have knowledge of different wheel suspensions, tyres, steering elements, and brakes. They know different design versions, functions and the influence on driving and braking behavior. They are able to correctly develop the appropriate components. They are ready to analyze, to evaluate, and to optimize the complex interaction of the different components under consideration of boundary conditions.

Literature
Elective literature:

1. Robert Bosch GmbH: Automotive Handbook, 9th Edition, Wiley, Chichester 2015
2. Heißing, B. / Ersoy, M.: Chassis Handbook - fundamentals, driving dynamics, components, mechatronics, perspectives, Vieweg+Teubner, Wiesbaden 2011
3. Gießler, M. / Gnadler, R.: Script to the lecture "Automotive Engineering II", KIT, Institut of Vehicle System Technology, Karlsruhe, annual update

T 3.28 Module component: Autonomous Driving in Practice [T-MACH-115202]

Coordinators: Kevin Simon
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101265 - Vehicle Development
M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	6 CP	graded	Each winter term	1

Courses					
WT 26/27	**2113820**	Autonomous Driving in Practice	**3 SWS**	**Lecture / Practice /** 🗣	**Frey, Simon**
Exams					
WT 26/27	**76-T-MACH-115202**	Autonomous Driving in Practice			**Simon**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The final grade is based on: 2 written exams (duration about 30 minutes) and the final presentation of the practical task (duration 30 minutes max.), including the final report (2-3 pages). Submission of the homework is mandatory.

The overall impression will be evaluated.

Recommendations
Prior experience in autonomous driving, automotive engineering, and machine learning is a plus.

Additional Information
Due to capacity limitations, the lecture is limited to 16 students. If necessary, a selection process will be conducted. Places will be allocated based on the students' academic progress (semester level and subject-specific programming skills).

The course will be conducted in English.

Workload
180 hours

Below you will find excerpts from courses related to this module component:

V Autonomous Driving in Practice

2113820, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
The main objective of this course is to implement the pipeline required for automated/autonomous driving functions using a real test vehicle. This includes environmental perception using various sensors, processing the collected sensor data, planning driving maneuvers, and finally executing the maneuvers via the actuators.
- Sensor data acquisition: Setup and data recording of the sensor systems on the test vehicle
- Perception: Data annotation, segmentation of sensor data, object detection
- Maneuver planning: Path and trajectory planning, behavior generation, etc.
- Maneuver execution: Vehicle control, implementation of the driving maneuver in the real test vehicle via actuators

Organizational issues
Begrenzte Teilnehmerzahl mit Auswahlverfahren, in englischer Sprache. Bewerbungen sind am Ende des vorhergehenden Semesters einzureichen.
Termine und Raum werden über die Institutshomepage bekannt gegeben.

Limited number of participants with selection procedure, in English language. Please send the application at the end of the previous semester

Date and room: see homepage of institute.

T 3.29 Module component: B2B Sales Management [T-WIWI-111367]

Coordinators: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101424 - Foundations of Marketing

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2572187**	B2B Sales Management	**2 SWS**	**Lecture /** 🗣	**Klarmann**
Exams					
ST 2026	**7900021**	B2B Sales Management			**Klarmann**
WT 26/27	**7900125**	B2B Sales Management			**Klarmann**

Legend: 🖥 Online, Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
Assessment is based on the preparation and delivery of a presentation based on a case study (max. 30 points) and a written exam(ination) with additional resources, in the form of an open-book exam(ination) (max. 60 points). In addition, students have the option to participate in classroom tasks (max. 30 points) and a sales presentation (max. 15 points). A total of 120 points can be earned in the course. Further details regarding the assessment format will be announced during the lecture.

The B2B Sales Management course has a limited enrollment. There are 40 spots distributed among 8 presentation groups (5 people per group).

Prerequisites
None.

Additional Information
For further information, please contact Marketing and Sales Research Group (cin.kit.edu).

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V B2B Sales Management

2572187, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Content

The event is designed to teach you taking on marketing responsibility in a very special business environment. This involves companies that sell and market their (often technically highly complex) products themselves to other companies, which is referred to as "business-to-business" (B2B) marketing and sales. Since traditional communication instruments (e.g. advertising) often hardly work in this environment and many projects lead to a long-term cooperation between supplier and customer, (personal) sales play a special role in marketing. Therefore, this event introduces marketing in B2B markets on the one hand and deals with questions of sales and distribution on the other hand.

Topics with regard to B2B sales management are:

- Basic aspects of B2B sales and B2B purchasing
- Understanding of marketing challenges in specific B2B business types (commodities, systems, solutions)
- Value pricing and value-based selling
- Organizational buying behavior
- Basics of B2B customer relationship management (e.g. key account management, reference customer management)
- Sales process (lead generation, sales presentations, customer-oriented selling, closing)
- Sales automation

Learning objectives

Students

- Are familiar with marketing and sales peculiarities and challenges in B2B environments
- Are able to identify different B2B business types and their marketing characteristics
- Are familiar with central theories of organizational buying behavior
- Are familiar with central objectives of Customer Relationship Management in B2B environments and are able to implement them with appropriate tools
- Are able to prioritize customers and calculate B2B Customer Lifetime Value
- Know how B2B sales presentations work and have also gained practical experience in this area
- Are able to determine value-based prices

Workload

The total workload for this course is approximately 135.0 hours.
Attendance time: 35.0 hours
Self-study: 100.0 hours

Organization

A detailed schedule will be announced.

Literature

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T 3.30 Module component: Bachelor's Thesis [T-WIWI-115142]

Coordinators: Studiendekan des KIT-Studienganges
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107751 - Bachelor's Thesis

Type	Credits	Grading	Version
Final Thesis	15 CP	graded	1

Assessment
see module description

Prerequisites
see module description

Final Thesis
This module component represents a final thesis. The following periods have been supplied:

Submission deadline	6 months
Maximum extension period	1 months
Correction period	6 weeks

Workload
450 hours

T 3.31 Module component: Basic Principles of Economic Policy [T-WIWI-103213]

Coordinators: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101668 - Economic Policy I

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	see Annotations	1

Courses					
ST 2026	**2560280**	Basic Principles of Economic Policy	**2 SWS**	**Lecture /**	**Ott**
ST 2026	**2560281**	Exercises of Basic Principles of Economic Policy	**1 SWS**	**Practice /**	**Ghoniem**
Exams					
ST 2026	**7900106**	Basic Principles of Economic Policy			**Ott**
WT 26/27	**7900079**	Basic Principles of Economic Policy			**Ott**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Success is assessed in the form of a written examination (60 minutes). The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Recommendations
Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2610012], and Economics II [2600014].

Additional Information
Please note that the lecture will not be held in summer semester 2026. The exam is offered.

Description:

Theory of general economic policy and discussion of current economic policy topics:

- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning objectives:

Students learn:

- To apply basic concepts of micro- and macroeconomic theories to economic policy issues.
- to develop arguments on how state intervention in the market can be legitimized from a welfare economic perspective
- to derive theory-based policy recommendations.

Learning content:

- Market interventions: microeconomic perspective
- Market interventions: macroeconomic perspective
- Institutional economic aspects
- Economic policy and welfare economics
- Economic policy makers: Political-economic aspects

Workload:

- Total effort at 4.5 LP: approx. 135 hours
- Presence time: approx. 30 hours
- Self-study: approx. 105 hours

Media:

See course announcement

References:

See course announcement

Below you will find excerpts from courses related to this module component:

V **Basic Principles of Economic Policy** **Lecture (V)**
2560280, SS 2026, 2 SWS, Language: German, Open in study portal **On-Site**

Content
The lecture deals with theories of general economic policy and discussion of current economic policy topics:

- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning objectives:

Students shall be given the ability to

- apply basic concepts of micro- and macroeconomic theories to economic policy issues
- develop arguments on how state intervention in the market can be legitimized from a welfare economic perspective
- derive theory-based policy recommendations

Recommendations:

Basic micro- and macroeconomic knowledge is required, especially as taught in the courses Economics I [2610012] and Economics II [2600014].

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Assessment:

The examination takes place in the form of a written examination (60min) (according to §4(2), 1 SPO). The examination is offered every semester and can be repeated at any regular examination date.

Organizational issues
Die Vorlesung wird im SoSe 2026 aufgrund eines Forschungssemesters nicht gelesen; Übung und Klausur finden statt.

Zugehörige Veranstaltung: Übungen zur Einführung in die Wirtschaftspolitik [2560281]
Vorbereitungsmaterialien finden Sie im Ilias.

Literature

- Klump, Rainer (2013): Wirtschaftspolitik. Pearson Studium
- Baldwin, Richard und Charles Wyplosz (2019): The Economics of European Integration, 6. Edition, McGraw-Hill Education, London
- Foliensatz zur Vorlesung
- Übungsaufgaben

V Exercises of Basic Principles of Economic Policy

2560281, SS 2026, 1 SWS, Language: German, Open in study portal

Practice (Ü)
On-Site

Organizational issues
Zugehörige Veranstaltung: [2560280] Einführung in die Wirtschaftspolitik

Literature

- Klump, Rainer (2013): Wirtschaftspolitik. Pearson Studium
- Baldwin, Richard und Charles Wyplosz (2019): The Economics of European Integration, 6. Edition, McGraw-Hill Education, London
- Foliensatz zur Vorlesung
- Übungsaufgaben

T 3.32 Module component: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]

Coordinators: Prof. Dr. Gerd Gutekunst
Prof. Dr. Berthold Wigger

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101403 - Public Finance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2560134**	Basics of German Company Tax Law and Tax Planning	**3 SWS**	**Lecture /** 🗣	**Wigger, Gutekunst**
Exams					
ST 2026	**790unbe**	Basics of German Company Tax Law and Tax Planning			**Wigger**
WT 26/27	**790unbe**	Basics of German Company Tax Law and Tax Planning			**Wigger**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Success is assessed in the form of a written examination (90 minutes). The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Recommendations
Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course “Öffentliche Einnahmen” beforehand.

Below you will find excerpts from courses related to this module component:

V Basics of German Company Tax Law and Tax Planning

2560134, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Workload:
The total workload for this course is approximately 135.0 hours. For further information see German version.

T 3.33 Module component: Basics of Technical Logistics [T-MACH-113013]

Coordinators: Dr.-Ing. Martin Mittwollen
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106995 - Automation and Material Flow in Logistics

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each winter term	4

Courses					
WT 26/27	**2117057**	Fundamentals of technical logistics	**3 SWS**	**Lecture / Practice /**	**Mittwollen**

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
The success control takes place in the form of an examination performance of a different kind. This is composed as follows:
50% assessment of a project report in the form of a presentation with commentary
50% assessment of the presentation followed by a colloquium
To pass the exam, both components must be passed.
The overall impression is evaluated.

Prerequisites
none

Recommendations
Knowledge of the basics of technical mechanics recommended.

Additional Information
The course is offered in German

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Fundamentals of technical logistics** — **Lecture / Practice (VÜ) Blended (On-Site/Online)**
2117057, WS 26/27, 3 SWS, Language: German, Open in study portal

Content
Course content:

- Conveyed goods/conveying equipment (overview, properties, classification)
- Technical logistics processes and machines
- Energy transmission and conversion from the energy source to the load
- Electrical and mechanical transmission elements
- Hoisting gear, chassis
- Drives in conveyor technology
- Identification
- Operating behavior

Learning objectives:

After successfully completing the course, you will be able to work independently and in a team to:

- Describe technical logistics processes and machines.
- Describe the basic structure and mode of operation of conveyor technology machines using models.
- Apply the basic knowledge you have learned to real systems and machines or plan them.

Description:

The course concept combines **self-directed learning with practical application**. Students first work through the theoretical content independently using digital learning materials such as videos and scripts (**Studybytes on ILIAS**) and then use the face-to-face time (**on-campus sessions**) to apply what they have learned in interactive project work and discussions. This concept promotes **flexible, independent learning**, supports active engagement with the content, and enables targeted **practical application of knowledge**.

Off-campus:

- Self-study using Studybytes on ILIAS: videos with teaching content, scripts, bullet points, self-check questions, exercise sheets, further reading

On-campus:

- Face-to-face sessions with practical application of what has been learned

Organizational issues
Konzept: Kombination aus selbstgesteuertem Lernen mit praktischer Anwendung - siehe Beschreibung

On-Campus-Termine (geplant, Abweichungen werden im ILIAS-Kurs bekanntgegeben):

Ort: IFL Selmayr Saal (Geb. 50.38, Raum 0.23), jeweils Dienstags von 14.00 - 17.15 Uhr

Erfolgskontrolle: Prüfungsleistung anderer Art: Bearbeitung eines Projektes in 2er/3er Gruppen, schriftliche Ausarbeitung, Vorstellung der Präsentation mit anschließendem Kolloquium; Individualnoten durch Kenntlichmachung des jeweiligen Arbeitsanteils

Die Gesamtnote wird anhand eines Gesamteindruckes über alle Komponenten der Prüfung (Ausarbeitung, Präsentation, Kolloquium) hinweg vergeben

T 3.34 Module component: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II [T-MACH-100967]

Coordinators: Prof. Dr. Andreas Guber
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	3

Courses					
ST 2026	**2142883**	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II	**2 SWS**	**Lecture /** 🗣	**Guber, Ahrens**
Exams					
ST 2026	**76-T-MACH-100967**	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II			**Guber**
WT 26/27	**76-T-MACH-100967**	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II			**Guber**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written exam (75 Min.)

Prerequisites
none

Additional Information
The course is offered in German

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II

Lecture (V) On-Site

2142883, SS 2026, 2 SWS, Language: German, Open in study portal

Content
Examples of use in Life-Sciences and biomedicine: Microfluidic Systems:
LabCD, Protein Cristallisation
Microarrys
Tissue Engineering
Cell Chip Systems
Drug Delivery Systems
Micro reaction technology
Microfluidic Cells for FTIR-Spectroscopy
Microsystem Technology for Anesthesia, Intensive Care and Infusion
Analysis Systems of Person´s Breath
Neurobionics and Neuroprosthesis
Nano Surgery

Organizational issues
Zu jedem Vorlesungstermin werden via ILIAS die jeweiligen Folien im PDF-Format zur Verfügung gestellt.

schriftl. Prüfung: Mo, 07.09.2026, 8 - 10 Uhr; 10.21 Gottlieb-Daimler-Hörsaal

Literature

Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005

Buess, G.: Operationslehre in der endoskopischen Chirurgie, Band I und II;
Springer-Verlag, 1994

M. Madou
Fundamentals of Microfabrication

T 3.35 Module component: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III [T-MACH-100968]

Coordinators: Prof. Dr. Andreas Guber
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	3

Courses					
ST 2026	**2142879**	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III	**2 SWS**	**Lecture /** 🗣	**Guber, Ahrens**
Exams					
ST 2026	**76-T-MACH-100968**	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III			**Guber**
WT 26/27	**76-T-MACH-100968**	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III			**Guber**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written exam (75 Min.)

Prerequisites
none

Additional Information
The course is offered in German

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III

Lecture (V) On-Site

2142879, SS 2026, 2 SWS, Language: German, Open in study portal

Content
Examples of use in minimally invasive therapy
Minimally invasive surgery (MIS)
Endoscopic neurosurgery
Interventional cardiology
NOTES
OP-robots and Endosystems
License of Medical Products and Quality Management

Organizational issues
Zu jedem Vorlesungstermin werden via ILIAS die jeweiligen Folien im PDF-Format zur Verfügung gestellt.

schriftl. Prüfung: Mo, 28.09.2026, 8:00 - 10:00 Uhr; 10.21 Gottlieb-Daimler.Hörsaal

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005

Buess, G.: Operationslehre in der endoskopischen Chirurgie, Band I und II;
Springer-Verlag, 1994

M. Madou
Fundamentals of Microfabrication

T 3.36 Module component: Boosting of Combustion Engines [T-MACH-105649]

Coordinators: Dr.-Ing. Johannes Kech
Dr. Nicolas Lachenmaier

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2134153**	Boosting of Combustion Engines	**2 SWS**	/ 🗣	**Kech**
Exams					
ST 2026	**76-T-MACH-105649**	Boosting of Combustion Engines			**Kech, Lachenmaier**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral exam, 20 min

Prerequisites
none

Additional Information
This course is offerd in German.

Workload
120 hours

T 3.37 Module component: Brand Management [T-WIWI-112156]

Coordinators: Prof. Dr. Ann-Kristin Kupfer
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101424 - Foundations of Marketing

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2572190**	Brand Management	**2 SWS**	**Lecture /**	**Kupfer**
WT 26/27	**2572191**	Brand Management Exercise	**1 SWS**	**Practice /**	**Cinar**
Exams					
ST 2026	**7900047**	Brand Management			**Kupfer**
WT 26/27	**7900158**	Brand Management			**Kupfer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment of success will be done by the preparation and presentation of a case study as well as a written exam. Further details will be announced during the lecture.

Prerequisites
None

Recommendations
Students are highly encouraged to actively participate in class.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Brand Management

2572190, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Students learn the theoretical foundations of brand management and its most important concepts. They learn both about the importance of brands for consumers as well as the importance of brands for firms. Special emphasis will be given to the development of brand strategies. Furthermore, students will learn how to evaluate and apply brand instruments. A tutorial offers the opportunity to apply the key learnings of the lecture using case studies.

The learning objectives are as follows:

- Getting to know the theoretical foundations of brand management
- Evaluating strategic branding options (e.g., relating to the development of the core of the brand and the brand architecture) and operative brand instruments (e.g., relating to the brand name and logo)
- Fostering critical and analytical thinking skills and the application of knowledge to marketing problems
- Improving English skills

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

T 3.38 Module component: CAD Workshop [T-MACH-114767]

Coordinators: Prof. Dr.-Ing. Arne Rönnau
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-107658 - Data Driven Engineering Fundamentals

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	4 CP	graded	Each term	1 semesters	2

Courses					
ST 2026	**2121330**	CAD Workshop	**4 SWS**	**Project /** 🗣	**Rönnau**
WT 26/27	**2121330**	CAD Workshop	**4 SWS**	**Seminar /** 🗣	**Rönnau**
Exams					
ST 2026	**76-T-MACH-114767**	CAD Workshop			**Rönnau**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Learning control is an examination of another type. The overall impression is evaluated. The following aspects are included in the grading:

- Completion of the project task and documentation
- 4 interim presentations
- Final presentation including live demonstration

The grading scale will be announced in the course.

Prerequisites
The Brick T-MACH-102153 - PLM-CAD Workshop must not have been started.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-102153 - PLM-CAD Workshop must not have been started.

Additional Information
Attendance is compulsory. The number of participants is limited. Information on the application process is available in ILIAS.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V CAD Workshop

2121330, SS 2026, 4 SWS, Language: English, Open in study portal

Project (PRO)
On-Site

Content
The CAD Workshop is a project-based bachelor-level module that provides students with a hands-on introduction to the computer-aided development of a mechatronic prototype. The course has a particular focus on the development process from the initial idea to a functional prototype, including. team organisation, product management, and marketing.

Students work in small teams and operate under limited resources (time, budget, and personnel). Based on a task defined at the beginning of the workshop, the teams develop a product concept and implement it along a structured development process. The focus lies less on the design's complexity and more on the exemplary experience with typical tasks and challenges encountered throughout the development process, such as role and task allocation, workflow definition, bill of materials, version and data management, as well as project and time planning.

In parallel, students translate their concepts into mechanical designs using CAD software (e.g., Autodesk Fusion 360), with particular emphasis on creating assemblies. At least two components need to be manufactured using additive manufacturing methods (3D printing), while also providing basic insights into classical CAD design of individual parts. The designed components are assembled into a mechatronic prototype that may include basic electronic and software-based functionality. The control system of the prototype is implemented by the students.

The entire development process is documented, regularly reflected upon in milestone presentations, and finally presented in a final presentation, including a live demonstration of the prototype.

Learning Objectives

After successfully completing the module, students are able to:

- Work effectively in interdisciplinary teams and define roles, workflows, and responsibilities
- Develop a technical prototype under realistic constraints (time and resources)
- Create simple part designs with CAD, optimised for 3D printing
- Create CAD models of assemblies and integrate them into a coherent development process
- Conceive, build, and evaluate simple mechatronic systems
- Document and present project results in a clear and marketing-oriented manner

Additional Information

The number of participants is limited. Information on the application process is available in ILIAS.

Organizational Information

A project-based workshop with collaborative group work requiring regular attendance and active participation. Details regarding the schedule, assessment criteria, and milestones will be announced at the beginning of the course.

See further details on course organisation at: teaching.imi.kit.edu and in ILIAS.

Workload 120 hours

- regular attendance: 60 hours
- self-study and project work: 60 hours

Organizational issues
See ILIAS for time and location / Zeit und Ort siehe ILIAS

T 3.39 Module component: CAE-Basics [T-MACH-113507]

Coordinators: Prof. Dr.-Ing. Tobias Düser
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-107658 - Data Driven Engineering Fundamentals

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	3 CP	graded	Each winter term	1 semesters	4

Courses					
WT 26/27	**2145160**	CAE-Basics	**3 SWS**	**Lecture /** 🗣	**Düser**
Exams					
ST 2026	**76-T-MACH-113507**	CAE-Basics			**Düser, Ott**
WT 26/27	**76-T-MACH-113507**	CAE-Basics			**Düser, Ott**

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written exam with a duration of 60 minutes.

Prerequisites
Admission to the exam only with successful completion of CAE-Basics Workshop

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-113899 - CAE-Basics Workshop must have been passed.

Recommendations
Knowledge of the lectures "Mechanical Design A" and "Engineering Mechanics 1" is assumed.

Additional Information
The number of participants is limited to 30 for students enrolled in the Industrial Engineering and Management program. Selection is based on degree program, academic progress, waiting time and lottery (in that order).

The course is offered in English.

Workload
90 hours

Below you will find excerpts from courses related to this module component:

V CAE-Basics

2145160, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

- Fundamentals of Computer Aided Design (CAD)
- Parameter-based modeling of assemblies
- Introduction to Finite Element Analysis (FEA)
- Strength and deformation analysis of solids using FE models

The course is offered in English.

Organizational issues
Zusätzlich zum Besuch der Lehrveranstaltungen sind praktische Übungen eigenständig zu bearbeiten.

In addition to attending the courses, practical exercises must be completed independently.

T 3.40 Module component: CAE-Basics Workshop [T-MACH-113899]

Coordinators: Prof. Dr.-Ing. Tobias Düser
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-107658 - Data Driven Engineering Fundamentals

Type	Credits	Grading	Term offered	Expansion	Version
Coursework (practical)	1 CP	pass/fail	Each winter term	1 semesters	3

Courses					
WT 26/27	**2145160**	CAE-Basics	**3 SWS**	**Lecture /** 🗣	**Düser**
Exams					
WT 26/27	**76-T-MACH-113899**	CAE-Basics Workshop			**Düser, Ott**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Successful solution of an individual computer task that includes the practical content from the CAD and FEM exercises. Details are given in the lecture "CAE-Basics". Passing this course allows to register to the exam "CAE-Basics" (see T-MACH-113507). No on-site attendance required.

Prerequisites
None

Recommendations
None

Additional Information
The number of participants is limited to 30 for students enrolled in the Industrial Engineering and Management program. Selection is based on degree program, academic progress, waiting time and lottery (in that order).

The course is offered in English.

Workload
30 hours

Below you will find excerpts from courses related to this module component:

V CAE-Basics

2145160, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

- Fundamentals of Computer Aided Design (CAD)
- Parameter-based modeling of assemblies
- Introduction to Finite Element Analysis (FEA)
- Strength and deformation analysis of solids using FE models

The course is offered in English.

Organizational issues
Zusätzlich zum Besuch der Lehrveranstaltungen sind praktische Übungen eigenständig zu bearbeiten.

In addition to attending the courses, practical exercises must be completed independently.

T 3.41 Module component: Civil Law for Beginners [T-INFO-103339]

Coordinators: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: M-INFO-101190 - Introduction to Civil Law

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	3

Courses					
WT 26/27	**2424012**	Civil Law for Beginners	**4 SWS**	**Lecture /** 🗣	**Matz**
Exams					
ST 2026	**7500041**	Civil Law for Beginners			**Matz**
WT 26/27	**7500012**	Civil Law for Beginners			**Matz**

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.42 Module component: Climatology [T-PHYS-101092]

Coordinators: Prof. Dr. Joaquim José Ginete Werner Pinto
Organisation: KIT Department of Physics
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Version
Coursework	4 CP	pass/fail	Each summer term	4

Courses					
ST 2026	**4051111**	Klimatologie	**3 SWS**	**Lecture /** 🗣	**Ginete Werner Pinto**
ST 2026	**4051112**	Übungen zu Klimatologie	**1 SWS**	**Practice /** 🗣	**Ginete Werner Pinto, Christ, Dillerup, NN**
Exams					
ST 2026	**7800005**	Climatology			**Ginete Werner Pinto**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
none

Workload
120 hours

T 3.43 Module component: CO2-Neutral Combustion Engines and their Fuels I [T-MACH-111550]

Coordinators: Prof. Dr. Thomas Koch
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101275 - Combustion Engines I

Type	Credits	Grading	Term offered	Expansion	Version
Oral examination	5 CP	graded	Each winter term	1 semesters	3

Courses					
WT 26/27	**2133113**	CO2-neutral combustion engines and their fuels I	**3 SWS**	**Lecture / Practice /**	**Koch**
Exams					
ST 2026	**76-T-MACH-102194**	CO2-neutral combustion engines and their fuels I			**Koch**
WT 26/27	**76-T-MACH-102194**	CO2-neutral combustion engines and their fuels I			**Kubach, Koch**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral examination, Duration: approx. 25 min., no auxiliary means

Prerequisites
none

Additional Information
This course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V CO2-neutral combustion engines and their fuels I

2133113, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Organizational issues
Übungstermine Donnerstags nach Bekanntgabe in der Vorlesung

T 3.44 Module component: CO2-Neutral Combustion Engines and their Fuels II [T-MACH-111560]

Coordinators: Prof. Dr. Thomas Koch
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	4

Courses					
ST 2026	**2134151**	CO2-neutral combustion engines and their fuels II	**3 SWS**	**Lecture / Practice /** 🗣	**Koch**
Exams					
ST 2026	**76-T-MACH-104609**	Combustion Engines, Hydrogen Engines and CO2 neutral Fuels II			**Koch**
WT 26/27	**76-T-MACH-104609**	Combustion Engines, Hydrogen Engines and CO2 neutral Fuels II			**Kubach, Koch**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral examination, duration: 25 minutes, no auxiliary means

Prerequisites
none

Recommendations
Fundamentals of Combustion Engines II helpful

Additional Information
This course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V CO2-neutral combustion engines and their fuels II

2134151, SS 2026, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

T 3.45 Module component: Competition in Networks [T-WIWI-100005]

Coordinators: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101668 - Economic Policy I

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	3

Courses					
WT 26/27	**2561204**	Competition in Networks	**2 SWS**	**Lecture /**	**Mitusch**
WT 26/27	**2561205**	Übung zu Wettbewerb in Netzen	**1 SWS**	**Practice /**	**Mitusch, Corbo, Latsch**
Exams					
ST 2026	**7900274**	Competition in Networks			**Mitusch**
WT 26/27	**7900221**	Competition in Networks			**Mitusch**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

Prerequisites
None.

Recommendations
Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Competition in Networks

2561204, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Network or infrastructure industries like telecommunication, transport, and utilities form the backbone of modern economies. The lecture provides an overview of the economic characteristics of network industries. The planning of networks is complicated by the multitude of aspects involved (like spatial differentiation and the like). The interactions of different companies - competition or cooperation or both - are characterized by complex interdependencies within the networks: network effects, economies of scale, effects of vertical integration, switching costs, standardization, compatibility etc. appear increasingly in these sectors and even tend to appear in combination. Additionally, government interventions can often be observed, partly driven by the aims of competition policy and partly driven by the aims industrial policy. All these issues are brought up, analyzed formally (in part) and illustrated by several examples in the lecture

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Literatur und Skripte werden in der Veranstaltung angegeben.

T 3.46 Module component: Computational Macroeconomics [T-WIWI-112723]

Coordinators: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101501 - Economic Theory

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	3

Courses					
ST 2026	**2500162**	Computational Macroeconomics	**2 SWS**	**Lecture /** 🗣	**Schang, Brumm**
ST 2026	**2500164**	Übung zu Computational Macroeconomics	**1 SWS**	**Practice /** 🗣	**Schang**
Exams					
ST 2026	**7900201**	Computational Macroeconomics			**Brumm**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
This component will no longer be offered starting from the winter semester 27/28. The final opportunity to enroll and complete the assessment is the summer semester 27.

The assessment takes place in the form of a written 60 min. examination during the lecture-free period of the semester. The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Computational Macroeconomics

2500162, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Computational Macroeconomics combines macroeconomic theory with hands-on programming. The course provides you with both an analytical understanding of macroeconomic models and the tools needed to build and solve them.

At its core, the course introduces lifecycle and overlapping generations (OLG) models — a foundational framework for analyzing how different generations interact in the economy. These models are widely used in macroeconomic research to study questions such as the effect of demographic change on returns to capital or the design and reform of pension systems.

Alongside the economic theory, the course builds practical skills in numerical solution methods, with a focus on value function iteration. You will implement these methods directly in Python, bridging the gap between abstract economic modeling and working, executable code.

By the end of the course, you will be able to build and analyze OLG models from the ground up, apply value function iteration to solve quantitative economic models, and implement solution algorithms in Python.

This course is ideal preparation for writing a thesis at the Chair of Macroeconomics and for anyone looking to engage seriously with modern economic research.

T 3.47 Module component: Constitution and Properties of Wearresistant Materials [T-MACH-102141]

Coordinators: Prof. Sven Ulrich
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	3

Courses					
ST 2026	**2194643**	Constitution and Properties of Wear resistant materials	**2 SWS**	**Lecture /** 🗣	**Ulrich**
Exams					
ST 2026	**76-T-MACH-102141**	Constitution and Properties of Wearresistant Materials			**Ulrich**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral examination (about 30 min)

no tools or reference materials

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Constitution and Properties of Wear resistant materials

2194643, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The assessment consists of an oral exam (ca. 30 min) taking place at the agreed date (according to Section 4(2), 2 of the examination regulation). The re-examination is offered upon agreement.

Teaching Content:

introduction

materials and wear

unalloyed and alloyed tool steels

high speed steels

stellites and hard alloys

hard materials

hard metals

ceramic tool materials

superhard materials

new developments

regular attendance: 22 hours
self-study: 98 hours

Basic understanding of constitution of wear-resistant materials, of the relations between constitution, properties and performance, of principles of increasing of hardness and toughness of materials as well as of the characteristics of the various groups of wear-resistant materials.

Recommendations: none

Organizational issues
Die Blockveranstaltung findet in folgendem Zeitraum statt:

26.05./27.05.2026: jeweils von 8:00-19:00 Uhr sowie

28.05.2026: 8:00-13:00 Uhr

Ort: KIT-CN, Geb. 681, Raum 214

Anmeldung verbindlich bis zum 24.05.2026 unter sven.ulrich@kit.edu.

Nach der Anmeldung wird Ihnen im Falle einer Online-Veranstaltung der Link zur Vorlesung per E-Mail am 25.05.2026 mitgeteilt.

Literature
Laska, R. Felsch, C.: Werkstoffkunde für Ingenieure, Vieweg Verlag, Braunschweig, 1981

Schedler, W.: Hartmetall für den Praktiker, VDI-Verlage, Düsseldorf, 1988

Schneider, J.: Schneidkeramik, Verlag moderne Industrie, Landsberg am Lech, 1995

Kopien der Abbildungen und Tabellen werden verteilt; Copies with figures and tables will be distributed

T 3.48 Module component: Construction Technology [T-BGU-101691]

Coordinators: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-BGU-101004 - Fundamentals of Construction

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	6 CP	graded	Each term	1 semesters	1

Courses					
ST 2026	**6200410**	Construction Technology	**3 SWS**	**Lecture /**	**Gentes, Haghsheno, Schneider**
ST 2026	**6200411**	Exercises to Construction Technology	**1 SWS**	**Practice /**	**Gentes, Haghsheno, Schneider, Waleczko**
Exams					
ST 2026	**8230101691**	Construction Technology			**Haghsheno**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
written exam with 75 minutes

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
180 hours

T 3.49 Module component: Consumer Psychology [T-WIWI-114292]

Coordinators: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101424 - Foundations of Marketing

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Assessment
The assessment of success takes the form of a presentation (weighting 30%) as part of the exercise, evaluations of weekly assignments throughout the semester (30%) and a written examination (90 minutes, weighting 40%). The details of the assessment will be announced at the beginning of the course.

Prerequisites
None.

Additional Information
Please note: Due to a research sabbatical of Prof. Scheibehenne, this course will not be offered in the summer semester 2026. The course is expected to be available again in the summer semester 2027.

Important information

Due to the interactive nature of the class, it is important to regularly participate in the weekly meetings and to regularly submit written assignments in preparation of these meetings. The assignments and active participation is part of the final grade. The 'Übung' associated with this course is mandatory: Students will be asked to do presentations in groups (introduce and discuss academic papers assigned by the lecturer). This will take place over one day (as a blocked event) during the semester (When and where will be announced at the beginning of the semester). The presentation also counts towards the final grade. There will be no weekly or bi-weekly Übung besides this event.

Goal

The goal of the class is to gain a better understanding of the psychological factors that influence consumer behavior. This includes situational, biological, cognitive, social, and evolutionary factors. We will address these questions from an interdisciplinary perspective. While the main focus is on theories from psychology, we will also incorporate relevant research from Marketing, Cognitive Science, Biology, and Economics.

Description

Just like Physics is an important foundation for Engineering, Psychology is an important basis for Economics, Management, and Marketing. Hence, getting a better understanding of the 'human condition' provides deeper insights into economic theory. This is particularly true for consumer behavior. Consumer decisions are ubiquitous in daily life, and they can have long-ranging and important consequences for individual (financial) well-being and health but also for societies and the planet as a whole. We will explore how consumer behavior is shaped by social influences, situational and cognitive constraints, as well as by emotions, motivations, evolutionary forces, neuronal processes, and individual differences. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates. The class will be taught in English.

Grading

Grading is based on three pillars: Active participation during the semester (homework assignments, in-class participation, 30%), your presentation in the Übung (30%) and a written exam at the end of the semester (40%). The grading of the homework will be based on two randomly selected weeks throughout the semester. The exam will cover the content of the class. The exam questions will be in English. You are allowed to bring a language dictionary into the exam, but you are not allowed to bring notes. Details about the content and the format of the exam will be announced in the lecture. All part-grades and the final grade will be communicated by the end of the semester.

Workload

The total workload for this course is approximately 135 hours:

Presence time: 30 hours

Preparation and wrap-up of the course: 45 hours

Exam and exam preparation: 60 hours

For further information, please contact the research group Cognition and Consumer Behavior (http://cub.iism.kit.edu/).

Workload
135 hours

T 3.50 Module component: Control of Mobile Machines [T-MACH-111821]

Coordinators: Simon Becker
Prof. Dr.-Ing. Marcus Geimer

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101266 - Automotive Engineering
M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Version
Oral examination	3 CP	graded	Each summer term	4

Courses					
ST 2026	**2114080**	Control of Mobile Machines	**2 SWS**	**Lecture /** 🗣	**Becker, Geimer**
Exams					
ST 2026	**76-T-MACH-111821**	Control of mobile machines			**Becker**

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of an oral exam (approx. 20 min) taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
A prerequisite for participation in the examination is the preparation of a semester report. T-MACH-111820 must be passed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-111820 - Control of Mobile Machines – Prerequisites must have been passed.

Additional Information
The course is offered in German.

Workload
90 hours

Below you will find excerpts from courses related to this module component:

V Control of Mobile Machines

2114080, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

- Basics of sensors, controls and control architectures in mobile machines
- Basics and functionalities of data communication in mobile machines (CAN-Bus, PROFIBUS, Ethernet, ...)
- Legal aspects and requirements (SIL-level, ...)
- Requirements for sensors for use in mobile machines
- Introduction to machine learning methods and their application for the control of mobile machines
- Overview of current research and developments in the field of agricultural robotics
- Implementation of a specific task within the exercise lessons
- The results of the semester task will be summarized in a short report as a pre-requisite for the exam.

Learning objectives

The students learn the theoretical basics of data communication as well as the architecture of control systems in mobile machines. Furthermore, they will be able to identify influences and general conditions during usage and derive practical and legal requirements for sensors and control systems. The students will learn methods of machine learning for control tasks in mobile machines as well as their architecture and the handling of training data. After participating in the exercise, they will be able to implement, train and validate a control system for a specific task.

Recommendations

Basic knowledge of electrical engineering and computer science is recommended. Initial programming knowledge, preferably in Python, is required. The number of participants is limited as hardware will be provided for the exercise. Prior registration is required, details will be announced on the web pages of the Institute of Vehicle Systems Engineering / Department of Mobile Machinery. In case of high registration numbers exceeding the capacities, a selection among all interested persons will take place according to qualification.

regular attendance: 21 hours
total self-study: 92 hours

Literature

Etschberger, K.: Controller Area Network, Grundlagen, Protokolle, Bausteine, Anwendungen; München, Wien: Carl Hanser Verlag, 2002.
Engels, H.: CAN-Bus - CAN-Bus-Technik einfach, anschaulich und praxisnah dargestellt; Poing: Franzis Verlag, 2002.

CAN-Bus-Technik einfach, anschaulich und praxisnah dargestellt; Poing: Franzis Verlag, 2002.

T 3.51 Module component: Control of Mobile Machines – Prerequisites [T-MACH-111820]

Coordinators: Simon Becker
Prof. Dr.-Ing. Marcus Geimer

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101266 - Automotive Engineering
M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Version
Coursework	1 CP	pass/fail	Each summer term	2

Courses					
ST 2026	**2114081**	Control of Mobile Machines	**2 SWS**	**Practice / 🗣**	**Becker, Geimer**
Exams					
ST 2026	**76-T-MACH-111820**	Control of mobile machines - Advance			**Becker, Geimer**

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Preparation of a report on the completion of the semester task

Prerequisites
none

Additional Information
The course is offered in German.

Workload
30 hours

T 3.52 Module component: Control Technology [T-MACH-105185]

Coordinators: Dr.-Ing. Philipp Gönnheimer
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	2

Courses					
ST 2026	**2150683**	Control Technology	**2 SWS**	**Lecture /** 🗣	**Gönnheimer**
Exams					
ST 2026	**76-T-MACH-105185**	Control Technology			**Gönnheimer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Exam (60 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Control Technology** — **Lecture (V) On-Site**
2150683, SS 2026, 2 SWS, Language: German, Open in study portal

Content
The lecture control technology gives an integral overview of available control components within the field of industrial production systems.
The first part of the lecture deals with the fundamentals of signal processing and with control peripherals in the form of sensors and actors which are used in production systems for the detection and manipulation of process states.
The second part handles with the function of electric control systems in the production environment. The main focus in this chapter is laid on programmable logic controls, computerized numerical controls and robot controls. Finally the course ends with the topic of cross-linking and decentralization with the help of bus systems.
The lecture is very practice-oriented and illustrated with numerous examples from different branches.

The following topics will be covered:

- Signal processing
- Control peripherals
- Programmable logic controls
- Numerical controls
- Controls for industrial robots
- Distributed control systems
- Field bus
- Trends in the area of control technology

Learning Outcomes:

The students …

- are able to name the electrical controls which occur in the industrial environment and explain their function.
- can explain fundamental methods of signal processing. This involves in particular several coding methods, error protection methods and analog to digital conversion.
- are able to choose and to dimension control components, including sensors and actors, for an industrial application, particularly in the field of plant engineering and machine tools. Thereby, they can consider both, technical and economical issues.
- can describe the approach for projecting and writing software programs for a programmable logic control named Simatic S7 from Siemens. Thereby they can name several programming languages of the IEC 1131.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Medien:
Skript zur Veranstaltung wird über ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in ilias (https://ilias.studium.kit.edu/).

T 3.53 Module component: Conveying Technology and Logistics [T-MACH-102135]

Coordinators: Prof. Dr.-Ing. Kai Furmans
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each summer term	2

Courses					
ST 2026	**2119100**	Fördertechnik und Logistiksysteme	**2 SWS**	**Seminar / 🗣**	**Furmans**
WT 26/27	**2119100**	Fördertechnik und Logistiksysteme	**1 SWS**	**Seminar / 🗣**	**Furmans**
Exams					
ST 2026	**76-T-MACH-102135**	Conveying Technology and Logistics			**Furmans**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Fördertechnik und Logistiksysteme

2119100, SS 2026, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
The goal of the seminar is to deal with different topics related to the materials handling and logistics. Depending on the topic, the students can work on the either alone or in a group. At the end the results are presented and discussed with a final presentation. To prepare the work for the seminar an introductory event is scheduled at the beginning.

Organizational issues
Ort: Gebäude 50.38, Raum 0.22, Termine siehe Homepage

V Fördertechnik und Logistiksysteme

2119100, WS 26/27, 1 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
The goal of the seminar is to deal with different topics related to the materials handling and logistics. Depending on the topic, the students can work on the either alone or in a group. At the end the results are presented and discussed with a final presentation. To prepare the work for the seminar an introductory event is scheduled at the beginning.

Organizational issues
Weiteres siehe Homepage

T 3.54 Module component: Data Science Fundamentals in Engineering [T-MACH-114078]

Coordinators: Prof. Dr.-Ing. Anne Meyer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-107658 - Data Driven Engineering Fundamentals

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	4 CP	graded	Each winter term	1 semesters	3

Courses					
WT 26/27	**2121360**	Data Science Fundamentals in Engineering	**3 SWS**	**Lecture / Practice /** 🗣	**Meyer**
Exams					
ST 2026	**76-T-MACH-114078**	Data Science Fundamentals in Engineering			**Meyer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The examination of another type consists of:

1. An approximately 15-minute colloquium on the course work, as well as
2. an oral examination lasting approximately 25 minutes.

The overall impression is evaluated.

Additional Information
The course is offered in English.

Workload 120 hours

In-class study 45 hours

Independent study 75 hours

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Data Science Fundamentals in Engineering

2121360, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Data science and data-driven methods are an essential component of modern engineering and affect all stages of the product lifecycle, from data-supported product design to production, quality assurance, and intelligent or autonomous technical systems. This module introduces fundamental concepts, methods, and workflows of data science and machine learning with a strong focus on engineering applications.

Students gain an understanding of engineering-specific data characteristics and learn how to design and implement basic data analysis and machine learning pipelines. One component of the course is to work on two data science and machine learning challenges using engineering data sets. Students apply state-of-the-art Python libraries to explore data, build models, and evaluate their performance.

The topics of this course include:

- Engineering data sources, data types, data quality, and data representation
- Data science workflows, exploratory data analysis, and visualization
- Statistical modeling and machine learning methods (regression, classification, clustering)
- Model training, evaluation, validation, and generalization
- Overfitting, model selection, and hyperparameter optimization
- Machine learning pipelines and practical implementation aspects
- Fundamentals of deep learning and neural networks for engineering applications

This module provides foundational competencies for subsequent courses in data-driven engineering, machine learning, and artificial intelligence.

Learning Objectives

After successful completion of the module, students are able to:

- **Explain** the role of data science, machine learning, and deep learning in engineering and their complementarity to simulation- and optimization-based approaches.
- **Analyze** engineering data sets with respect to data quality, structure, and suitability for data-driven, learning-based methods.
- **Apply** exploratory data analysis, statistical modeling, machine learning, and basic deep learning methods to engineering problems.
- **Design and implement** data analysis, machine learning, and deep learning pipelines using state-of-the-art Python libraries.
- **Evaluate** the performance, generalization capability, and limitations of machine learning and deep learning models using appropriate validation techniques.

Organizational Information

See further details on course organization at: lehre.imi.kit.edu and in ILIAS

Workload

120 hours

Organizational issues
The exercises take place on Wednesdays on specific days from 9:45 a.m. to 1:00 p.m. For further information, see ILIAS.

T 3.55 Module component: Data-Driven Algorithms in Vehicle Technology [T-MACH-112126]

Coordinators: Dr. Stefan Scheubner
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101265 - Vehicle Development
M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	4 CP	graded	Each winter term	1 semesters	2

Courses					
WT 26/27	**2113840**	Data-Driven Algorithms in Vehicle Technology	**2 SWS**	**Lecture /**	**Scheubner**
Exams					
ST 2026	**76-T-MACH-112126**	Data-Driven Algorithms in Vehicle Technology			**Scheubner**
WT 26/27	**76-T-MACH-112126**	Data-Driven Algorithms in Vehicle Technology			**Scheubner**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Examination

Duration: 90 minutes

Additional Information
The course is offered in English.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Data-Driven Algorithms in Vehicle Technology

2113840, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Course Syllabus: Data-Driven Algorithms in Vehicle Technology
Motivation for the Course: Nowadays, engineers often develop technical systems using a combination of hard- and software. This is true especially for modern passenger vehicle development. In a digitalized world, such developments are built on knowledge gained from relevant data sources, e.g. the vehicle sensors. Therefore, engineers in automobile technology need qualifications from data science to successfully create new functionalities in the cars. To prevent remaining purely theoretical, the algorithms in this course are explained using a real-world problem of “EV Routing”. Students have the opportunity to test methods in Python with frequent exercises presented.
Goal of the Course: Students have a basic understanding of data-driven algorithms such as Markov Models, Machine Learning or Monte-Carlo Methods. The approach for building data-driven models in automobile technology are known to students and they are able to test algorithms in the programming language “Python”. Furthermore, students have learnt how to analyse the algorithm performance.
Content:
1. Introduction to function development as well as the prerequisites for the course (e.g. Fundamentals for running Python code)
2. Fundamentals for EV Routing and relevant data sources
3. Parameter estimation and state classification algorithms to determine the current situation of the vehicle
4. Learning methods for driver behaviour
5. Forecast algorithms to predict future energy consumption of an electric vehicle

Organizational issues
Das Vorlesungsmaterial wird auf ILIAS bereitgestellt. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/PasswoerterIlias/

Die erste Vorlesung findet in Präsenz am Campus Ost, Geb. 70.04, Raum 220 statt. Alle Termine finden Sie auf der Institutshomepage.

Alle weiteren Vorlesungsinhalte werden als Videoaufzeichnungen in ILIAS bereit gestellt. In regelmäßigen Abständen wird es Sprechstunden geben. Die genauen Termine erfahren Sie dann über den entsprechenden ILIAS Kurs

T 3.56 Module component: Derivatives [T-WIWI-102643]

Coordinators: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101402 - eFinance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2530550**	Derivatives	**2 SWS**	**Lecture /** 🗣	**Uhrig-Homburg**
ST 2026	**2530551**	Übung zu Derivate	**1 SWS**	**Practice /** 🗣	**Dinger, Uhrig-Homburg**
Exams					
ST 2026	**7900111**	Derivatives			**Uhrig-Homburg**
WT 26/27	**7900051**	Derivatives			**Uhrig-Homburg**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Success is assessed in the form of a written examination (75 minutes). The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be earned for successful participation in the exercises by submitting correct solutions to at least 50% of the bonus exercises set. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites
None

Recommendations
None

Below you will find excerpts from courses related to this module component:

V Derivatives

2530550, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

Weiterführende Literatur:
Cox/Rubinstein (1985): Option Markets, Prentice Hall

T 3.57 Module component: Design and Development of Mobile Machines [T-MACH-105311]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each winter term	1

Courses					
WT 26/27	**2113079**	Design and Development of Mobile Machines	**2 SWS**	**Lecture /** 🗣	**Geimer**
Exams					
ST 2026	**76-T-MACH-105311**	Design and Development of Mobile Machines			**Geimer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of an oral exam (approx. 20 min) taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A registration is mandatory, the details will be announced on the webpages of the *Institute of Vehicle System Technology / Institute of Mobile Machines.* In case of too many applications, attendance will be granted based on pre-qualification.

The course will be replenished by interestung lectures of professionals from leading hydraulic companies.

Prerequisites
Required for the participation in the examination is the preparation of a report during the semester. T-MACH-108887 must have been passed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-108887 - Design and Development of Mobile Machines - Advance must have been passed.

Recommendations
Prior attendance of a course in the field of fluid technology, for example Fluid Power[2113092] or Mathematical Methods of Hydraulics[2113090], is recommended.

Additional Information
The course is offered in German.

Further information can be found on our homepage:
https://www.fast.kit.edu/mobima/13438_12749.php

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Design and Development of Mobile Machines

2113079, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Excavators and wheel loaders are highly specialized mobile machines. Their function is to loosen and pick up material and place/dump it again at a short distance.
The decisive factor for dimensioning is the capacity of the standard bucket. Using a wheel loader or excavator, the essential dimensioning steps for the design are worked through in this course. This includes, among other things

- Determining the size class and main dimensions,
- the dimensioning of an electric drive train,
- the design of the primary energy supply,
- determining the kinematics of the equipment,
- dimensioning the working hydraulics and
- strength calculations.

The entire sizing and design process for these machines is heavily influenced by the use of standards and guidelines. This aspect is also covered.

The course builds on knowledge from the fields of mechanics, strength of materials, machine elements, drive technology and fluid technology.
The course requires active participation and continuous involvement.

Recommendations:

Prior attendance of a course in the field of fluid technology, for example Fluid Power [2113092] or Mathematical Methods of Hydraulics [2113090], is recommended."

- Attendance time: 21 hours
- Self-study: 99 hours

Literature
Keine.

T 3.58 Module component: Design and Development of Mobile Machines - Advance [T-MACH-108887]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Jan Siebert

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Version
Coursework	0 CP	pass/fail	Each term	1

Exams			
ST 2026	**76-T-MACH-108887**	Design and Development of Mobile Machines - Advance	**Geimer**
WT 26/27	**76-T-MACH-108887**	Design and Development of Mobile Machines - Advance	**Geimer**

Assessment
Preparation of semester report

Prerequisites
none

Additional Information
The course is offered in German.

T 3.59 Module component: Development of Hybrid Drivetrains [T-MACH-110817]

Coordinators: Prof. Dr. Thomas Koch
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2134155**	Development of Hybrid Powertrains	**2 SWS**	**Lecture / 🗣**	**Koch, Doppelbauer**
Exams					
ST 2026	**76-T-MACH-110817**	Development of hybrid drivetrains			**Koch**
WT 26/27	**76-T-MACH-110817**	Development of hybrid drivetrains			**Koch**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
oral exam, 20 min.

Prerequisites
None

Additional Information
This course is offered in German.

Workload
120 hours

T 3.60 Module component: Digital Markets and Market Design [T-WIWI-112228]

Coordinators: Prof. Dr. Adrian Hillenbrand
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101499 - Applied Microeconomics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	2500035	Digital Markets and Market Design	2 SWS	Lecture / 🗣	Hillenbrand
WT 26/27	2500036	Digital Markets and Market Design	1 SWS	Practice / 🗣	Hillenbrand

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination (60 min.). The examination is only offered in the winter semester; two examination dates are offered during this period.

Prerequisites
None

Additional Information
The lecture will be held in English.

Below you will find excerpts from courses related to this module component:

V Digital Markets and Market Design

2500035, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Online Markets determine our everyday lives. At the same time rapid technological advancements quickly change the landscape of online markets posing challenges for market design and consumer protection. In this course we apply theoretical economic models in the area of digital markets in order to make sense of current developments. Topics include consumer search, algorithmic pricing, recommender systems and steering, price discrimination and matching markets. We also discuss the potential effects of current policies like the Digital Markets Act and Digital Services Act on market outcomes.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 60 h

• Exam preparation and participation in the assessment: 45 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

V Digital Markets and Market Design

2500036, WS 26/27, 1 SWS, Language: English, Open in study portal

Practice (Ü)
On-Site

Content
Exercise Session for the course "Digital Markets and Market Design

Organizational issues
Jede zweite Woche eine Übung

T 3.61 Module component: Digital Markets and Mechanisms [T-WIWI-114598]

Coordinators: Dr. Frank Rosar
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2560550**	Digital Markets and Mechanisms	**2 SWS**	**Lecture / 🗣**	**Rosar**
ST 2026	**2560551**	Digital Markets and Mechanisms	**1 SWS**	**Practice / 🗣**	**Rosar**
Exams					
ST 2026	**7900161**	Exam Digitale Märkte und Mechanismen			**Puppe, Rosar**
WT 26/27	**7900007**	Exam Digitale Märkte und Mechanismen (2)			**Rosar, Puppe**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be earned through successful participation in the excercise. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites
None

Recommendations
Basic knowledge of microeconomics (in particular game theory) as well as statistics (especially the use of probabilities and expected values) is desirable, but not required.

Below you will find excerpts from courses related to this module component:

V Digital Markets and Mechanisms

2560550, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Auctions are a central feature of the digital economy—sometimes visible, as on eBay, but often hidden in the background, for example in the automated allocation of advertising space with every Google search or in electricity markets. But what strategic incentives shape bidders' behavior? And how can auction mechanisms be designed to maximize revenue?

This course introduces the theoretical foundations and analytical tools for studying and designing auctions and mechanisms. Students will learn key equilibrium concepts of strategic interaction, compare different auction formats with respect to efficiency and revenue, and gain an introduction to the basic ideas of mechanism design. Mechanism design studies how rules and incentive systems can be structured to achieve specific economic objectives. The concepts and methods covered in the course are widely applicable in many other areas of economics.

The course is intended for undergraduate students interested in the game-theoretic modeling of markets and the design of economic incentive mechanisms. No prior knowledge of game theory is required; the necessary foundations will be covered in the course.

The total workload for this course is structured as follows:

- Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h
- Preparation and follow-up of course content: 50 h
- Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

V

Digital Markets and Mechanisms

2560551, SS 2026, 1 SWS, Language: German, Open in study portal

Practice (Ü)
On-Site

Content
See course description.

T 3.62 Module component: Digital Services: Foundations [T-WIWI-111307]

Coordinators: TT-Prof. Dr. Maximilian Förster
Dr. Carsten Holtmann

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101434 - eBusiness and Service Management
M-WIWI-102752 - Fundamentals of Digital Service Systems
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	3

Courses					
ST 2026	**2595466**	Digital Services: Foundations	**2 SWS**	**Lecture /** 🗣	**Förster, Holtmann**
ST 2026	**2595467**	Exercise Digital Services: Foundations	**1 SWS**	**Practice /** 🗣	**Förster, Schäfer**
Exams					
ST 2026	**7900079**	Digital Services: Foundations			**Satzger**
WT 26/27	**7900067**	Digital Services: Foundations			**Förster**

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment of success takes place through a written exam (60 minutes) with additional aids (according to § 4(2), 1 SPO). Further details regarding the assessment of success will be announced during the lecture.

A bonus can be acquired by successful completion of a a practically-oriented assignment (written report + short in-class presentation) during the semester. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). Further details regarding the acquisition of a bonus will be announced at the beginning of the course.

Additional Information
The course will be offered as a pure in-person lecture starting in the summer semester of 2026.
Please check the announcements in the ILIAS forum.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Digital Services: Foundations

2595466, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content

The world has been moving towards “service-led” economies: In many developed countries, services already account for more than 70% of the gross domestic product. In order to design, engineer, and manage services, traditional “goods-oriented” business models are often inappropriate. At the same time, the rapid development of information and communication technology (ICT), such as Artificial Intelligence (AI), pushes “servitization” and the economic importance of digital services. This drives competition and opens up novel opportunities: Services can instantly be delivered anywhere across the globe; dynamic and scalable service ecosystems replace static value chains; increased interaction options allow “value co-creation” between providers and customers; and the analysis of big data enables service optimization and personalization.

Building on a systematic categorization of different types of services and on the general notion of “value co-creation”, we cover concepts for managing, developing, and analyzing digital services, as well as current technological advances in digital services, allowing for further specialization in master level courses. Topics in this course include an introduction to digital services, human-centered development of services, and service analytics based on big data. Additionally, we cover emerging technologies and trends as well as essential design concepts for AI-based services, such as bias and fairness in AI, explainable AI, and sovereign AI. Finally, the lecture lays the practical foundations for implementing, analyzing, and managing digital services at scale. Besides those contents, the lecture entails first-hand research insights, exercises and discussion sessions, and guest lectures from practitioners that will illustrate the relevance of digital services in today’s world.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature

- Bartelheimer, C., Heinz, D., Hönigsberg, S., et al. (2025). Conceptualizing hybrid intelligent service ecosystems. *Electronic Markets, 35*, Article 63.
- Böhmann, T., Leimeister, J. M., & Möslein, K. (2014). Service systems engineering. Business & Information Systems Engineering,6(2), 73-79.
- Brasse, J., Broder, H. R., Förster, M., Klier, M., & Sigler, I. (2023). Explainable artificial intelligence in information systems: A review of the status quo and future research directions. *Electronic Markets*, *33*(1), 26.
- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.). (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Fromm, H., Habryn, F., & Satzger, G. (2012). Service analytics: Leveraging data across enterprise boundaries for competitive advantage. In Globalization of professional services (pp. 139-149). Springer, Berlin, Heidelberg.
- Ostrom, A. L., Parasuraman, A., Bowen, D. E., Patrício, L., & Voss, C. A. (2015). Service research priorities in a rapidly changing context. Journal of Service Research, 18(2), 127-159.
- Spohrer, J., Maglio, P. P., Bailey, J., & Gruhl, D. (2007). Steps toward a science of service systems. Computer, 40(1), 71-77.
- Satzger, G., Benz, C., Böhmann, T., & Roth, A. (2022). Servitization and digitalization as “Siamese Twins”: Concepts and research priorities. In B. Edvardsson & B. Tronvoll (Eds.), *The Palgrave Handbook of Service Management*. Palgrave Macmillan.

T 3.63 Module component: Digitalization from Product Concept to Production [T-MACH-113647]

Coordinators: Dr.-Ing. Marc Wawerla
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	4 CP	graded	Each winter term	1 semesters	3

Courses					
WT 26/27	**2149702**	Digitalization from Product Concept to Production	**2 SWS**	**Lecture /** 🗣	**Wawerla**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Alternative test achievement (graded):
- Written processing of a case study (weighting 50%) and
- Presentation of the results (ca. 10 min.) followed by a colloquium (ca. 30 min.) (weighting 50%)

Prerequisites
T-MACH-110176 may not have started.

Additional Information
The course is offered in English.

For organizational reasons, the number of participants in the course is limited. As a result, a selection process will be carried out for registrations. Further information on the course and application can be found via https://www.wbk.kit.edu/studium-und-lehre.php.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Digitalization from Product Concept to Production

2149702, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The lecture covers digitalization along the entire value chain in technology companies. The focus is on production and the supply chain. In this context, concepts, tools, methods, technologies, and specific applications in industry are presented. As part of the course, students have the opportunity to gain insights into the digitalization processes of a German high-tech company.

Main topics of the lecture:

- Concepts and methods such as disruptive innovation and agile project management
- Overview of available technologies
- Practical approaches to innovation
- Applications in industry
- Excursion to ZEISS IQS

Learning Outcomes:

The students are able to …

- describe and explain the methods and concepts presented in the course.
- analyze and evaluate the suitability of digitalization technologies for value creation processes in the manufacturing industry.
- assess the applicability of methods such as disruptive innovation and agile project management.
- assess the practical challenges of digitalization in industry.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Aus organisatorischen Gründen ist die Anzahl der Teilnehmenden der Lehrveranstaltung begrenzt. Infolgedessen findet ein Auswahlprozess der Anmeldungen statt. Weitere Informationen zur Lehrveranstaltung und Bewerbung sind unter https://www.wbk.kit.edu/studium-und-lehre.php zu finden.

For organizational reasons, the number of participants in the course is limited. As a result, a selection process will carried out for registrations. Further information on the course and application can be found via https://www.wbk.kit.edu/studium-und-lehre.php.

T 3.64 Module component: Economics and Behavior [T-WIWI-102892]

Coordinators: Dr. Hannes Rau
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2560137**	Economics and Behavior	**2 SWS**	**Lecture /** 🗣	**Rau**
WT 26/27	**2560138**	Übung zu Economics and Behavior	**1 SWS**	**Practice /** 🗣	**Rau**
Exams					
ST 2026	**7900154**	Exam Economics and Behavior (2)			**Rau, Mill**
WT 26/27	**7900118**	Exam Economics and Behavior			**Rau**
WT 26/27	**7900134**	Exam Economics and Behavior			**Rau**

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The course will be held as scheduled during the 2026/2027 winter term as part of a chair substitution by Dr. Hannes Rau. However, the exam schedule during this period differs from the standard schedule (exams every semester):

- **Winter term 2026/2027**: Two written exam dates will be offered. The main exam date is in February 2027. A second date on March 24, 2027, is reserved exclusively for students retaking the exam.
- **Summer term 2027**: No exam will be offered this term.

As part of the course, students can earn a bonus toward their final grade by completing a special assignment. If the grade on the written examination falls between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced during the lecture.

Prerequisites
None

Recommendations
Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Additional Information
The lecture will be held in English.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Economics and Behavior

2560137, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The course covers topics from behavioral economics with regard to contents and methods. In addition, the students gain insight into the design of economic experiments. Furthermore, the students will become acquainted with reading and critically evaluating current research papers in the field of behavioral economics.

The students

- gain insight into fundamental topics in behavioral economics;
- get to know different research methods in the field of behavioral economics;
- learn to critically evaluate experimental designs;
- get introduced to current research papers in behavioral economics;
- become acquainted with the technical terminology in English.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

The course will be offered as scheduled during the Winter Term 2026/2027 by Dr. Hannes Rau. However, the examination schedule during this period differs from the regular examination cycle (i. e. examinations are not offered every semester):

- **Winter Term 2026/2027**: Two written examination dates will be offered. The main examination will take place in February 2027. A second examination date end of **March 2027** is reserved exclusively for students who did not pass the main examination.
- **Summer Semester 2027**: No examination will be offered.

The final grade is based on the written examination. In addition, students may earn a bonus to their final grade by successfully completing a special assignment. If the grade in the written examination is between 4.0 and 1.3, the bonus may improve the grade by up to **one grade level** (i. e., **0.3 or 0.4**). Further details will be announced at the beginning of the course.

The total workload for this course is approximately **135 hours**. For further information, plese refer to the German course description.

The course will be taught in English.

Recommendations:

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Literature
Kahnemann, Daniel: Thinking, Fast and Slow. Farrar, Straus and Giroux, 2011.

T 3.65 Module component: Economics I: Microeconomics [T-WIWI-102708]

Coordinators: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101398 - Introduction to Economics
M-WIWI-107753 - Preliminary Exam

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2610012**	Economics I: Microeconomics	**3 SWS**	**Lecture /** 🗣	**Reiß**
WT 26/27	**2610013**		**2 SWS**	**Tutorial /** 🗣	**Reiß, Potarca**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation.

The main exam takes place subsequent to the lectur. The re-examination is offered at the same examination period. As a rule, only repeating candidates are entitled for taking place the re-examination. For a detailed description on the exam regulations see the information of the respective chair.

Prerequisites
None

Below you will find excerpts from courses related to this module component:

V Economics I: Microeconomics

2610012, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This course provides a solid grounding in microeconomic theory. The two main parts of the course deal with questions of microeconomic decision theory (household and firm decisions) and questions of market theory (equilibria and efficiency on competitive markets). The last part of the lecture deals with problems of imperfect competition (oligopoly markets) as well as the basics of game theory and welfare economics.

Learning objectives:
The main aim of the course is to teach students the basics of thinking in microeconomic models. In particular, students should be able to analyze goods markets and the determinants of market outcomes. In detail, students will learn

- to name and define the basic microeconomic terms.
- to explain the interrelationships in microeconomic models.
- to calculate the important parameters of microeconomic models.
- to judge the possible effects of economic policy measures on the behavior of economic agents (in simple decision problems) and possibly propose alternative measures.
- to analyze as a participant in a tutorial simple microeconomic problems by solving written exercises and presenting the results of the exercises on the blackboard.
- to become familiar with the basic literature on microeconomics.

In this way, students acquire the necessary basic knowledge

- to recognize the structure of economic problems on a microeconomic level and develop proposals for solutions.
- to provide active decision support for simple economic decision problems.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (5 SWS × 15 weeks): 75 h

• Preparation and follow-up of course content: 45 h

• Exam preparation and participation in the assessment: 30 h

Total workload: 150 h (corresponds to 5 ECTS credits)

Literature

- Varian, H. R. 2016. *Grundzüge der Mikroökonomik*. 9. Auflage. De Gruyter Oldenburg Verlag.
- Pindyck, R. S. und Rubinfeld, D. L. 2015. *Mikroökonomie*. 8. Auflage. Pearson.
- Frank, R. H. 2006. *Microeconomics and Behavior*. 6. Auflage. McGraw-Hill/Irwin.

T 3.66 Module component: Economics II: Macroeconomics [T-WIWI-102709]

Coordinators: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101398 - Introduction to Economics

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each summer term	1

Courses					
ST 2026	**2600014**	Economics II: Macroeconomics	**4 SWS**	**Lecture**	**Brumm**
ST 2026	**2660015**	Economics II : Macroeconomics, Tutorial	**2 SWS**	**Tutorial**	**Brumm, Kissling**
Exams					
ST 2026	**7900022**	Economics II: Macroeconomics			**Brumm**
WT 26/27	**7900040**	Economics II: Macroeconomics			**Brumm**

Assessment
Success is assessed in the form of a written examination (120 minutes). The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Below you will find excerpts from courses related to this module component:

V Economics II: Macroeconomics

2600014, SS 2026, 4 SWS, Language: German, Open in study portal

Lecture (V)

Content
Classical Theory of Macroeconomic Production
Chapter 1: Gross domestic product
Chapter 2: Money and Inflation
Chapter 3: Open Economy I
Chapter 4: Unemployment

Growth: The economy in the long term
Chapter 5: Growth I
Chapter 6: Growth II

Business cycle: The economy in the short term
Chapter 7: Economy and aggregate demand I
Chapter 8: Economy and aggregate demand II
Chapter 9: Open Economy II
Chapter 10: Macroeconomic supply

Advanced topics of macroeconomics
Chapter 11: Dynamic model of the economy as a whole
Chapter 12: Microeconomic foundations
Chapter 13: Macroeconomic economic policy

Learning goals:
The students. . .
- can name the basic indicators, technical terms and concepts of macroeconomics.
- can use models to reduce complex relationships to their basic components.
- can analyse economic policy debates and form their own opinion on them.

Workload:
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (6 SWS × 15 weeks): 90 h
• Preparation and follow-up of course content: 35 h
• Exam preparation and participation in the assessment: 25 h
Total workload: 150 h (corresponds to 5 ECTS credits)

Literature
Als Grundlage dieser Veranstaltung dient das bekannte Lehrbuch „Makroökonomik“ von Greg Mankiw vom Schäffer Poeschel Verlag in der aktuellen Fassung.

T 3.67 Module component: eFinance: Information Systems for Securities Trading [T-WIWI-110797]

Coordinators: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101402 - eFinance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101434 - eBusiness and Service Management
M-WIWI-101465 - Topics in Finance I
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2540454**	eFinance: Information Systems for Securities Trading	**2 SWS**	**Lecture /** 🗣	**Weinhardt, Wagener**
WT 26/27	**2540455**	Übungen zu eFinance: Information Systems for Securities Trading	**1 SWS**	**Practice /** 🗣	**Motz, Motz**
Exams					
ST 2026	**7900269**	eFinance: Information Systems for Securities Trading			**Weinhardt**

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is monitored by means of ongoing elaborations and presentations of tasks and an examination (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-102600 - eFinance: Information Engineering and Management for Securities Trading must not have been started.

Additional Information
The course"eFinance: Information Systems for Securities Trading" covers different actors and their function in the securities industry in-depth, highlighting key trends in modern financial markets, such as Distributed Ledger Technology, Sustainable Finance, and Artificial Intelligence. Security prices evolve through a large number of bilateral trades, performed by market participants that have specific, well-regulated and institutionalized roles. Market microstructure is the subfield of financial economics that studies the price formation process. This process is significantly impacted by regulation and driven by technological innovation. Using the lens of theoretical economic models, this course reviews insights concerning the strategic trading behaviour of individual market participants, and models are brought market data. Analytical tools and empirical methods of market microstructure help to understand many puzzling phenomena in securities markets.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V eFinance: Information Systems for Securities Trading

2540454, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature

- Picot, Arnold, Christine Bortenlänger, Heiner Röhrl (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners"". Oxford University Press, New York

Weiterführende Literatur:

- Gomber, Peter (2000): "Elektronische Handelssysteme - Innovative Konzepte und Technologien". Physika Verlag, Heidelberg
- Schwartz, Robert A., Reto Francioni (2004): "Equity Markets in Action - The Fundamentals of Liquidity, Market Structure and Trading". Wiley, Hoboken, NJ

T 3.68 Module component: Electric Energy Systems [T-ETIT-112850]

Coordinators: Prof. Dr.-Ing. Marc Hiller
Prof. Dr.-Ing. Thomas Leibfried

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: M-ETIT-106821 - Electric Energy Systems and Power Generation

Type	Credits	Grading	Term offered	Version
Written examination	6 CP	graded	Each summer term	1

Courses					
ST 2026	**2306200**	Electric Energy Systems	**2 SWS**	**Lecture /** 🗣	**Hiller, Leibfried**
ST 2026	**2306201**	Practice to Electric Energy Systems	**2 SWS**	**Practice /** 🗣	**Hiller, Leibfried**
Exams					
ST 2026	**7306200**	Electric Energy Systems			**Leibfried, Hiller**
WT 26/27	**7306200**	Electric Energy Systems			**Leibfried, Hiller**

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
none

T 3.69 Module component: Electrical Engineering for Business Engineers, Part I [T-ETIT-100533]

Coordinators: Dr.-Ing. Matthias Brodatzki
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-ETIT-101155 - Electrical Engineering

Type	Credits	Grading	Term offered	Version
Written examination	3 CP	graded	Each winter term	1

Courses					
WT 26/27	**2304223**	Electrical Engineering for Business Engineers, Part I	**2 SWS**	**Lecture /**	**Brodatzki**
WT 26/27	**2304225**	Electrical Engineering for Business Engineers, Part I (Exercise to 2304223)	**2 SWS**	**Practice /**	**Brodatzki**
Exams					
ST 2026	**7304223**	Electrical Engineering for Business Engineers, Part I			**Brodatzki**
WT 26/27	**7304223**	Electrical Engineering for Business Engineers, Part I			**Brodatzki**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

T 3.70 Module component: Electrical Engineering for Business Engineers, Part II [T-ETIT-100534]

Coordinators: Dr.-Ing. Matthias Brodatzki
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-MACH-101261 - Emphasis in Fundamentals of Engineering
M-WIWI-107750 - Additional Fundamentals of Engineering

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each summer term	1

Courses					
ST 2026	**2304224**	Elektrotechnik II für Wirtschaftsingenieure	**3 SWS**	**Lecture /** 🗣	**Brodatzki**
Exams					
ST 2026	**7304224**	Electrical Engineering for Business Engineers, Part II			**Brodatzki**
WT 26/27	**7304224**	Electrical Engineering for Business Engineers, Part II			**Brodatzki**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

T 3.71 Module component: Energy Policy [T-WIWI-102607]

Coordinators: Prof. Dr. Martin Wietschel
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101464 - Energy Economics

Type	Credits	Grading	Term offered	Version
Written examination	3,5 CP	graded	Each summer term	4

Courses					
ST 2026	**2581959**	Energy Policy	**2 SWS**	**Lecture /**	**Wietschel**
Exams					
ST 2026	**7981959**	Energy Policy			**Fichtner**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None.

Below you will find excerpts from courses related to this module component:

V Energy Policy

2581959, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The availability of cheap, environmentally friendly and secure energy is crucial for human welfare. However, the increasing scarcity of resources and increasing environmental pressures, with a particular focus on climate change, threaten human welfare through economic action. Energy contributes significantly to environmental pollution. The energy industry is characterised by high regulation and a significant influence of political decisions.

At the beginning of the lecture different perspectives on energy policy will be presented and the analysis of political decision-making processes will be discussed. Then the current energy policy challenges in the area of environmental pollution, regulation and the role of energy for households and industry will be discussed. Then the actors of energy policy and energy responsibilities in Europe will be discussed. The economic approaches from traditional environmental economics and sustainability as a new policy approach will then be discussed. Finally, energy policy instruments such as the promotion of renewable energies or energy efficiency are discussed in detail and how they can be evaluated.

The lecture emphasizes the relationship between theory and practice and presents some case studies.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 45 h

• Exam preparation and participation in the assessment: 30 h

Total workload: 105 h (corresponds to 3.5 ECTS credits)

Literature
Wird in der Vorlesung bekannt gegeben.

T 3.72 Module component: Engine Measurement Techniques [T-MACH-105169]

Coordinators: Dr.-Ing. Sören Bernhardt
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2134137**	Engine measurement techniques	**2 SWS**	**Lecture /**	**Bernhardt**
Exams					
ST 2026	**76-T-MACH-105169**	Engine Measurement Techniques			**Bernhardt**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral examination, Duration: 0,5 hours, no auxiliary means

Prerequisites
none

Recommendations
T-MACH-102194 Combustion Engines I

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Engine measurement techniques

2134137, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature

1. Grohe, H.:Messen an Verbrennungsmotoren
2. Bosch: Handbuch Kraftfahrzeugtechnik
3. Veröffentlichungen von Firmen aus der Meßtechnik
4. Hoffmann, Handbuch der Meßtechnik
5. Klingenberg, Automobil-Meßtechnik, Band C

T 3.73 Module component: Enterprise Systems for Financial Accounting & Controlling [T-WIWI-113746]

Coordinators: Christian Fleig
Prof. Dr. Alexander Mädche

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101434 - eBusiness and Service Management
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2500060**	Enterprise Systems for Financial Accounting & Controlling	**3 SWS**	**Lecture /** 🗣	**Mädche, Fleig**
Exams					
ST 2026	**7900210**	Enterprise Systems for Financial Accounting & Controlling			**Mädche**
WT 26/27	**7900074**	Enterprise Systems for Financial Accounting & Controlling			**Mädche**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment is carried out as a single examination of another type comprising a one-hour written exam and the execution of a capstone project. The two components are combined into a single weighted assessment that reflects the overall impression of the combined performance. Detailed information on the concrete design will be announced during the lecture.

Prerequisites
Keine.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Enterprise Systems for Financial Accounting & Controlling

2500060, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Enterprise Systems building on enterprise resource planning (ERP) packaged software such as SAP S/4HANA are information systems that target large-scale integration of business processes and data across a company's functional areas. These systems are crucial for financial accounting and controlling as they enable organizations to streamline and integrate their financial operations, ensuring accurate decision-making based on real-time financial data. Contemporary packaged ERP software provide modules that integrate core business processes in financial accounting including general ledger, accounts receivable, payable and asset accounting. The information generated in these processes serves as a major source of cost-related decision-making, reporting and data analyses in internal accounting ("controlling"). Packaged ERP software typically rely on industry best practices captured in the form of product software with a standardized structure of master data. Thereby, they also support regulatory compliance and analyzability of processes in approaches such as process mining which enhances overall business efficiency and competitiveness. However, implementing enterprise systems in practice imposes substantial challenges to organizations.

First, the B.Sc. lecture "Enterprise Systems for Financial Accounting & Controlling" introduces fundamental business processes and concepts in finance and controlling and explains how these processes are implemented in packaged ERP software such as SAP S/4HANA. Students learn the basic and most important terms and master data structures in the SAP FI/CO module. Second, students learn about the principles of packaged ERP software, gaining hands-on experience SAP S4/HANA. Third, the lecture introduces the challenges in enterprise system projects such as SAP S/4HANA implementations, Fourth, students actively apply their knowledge in collaborative team efforts when working with exemplary SAP data in Microsoft SQL Server to analyze finance and controlling master data processes (capstone project)

Learning Objectives:

The students …

- understand modern business concepts of financial accounting & controlling for large enterprises
- the importance of enterprise systems supporting the implemention of modern business concepts
- know the underlying principles of packaged software for enterprise resource planning and process intelligence
- Understand the opportunities and challenges of Enterprise Systems implementation at large enterprises
- Get hands-on knowledge about financial accounting & controlling with commercial product software (e.g., SAP S4/HANA)
- Apply their knowledge on enterprise systems implementation for financial accounting and controlling on real-world data in team effort

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

T 3.74 Module component: Entrepreneurship Basics [T-WIWI-114637]

Coordinators: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107451 - Entrepreneurial Thinking and Action: Fundamentals of Entrepreneurship

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Courses					
ST 2026	**2545010**	Entrepreneurship Basics (Track 1)	**3 SWS**	**Seminar /**	**Hirte, Terzidis**
WT 26/27	**2545010**	Entrepreneurship Basics (Track 1)	**3 SWS**	**Seminar /**	**Hirte**
Exams					
ST 2026	**7900056**	Entrepreneurship Basics (Track 1)			**Terzidis**
WT 26/27	**7900085**	Entrepreneurship Basics (Track 1)			**Terzidis**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment is conducted as an alternative exam assessment. The specific form of assessment depends on the course and may include, for example, the following components:

- **Project Report or Reflection Paper**
- **Mid-term and Final Presentation**
- **Group Work with Individual Contribution**
- **Active Participation and Mandatory Attendance**

The overall grade is determined by the weighted evaluation of these individual assessment components. The detailed weighting of these components for grade calculation will be communicated to students at the beginning of the course.

Prerequisites
None

Recommendations
An interest in entrepreneurial thinking and action, teamwork, and interdisciplinary project work is recommended. Basic knowledge in business administration and/or innovation methods is helpful but not required.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Entrepreneurship Basics (Track 1)

2545010, SS 2026, 3 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Content

This seminar explains important factors for becoming an entrepreneur and guides you through a structured process from the first business idea to a pitch of your final business model. Therefore, a business idea will be developed in the context of the UN Sustainable Development Goals. In small teams you create, develop, validate and present your business model. It simulates the basics of a start-up process up to the investor pitch.

Learning Objectives

After completing this course, the course participants will be able to

- Reflect on and define your personal and team core values
- Reflect on and define your personal and team competencies
- Reflect on and recall a definition for business opportunity
- Define your field of interest for opportunity recognition using the UN SDGs
- Analyze a specific domain to identify business opportunities
- Develop a first draft for your business model by using the Business Model Canvas
- Pitch / present your business idea

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students

Organizational issues
Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. The groups are formed in the seminar.

V

Entrepreneurship Basics (Track 1)

2545010, WS 26/27, 3 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Course Content:

This seminar explains important factors for becoming an entrepreneur and guides you through a structured process from the first business idea to a pitch of your final business model. Therefore, a business idea will be developed in the context of the UN Sustainable Development Goals. In small teams you create, develop, validate and present your business model. It simulates the basics of a start-up process up to the investor pitch.

Learning Objectives

After completing this course, the course participants will be able to

- Reflect on and define your personal and team core values
- Reflect on and define your personal and team competencies
- Reflect on and recall a definition for business opportunity
- Define your field of interest for opportunity recognition using the UN SDGs
- Analyze a specific domain to identify business opportunities
- Develop a first draft for your business model by using the Business Model Canvas
- Pitch / present your business idea

Credentials:

Registration is via the Wiwi portal.

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Registration is via the Wiwi portal.

In the seminar you will work on a project in teams of max. 5 persons. The groups are formed in the seminar

T 3.75 Module component: Exam on Climatology [T-PHYS-105594]

Coordinators: Prof. Dr. Joaquim José Ginete Werner Pinto
Organisation: KIT Department of Physics
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Version
Written examination	1 CP	graded	6

Exams			
ST 2026	**7800052**	Exam on Climatology as Minor Subject	**Ginete Werner Pinto**
ST 2026	**7800139**	Climatology reexam	**Ginete Werner Pinto**

Assessment
Credits are awarded upon successful completion of a written examination (90 minutes) in accordance with §4(2)(2) of the Study Regulations (SPO) for the course offered in this module.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-PHYS-101092 - Climatology must have been passed.

Workload
30 hours

T 3.76 Module component: Examination Prerequisite Project Management [T-BGU-113454]

Coordinators: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-BGU-101004 - Fundamentals of Construction

Type	Credits	Grading	Term offered	Expansion	Version
Coursework	0 CP	pass/fail	Each winter term	1 semesters	1

Courses					
WT 26/27	**6200111**	Project Management	**2 SWS**	**Lecture / Practice /** 🗣	**Haghsheno, Schneider, Gloser**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
4 online tests during the course with 20 questions und 20 min. duration each

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
5 hours

Below you will find excerpts from courses related to this module component:

V Project Management

6200111, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
This course provides a comprehensive introduction to (construction) project management. It takes a closer look at the organisation and delivery of a construction project from the client's perspective. In this context, a range of competences are presented that should be on hand for the successful execution of project management. In addition, we present a selection of project management methods for individual competences and illustrate them with case studies.

Organizational issues
Vorlesungen: Mittwochs vom 28.10.2026 bis 17.02.2027, jeweils 09:45 – 11:15 Uhr (hybrid)

Übungen: Asynchron ab 18.11.2026, 09.12.2026, 13.01.2027, 10.02.2027 (online)

Literature

- AHRENS, Hannsjörg; BASTIAN, Klemens; MUCHOWSKI, Lucian (Hrsg.) (2021) *Handbuch Projektsteuerung - Baumanagement: Ein praxisorientierter Leitfaden mit zahlreichen Hilfsmitteln und Arbeitsunterlagen*, 6. Auflage, Fraunhofer IRB Verlag, Stuttgart
- GPM Deutsche Gesellschaft für Projektmanagement e. V. (Hrsg.) (2017) *Individual Competence Baseline für Projektmanagement (Version 4.0)*, 1. Auflage, GPM Deutsche Gesellschaft für Projektmanagement e. V., Nürnberg
- HAGHSHENO, Shervin; JOHN, Paul Christian (2024) *Bauherrnseitige Projektmanagement-Dienstleistungen in Deutschland*, Forschungsbericht, DVP – Deutscher Verband für Projektmanagement in der Bau- und Immobilienwirtschaft e. V.
- KOCHENDÖRFER, Bernd; LIEBCHEN, Jens H.; VIERING, Markus G. (2021) *Bau-Projekt-Management: Grundlagen und Vorgehensweisen*, 6. Auflage, Springer Vieweg, Wiesbaden
- SCHULZ, Markus (2020) *Projektmanagement: Zielgerichtet. Effizient. Klar.*, 2. Auflage, UVK Verlag, Tübingen

T 3.77 Module component: Experimental Economics (Bachelor) [T-WIWI-115079]

Coordinators: Dr. Hannes Rau
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101499 - Applied Microeconomics

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Once	4

Courses					
ST 2026	**2500071**	Experimental Economics (Bachelor)	**2 SWS**	**Lecture /** 🗣	**Rau**
ST 2026	**2500072**	Exercises Experimental Economics (Bachelor)	**1 SWS**	**Practice /** 🗣	**Rau**
Exams					
ST 2026	**7900286**	Exam Experimental Economis (Bachelor)			**Rau**
ST 2026	**7900293**	Exam NT Experimental Economis (Bachelor)			**Rau**

Legend: 🖥 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment takes the form of an examination of another type (Prüfungsleistung anderer Art). It consists of two components:

1. A **written exam** (60 min.), which is offered on two dates (expected at the end of July and mid-September 2026).
2. A **written assignment** involving the independent design of a study related to a selected published research paper.

The overall grade for the assessment is based on a point system, where the written exam accounts for **70%** and the written assignment for **30%** of the total attainable points. Details regarding the grading process will be announced at the beginning of the course.

Prerequisites
The module [M-WIWI-101398] Introduction to Economics
should have been successfully completed.

Recommendations
Basic knowledge of microeconomic theory, game theory, and statistics is helpful but not required.

Additional Information
The language of the course is German.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Exercises Experimental Economics (Bachelor)

2500072, SS 2026, 1 SWS, Language: German, Open in study portal

Practice (Ü)
On-Site

Content
The aim of this course is to provide an overview of the field of experimental economics and its various applications within economics and related disciplines.

The course begins with an introduction to the fundamental methodology of experimental economics. This includes discussing the possibilities and limitations of economic studies, the rules and principles guiding their implementation, the different types of experiments and their applications for different research purposes.

A central component of the course is the analysis of well-known and influential studies in experimental (and behavioral) economics. The respective study designs and main findings will be presented and subsequently critically discussed. In addition, research questions for potential follow-up projects will be developed.

Furthermore, the course introduces the basics of game-theoretic analysis and data analysis.

By the end of the course, participants should be able to develop their own research ideas and an appropriate experimental study to investigate them.

T 3.78 Module component: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

Coordinators: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-101414 - Methodical Foundations of OR
M-WIWI-101421 - Supply Chain Management

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	4

Courses					
WT 26/27	**2550486**	Facility Location and Strategic Supply Chain Management	**2 SWS**	**Lecture /** 🗣	**Nickel**
WT 26/27	**2550487**	Exercises for Facility Location and Strategic Supply Chain Management	**1 SWS**	**Practice /** 🗣	**Pomes, Hoffmann**
Exams					
WT 26/27	**00076**	Facility Location and Strategic Supply Chain Management			**Nickel**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of a written exam (60 min) according to Section 4 (2), 1 of the examination regulation.
The exam takes place in every semester.
Prerequisite for admission to examination is the succesful completion of the online assessments.

Prerequisites
Prerequisite for admission to examination is the succesful completion of the online assessments.

Recommendations
None

Additional Information
The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online at https://dol.ior.kit.edu/Lehrveranstaltungen.php.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Facility Location and Strategic Supply Chain Management

2550486, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Für die Klausurzulassung müssen 4 von 5 Online-Tests bestanden sein.

Die Zulassung ist ein Jahr gültig, außer es handelt sich um einen Zweitversuch. In diesem Falle müssen die Online-Tests nicht erneut absolviert werden.

Literature
Weiterführende Literatur:

- Daskin: Network and Discrete Location: Models, Algorithms, and Applications, Wiley, 1995
- Domschke, Drexl: Logistik: Standorte, 4. Auflage, Oldenbourg, 1996
- Francis, McGinnis, White: Facility Layout and Location: An Analytical Approach, 2nd Edition, Prentice Hall, 1992
- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
- Thonemann: Operations Management - Konzepte, Methoden und Anwendungen, Pearson Studium, 2005

T 3.79 Module component: Fatigue of Materials [T-MACH-112106]

Coordinators: Dr.-Ing. Stefan Guth
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	2

Courses					
ST 2026	**2173586**	Fatigue of Materials	**2 SWS**	**Lecture /** 🗣	**Guth**
Exams					
ST 2026	**76-T-MACH-112106**	Fatigue of Materials			**Guth**
WT 26/27	**76-T-MACH-112106**	Fatigue of Materials			**Guth**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral exam, about 20 minutes

Prerequisites
none

Recommendations
Basic knowledge in Materials Science will be helpful.

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Fatigue of Materials

2173586, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

- Introduction: historical review and some fatigue damage cases
- Cyclic Stress Strain Behaviour
- Crack Initiation
- Crack Propagation
- Lifetime Behaviour under Cyclic Loading
- Fatigue of Notched Components
- Structural Durability
- Fatigue of composites and compound materials

learning objectives:

The students are able to recognise the deformation and the failure behaviour of materials under cyclic loading and to assign it to the basic microstructural processes. They know the sequence and the development of fatigue damages and can evaluate the initiation and the growth of fatigue cracks.

The students can evaluate the cyclic strength behaviour of materials and components both qualitatively and quantitatively and know the procedures for the assessment of single-stage, multistage and stochastic cyclical loadings.

requirements:

none, basic knowledge in Material Science will be helpful

workload:

regular attendance: 21 hours
self-study: 99 hours

Literature
Ein Manuskript, das auch aktuelle Literaturhinweise enthällt, wird in der Vorlesung verteilt.

T 3.80 Module component: Financial Data Science [T-WIWI-111238]

Coordinators: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-105610 - Financial Data Science

Type	Credits	Grading	Term offered	Version
Examination of another type	9 CP	graded	Each summer term	2

Courses					
ST 2026	**2530371**	Financial Data Science	**4 SWS**	**Lecture /**	**Ulrich**
Exams					
ST 2026	**7900361**	Financial Data Science			**Ulrich**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The examination is structured as an alternative assessment.

Further details regarding submission deadlines, exam format, and retake opportunities will be announced in the first session.

Prerequisites
None.

Workload
270 hours

T 3.81 Module component: Financial Data Science in Practice [T-WIWI-114633]

Coordinators: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107454 - Financial Data Science in Practice

Type	Credits	Grading	Term offered	Version
Examination of another type	9 CP	graded	Each term	1

Exams			
ST 2026	**7900378**	Advanced Machine Learning and Data Science	**Ulrich**

Assessment
The examination is structured as an alternative exam assessment and consists of the following components:

- **Interim Presentations (Formative Milestones)**
- **Quality of Implementation** (Reproducibility, Code Documentation, Tests)
- **Final Written Paper** (15 – 20 pages, scientific standard)
- **Final Presentation** (approx. 30 minutes, public research talk)

The overall grade is determined by the weighted evaluation of the individual components of this assessment. The exact weighting of these components for grade calculation will be announced at the beginning of the course.

Prerequisites
The course T-WIWI-111238 "Financial Data Science" must be passed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-111238 - Financial Data Science must have been passed.

Workload
270 hours

T 3.82 Module component: Financial Econometrics II [T-WIWI-110939]

Coordinators: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	3

Courses					
ST 2026	**2521302**	Financial Econometrics II	**2 SWS**	**Lecture /** 🗣	**Schienle, Buse**
ST 2026	**2521303**	Übung zu Financial Econometrics II	**2 SWS**	**Practice /** 🗣	**Buse, Schienle**
Exams					
ST 2026	**7900081**	Financial Econometrics II			**Schienle**

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written examination (90 minutes). If the number of participants is low, an oral examination will be held instead.

Prerequisites
None

Recommendations
It is recommended that students have substantive knowledge of the course **"Financial Econometrics."**

Additional Information
The course will be held in English.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Financial Econometrics II

2521302, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h

• Preparation and follow-up of course content: 65 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
jedes Sommersemester

Literature
Taylor, S. J. (2005): "Asset Price Dynamics, Volatility, and Prediction", Princeton University Press.

Cochrane, J. H. (2005): "Asset Pricing", revised edition, Princeton University Press.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay (1997): "The Econometrics of Financial Markets", Princeton University Press.

Hamilton, J. D. (1994): "Time Series Analysis", Princeton University Press.

Hasbrouck, J. (2007):"Empirical Market Microstructure: The Institutions, Economics and Econometrics of Securities Trading", Oxford University Press.

Hautsch, N. (2012): "Econometrics of Financial High-Frequency Data", Springer.

Additional literature will be discussed in the lecture.

T 3.83 Module component: Financial Intermediation [T-WIWI-102623]

Coordinators: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	1

Exams			
ST 2026	**7900078**	Financial Intermediation	**Ruckes**
WT 26/27	**7900063**	Financial Intermediation	**Ruckes**

Assessment
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

Prerequisites
None

Recommendations
None

T 3.84 Module component: Financial Management [T-WIWI-102605]

Coordinators: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101435 - Essentials of Finance

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2530216**	Financial Management	**2 SWS**	**Lecture /** 🗣	**Ruckes**
ST 2026	**2530217**	Übung zu Financial Management	**1 SWS**	**Practice /** 🗣	**Ruckes**
Exams					
ST 2026	**7900074**	Financial Management			**Ruckes**
WT 26/27	**7900060**	Financial Management			**Ruckes**

Legend: Online, Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The assessment consists of a written exam (60 min.) according to Section 4 (2), 1 of the examination regulation.
The exam takes place at every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendations
Knowledge of the content of the course Business Administration: Finance and Accounting [25026/25027] is recommended.

Below you will find excerpts from courses related to this module component:

V Financial Management

2530216, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Weiterführende Literatur:

- Ross, Westerfield, Jaffe, Jordan (2009): Modern Financial Management, McGraw-Hill International Edition
- Berk, De Marzo (2016): Corporate Finance, 4. Edition, Pearson Addison Wesley

T 3.85 Module component: FinTech [T-WIWI-112694]

Coordinators: Prof. Dr. Julian Thimme
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101402 - eFinance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Grading	Term offered	Version
Oral examination	4,5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2500032**	FinTech	**2 SWS**	**Lecture /** 🗣	**Thimme**
WT 26/27	**2500219**	FinTech (Exercice)	**1 SWS**	**Practice /** 🗣	**Meng, Thimme**
Exams					
ST 2026	**7900089**	FinTech			**Thimme**

Legend: 🖳 Online, 🖳🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral examination (30 minutes) during the lecture-free period of the semester.

The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Recommendations
Knowledge of the course Business Administration: Finance and Accounting [25026/25027] is very helpful.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V FinTech

2500032, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Banks and other financial institutions are central entities that are crucial to the way capital markets are organized today. They have a variety of tasks: They lend to business and retail customers, thereby creating money, accept deposits, transfer money, advise customers, help companies issue stock, and much more. While all of these services are important for the smooth allocation of capital in an economy, recent technological advances allow companies called FinTechs to challenge banks' traditional business models. While FinTechs are still centralized entities, decentralized innovations based on blockchain technologies have the potential to fundamentally upend the system.

We start with a discussion of the problems with capital allocation and what financial institutions are doing to address these problems. The key question we are interested in is how efficient alternative solutions offered by traditional banks, FinTechs and Decentralized Finance applications are compared to each other. What are the advantages and disadvantages of the new technologies and how likely are they to prevail? In the different parts of the course, we will explore specific examples, including the status quo and possible ways forward.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

T 3.86 Module component: Foundations of Informatics I [T-WIWI-102749]

Coordinators: Dr.-Ing. Tobias Käfer
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101417 - Foundations of Informatics

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each summer term	2

Courses					
ST 2026	**2511010**	Foundations of Informatics I	**2 SWS**	**Lecture /** 🗣	**Käfer**
ST 2026	**2511011**	Exercises to Foundations of Informatics I		**Practice /** 🗣	**Käfer, Noullet, Kinder**
Exams					
ST 2026	**791-AIFB-Info1-HK**	Foundations of Informatics I (Registration extended until 26 July 2026)			**Käfer**
WT 26/27	**79AIFB_Info1_A5**	Foundations of Informatics I (Registration until 08.02.2027)			**Käfer**

Legend: 💻 Online, 🎭 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of an 1h written exam according to Section 4 (2), 1 of the examination regulation.

The exam takes place every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Below you will find excerpts from courses related to this module component:

V Foundations of Informatics I

2511010, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture provides an introduction to basic concepts of computer science and software engineering. Essential theoretical foundations and problem-solving approaches, which are relevant in all areas of computer science, are presented and explained, as well as shown in practical implementations.

The following topics are covered:

- Object Oriented Modeling
- Logic (Propositional Calculus, Predicate Logic, Boolean Algebra)
- Algorithms and Their Properties
- Sort-and Search-Algorithms
- Complexity Theory
- Problem Specification
- Dynamic Data Structures

Learning objectives:

The student

- is able to formalise tasks in the domain of informatics and is able to identify solution methods
- knows the basic terminology of computer science and is capable of applying these terms to different problems.
- knows basic programming structures and is able to apply them (particularly simple data structures, object interaction and implementation of basic algorithms).

Workload:

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature

- H. Balzert. Lehrbuch Grundlagen der Informatik. Spektrum Akademischer Verlag 2004.
- U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag 2000.
- T. H. Cormen, C. E. Leiserson. Introduction to Algorithms, MIT Press 2001.

V Exercises to Foundations of Informatics I

Practice (Ü)
On-Site

2511011, SS 2026, SWS, Language: German, Open in study portal

Content
The exercises are related to the lecture Foundations of Informatics I.

Multiple exercises are held that capture the topics, held in the lecture Foundations of Informatics I, and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

The following topics are covered:

- Object Oriented Modeling
- Logic (Propositional Calculus, Predicate Logic, Boolean Algebra)
- Algorithms and Their Properties
- Sort-and Search-Algorithms
- Complexity Theory
- Problem Specification
- Dynamic Data Structures

Learning objectives:

The student

- is able to formalise tasks in the domain of informatics and is able to identify solution methods
- knows the basic terminology of computer science and is capable of applying these terms to different problems.
- knows basic programming structures and is able to apply them (particularly simple data structures, object interaction and implementation of basic algorithms).

Literature

- H. Balzert. Lehrbuch Grundlagen der Informatik. Spektrum Akademischer Verlag 2004.
- U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag 2000.
- T. H. Cormen, C. E. Leiserson. Introduction to Algorithms, MIT Press 2001.

T 3.87 Module component: Foundations of Informatics II [T-WIWI-102707]

Coordinators: Prof. Dr.-Ing. Sanja Lazarova-Molnar
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101417 - Foundations of Informatics

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2511012**	Foundations of Informatics II	**3 SWS**	**Lecture /** 🗣	**Lazarova-Molnar**
WT 26/27	**2511013**	Tutorien zu Grundlagen der Informatik II	**1 SWS**	**Tutorial /** 🗣	**Lazarova-Molnar, Jungmann, Deufel**
Exams					
ST 2026	**791-AIFB-Info2-dt-NK**	Foundations of Informatics II (written exam in German, registration extended until 26 July 2026)			**Lazarova-Molnar**
ST 2026	**791-AIFB-Info2-en-NK**	Grundlagen der Informatik II (englischsprachige Klausur, Anmeldung verlängert bis 26.07.2026)			**Lazarova-Molnar**
WT 26/27	**79AIFB_Info2_Deutsch**	Foundations of Informatics II (exam in German, Registration until 08.02.2027)			**Lazarova-Molnar**
WT 26/27	**79AIFB_Info2_English**	Grundlagen der Informatik II (englischsprachige Klausur, Anmeldung bis 08.02.2027)			**Lazarova-Molnar**

Legend: 💻 Online, 🎭 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment takes the form of a written examination (in accordance with §4(2), 1 SPO), which can be completed in either German or English. The examination is offered every semester and can be retaken at any regular examination date.

The duration of the examination is 90 minutes.

Prerequisites
None

Recommendations
It is recommended to attend the course "Foundations of Informatics I" beforehand.

Active participation in the practical lessons is strongly recommended.

Below you will find excerpts from courses related to this module component:

V Foundations of Informatics II

2511012, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The course deals with formal models like finite automata, context-free grammars and push-down automata, offers formal descriptions of computational models of different complexity, and classifies language systems according to their expressive power; it investigates the limits of computability and theoretical complexity to distinguish efficiently solvable problems (P) from computationally intensive ones (NP-complete); at the same time it conveys the fundamentals of computer organization, including digital information formats (integer and floating-point), symbolic logic and the design of functional circuit components, followed by explanations of basic computer architectures, their instruction logic and the standardized fetch-decode-execute cycle, hierarchical storage concepts (cache levels, secondary memory), input-/output mechanisms, redundancy strategies, as well as methods for objective performance assessment and systematic optimization.

Learning objectives:

- Students acquire vast knowledge of methods and concepts in theoretical computer science and computer architectures.
- Based on the acquired knowledge and skills, students are capable of choosing and applying the appropriate methods and concepts for well-defined problem instances.
- Active participation in the tutorials enables students to acquire the necessary knowledge for developing appropriate solutions cooperatively.

Recommendations:

It is recommended to attend the course *Foundations of Informatics I* [2511010] beforehand.

Active participation in the practical lessons is strongly recommended.

Workload (3+1 SWS, 5 ECTS):

- Attendance time for lecture (3 SWS x 12 weeks): 36 h
- Attendance time for tutorial (1 SWS x 12 weeks): 12 h
- Self-study for lecture: 54 h
- Self-study for tutorial: 18 h
- Exam preparation and examination time: 30 h
- Total: 150 h

Organizational issues
Die Vorlesung wird zu Beginn des Semesters 4-stündig und am Ende 2-stündig gelesen, um eine bessere Abdeckung des Inhalts in den Übungen zu gewährleisten.

Literature
Weiterführende Literatur:

Literatur wird in der Vorlesung bekannt gegeben.

T 3.88 Module component: Foundations of Interactive Systems [T-WIWI-109816]

Coordinators: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101434 - eBusiness and Service Management
M-WIWI-102752 - Fundamentals of Digital Service Systems
M-WIWI-105928 - HR Management & Digital Workplace
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each summer term	3

Courses					
ST 2026	**2540560**	Foundations of Interactive Systems	**3 SWS**	**Lecture /**	**Mädche, Feick**
Exams					
ST 2026	**7900247**	Foundations of Interactive Systems			**Mädche**
WT 26/27	**7900326**	Foundations of Interactive Systems			**Mädche**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment is carried out as a single examination of another type comprising a one-hour written exam and the execution of a capstone project. The two components are combined into a single weighted assessment that reflects the overall impression of the combined performance. Detailed information on the concrete design will be announced during the lecture.

Prerequisites
None

Recommendations
None

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Foundations of Interactive Systems

2540560, SS 2026, 3 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Lecture Description

Computers have evolved from batch processors to highly interactive systems. This offers new possibilities besides challenges for designing a successful interaction between humans and computers. Interactive systems are socio-technical systems in which users perform tasks by interacting with technology in a specific context to achieve specified goals and outcomes.

This lecture introduces key concepts and principles of interactive systems from a human and computer perspective. From a human perspective, we discuss selected individual characteristics, cognitive processes, the interplay between cognition and activity, as well asmental models. From a computer perspective, we introduce established interaction technologies as well as contemporary multimodal technologies (e.g. augmented/mixed reality, eye-based interaction, etc.). We also introduce established principles and guidelines for designing user interfaces.. Furthermore, we describe the human-centered design process for interactive systems and supporting techniques & tools (e.g. personas, prototyping, user testing).

With this lecture, students acquire foundational knowledge to successfully **design the interaction between humans and computers** in business and private life. The course is complemented with a **Design Capstone Project**, where students in a team apply design methods & techniques to create an interactive prototype.

Learning Objectives

The students

- have a basic understanding of key conceptual and theoretical foundations of interactive systems from a human and computer perspective
- are aware of important design principles for the design of important classes of interactive systems
- know design processes and techniques for developing interactive systems
- know how to apply the knowledge and skills gathered in the lecture for a real-world problem (as part of design capstone project)

Prerequisites: No specific prerequisites are required for the lecture

Language of instruction: English

Bibliography

Alan Dix, Janet E. Finlay, Gregory D. Abowd, and Russell Beale. 2003. Human-Computer Interaction (3rd Edition). Prentice-Hall, Inc., USA.

Further literature will be made available in the lecture. In case of questions feel free to approach Siu Liu (siu.liu@kit.edu).

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Die Erfolgskontrolle erfolgt in Form einer Prüfungsleistung anderer Art (Form) nach § 4 Abs. 2 Nr. 3 SPO. Die Leistungskontrolle erfolgt in Form einer einstündigen Klausur und der Durchführung eines Capstone Projektes. Details zur Ausgestaltung der Erfolgskontrolle werden im Rahmen der Vorlesung bekannt gegeben.

T 3.89 Module component: Fuels and Lubricants for Combustion Engines [T-MACH-105184]

Coordinators: Hon.-Prof. Dr. Bernhard Ulrich Kehrwald
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each winter term	1

Courses					
WT 26/27	**2133108**	Fuels and Lubricants for Combustion Engines	**2 SWS**	**Lecture /** 🗣	**Kehrwald**
Exams					
ST 2026	**76-T-MACH-105184**	Fuels and Lubricants for Combustion Engines			**Kehrwald**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral examination, Duration: ca. 25 min., no auxiliary means

Prerequisites
none

Additional Information
The course is offered in German.

Below you will find excerpts from courses related to this module component:

V Fuels and Lubricants for Combustion Engines

2133108, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature
Skript

T 3.90 Module component: Functional Ceramics [T-MACH-105179]

Coordinators: Dr. Miriam Botros
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each winter term	2

Courses					
WT 26/27	**2126784**	Functional Ceramics	**2 SWS**	**Lecture /**	**Botros**
Exams					
ST 2026	**76-T-MACH-105179**	Functional Ceramics			**Botros**
WT 26/27	**76-T-MACH-105179**	Functional Ceramics			**Botros**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of an oral exam (20 min) taking place at the agreed date.

Auxiliary means: none

The re-examination is offered upon agreement.

Prerequisites
T-MACH-114752 – Functional Ceramics must not be started yet.

Additional Information
The course is offered in German.

Workload
120 hours

T 3.91 Module component: Fundamentals for Design of Motor-Vehicle Bodies I [T-MACH-102116]

Coordinators: Eva-Maria Knoch
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Version
Oral examination	2 CP	graded	Each winter term	2

Courses					
WT 26/27	**2113814**	Fundamentals for Design of Motor-Vehicles Bodies I	**1 SWS**	**Lecture /** 🗣	**Knoch**
Exams					
WT 26/27	**76-T-MACH-102116**	Fundamentals for Design of Motor-Vehicle Bodies I			**Knoch**

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral examination

Duration: approx. 30 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
60 hours

Below you will find excerpts from courses related to this module component:

V Fundamentals for Design of Motor-Vehicles Bodies I

2113814, WS 26/27, 1 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. History and design

2. Aerodynamics

3. Design methods (CAD/CAM, FEM)

4. Manufacturing methods of body parts

5. Fastening technologie

6. Body in white / body production, body surface

Learning Objectives:

The students have an overview of the fundamental possibilities for design and manufacture of motor-vehicle bodies. They know the complete process, from the first idea, through the concept to the dimensioned drawings (e.g. with FE-methods). They have knowledge about the fundamentals and their correlations, to be able to analyze and to judge relating components as well as to develop them accordingly.

Organizational issues
Termine und nähere Informationen: siehe ILIAS oder Institutshomepage

Dates and further information will be published on the homepage of the institute

Literature

1. Automobiltechnische Zeitschrift ATZ, Friedr. Vieweg & Sohn Verlagsges. mbH, Wiesbaden
2. Automobil Revue, Bern (Schweiz)
3. Automobil Produktion, Verlag Moderne Industrie, Landsberg

T 3.92 Module component: Fundamentals for Design of Motor-Vehicle Bodies II [T-MACH-102119]

Coordinators: Eva-Maria Knoch
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Version
Oral examination	2 CP	graded	Each summer term	1

Courses					
WT 26/27	**2114840**	Fundamentals for Design of Motor-Vehicles Bodies II	**1 SWS**	**Lecture /** 🗣	**Knoch**
Exams					
WT 26/27	**76-T-MACH-102119**	Fundamentals for Design of Motor-Vehicle Bodies II			**Knoch**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral examination

Duration: approx. 30 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
60 hours

Below you will find excerpts from courses related to this module component:

V Fundamentals for Design of Motor-Vehicles Bodies II

2114840, WS 26/27, 1 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Body properties/testing procedures
2. External body-parts
3. Interior trim
4. Compartment air conditioning
5. Electric and electronic features
6. Crash tests
7. Project management aspects, future prospects

Learning Objectives:

The students know that, often the design of seemingly simple detail components can result in the solution of complex problems. They have knowledge in testing procedures of body properties. They have an overview of body parts such as bumpers, window lift mechanism and seats. They understand, as well as, parallel to the normal electrical system, about the electronic side of a motor vehicle. Based on this they are ready to analyze and to judge the relation of these single components. They are also able to contribute competently to complex development tasks by imparted knowledge in project management.

Organizational issues
Termine und nähere Informationen: siehe ILIAS oder Institutshomepage

Dates and further information will be published on the homepage of the institute

Literature

1. Automobiltechnische Zeitschrift ATZ, Friedr. Vieweg & Sohn Verlagsges. mbH, Wiesbaden
2. Automobil Revue, Bern (Schweiz)
3. Automobil Produktion, Verlag Moderne Industrie, Landsberg

T 3.93 Module component: Fundamentals in the Development of Commercial Vehicles [T-MACH-111389]

Coordinators: Christof Weber
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101265 - Vehicle Development
M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	see Annotations	2

Courses					
ST 2026	**2114844**	Fundamentals in the Development of Commercial Vehicles II	**1 SWS**	**Lecture /** 🗣	**Weber**
WT 26/27	**2113812**	Fundamentals in the Development of Commercial Vehicles I	**1 SWS**	**Lecture /** 🗣	**Weber**
Exams					
ST 2026	**76-T-MACH-111389**	Fundamentals in the Development of Commercial Vehicles			**Weber**
WT 26/27	**76-T-MACH-111389**	Fundamentals in the Development of Commercial Vehicles			**Weber**

Legend: 🖥 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral group examination

Duration: appr. 30 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
Fundamentals in the Development of Commercial Vehicles I, WT

Fundamentals in the Development of Commercial Vehicles II, ST

The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Fundamentals in the Development of Commercial Vehicles II

2114844, SS 2026, 1 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Gear boxes of commercial vehicles
2. Intermediate elements of the drive train
3. Axle systems
4. Front axles and driving dynamics
5. Chassis and axle suspension
6. Braking System
7. Systems
8. Excursion

Learning Objectives:

The students know the advantages and disadvantages of different drives. Furthermore they are familiar with components, such as transfer box, propeller shaft, powered and non-powered frontaxle etc. Beside other mechanical components, such as chassis, axle suspension and braking system, also electric and electronic systems are known. Consequently the student are able to analyze and to judge the general concepts as well as to adjust them precisely with the area of application.

Organizational issues
die Vorlesung findet an unregelmäßigen Terminen am Campus Ost statt. Genaue Termine sowie nähere Informationen und eventuelle Terminänderungen:

siehe Institutshomepage.

Literature
1.HILGERS, M.: Nutzfahrzeugtechnik lernen, Springer Vieweg, ISSN: 2510-1803

2.SCHITTLER, M.; HEINRICH, R.; KERSCHBAUM, W.: Mercedes-Benz Baureihe 500 – neue V-Motorengeneration für schwere Nutzfahrzeuge, MTZ 57 Nr. 9, S. 460 ff, 1996

3.Robert Bosch GmbH (Hrsg.): Bremsanalgen für Kraftfahrzeuge, VDI-Verlag, Düsseldorf, 1. Auflage, 1994

4.RUBI, V.; STRIFLER, P. (Hrsg. Institut für Kraftfahrwesen RWTH Aachen): Indiustrielle Nutzfahrzeugentwicklung, Schriftenreihe Automobiltechnik, 1993

5.TEUTSCH, R.; CHERUTI, R.; GASSER, R.; PEREIRA, M.; de SOUZA, A.; WEBER, C.: Fuel Efficiency Optimization of Market Specific Truck Applications, Proceedings of the 5th Commercial Vehicle Technology Symposium – CVT 2018

V Fundamentals in the Development of Commercial Vehicles I

Lecture (V)
On-Site

2113812, WS 26/27, 1 SWS, Language: German, Open in study portal

Content
1. Introduction, definitions, history
2. Development tools
3. Complete vehicle
4. Cab, bodyshell work
5. Cab, interior fitting
6. Alternative drive systems
7. Drive train
8. Drive system diesel engine
9. Intercooled diesel engines

Learning Objectives:

The students have proper knowledge about the process of commercial vehicle development starting from the concept and the underlying original idea to the real design. They know that the customer requirements, the technical realisability, the functionality and the economy are important drivers.

The students are able to develop parts and components. Furthermore they have knowledge about different cab concepts, the interior and the interior design process. Consequently they are ready to analyze and to judge concepts of commercial vehicles as well as to participate competently in the commercial vehicle development.

Organizational issues
Das Vorlesungsmaterial wird auf ILIAS bereitgestellt. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/Passwoerterlias/

Termine und Nähere Informationen: siehe ILIAS oder Institutshomepage

Dates and further information will be published on the homepage of the institute.

Literature

1. Marwitz, H., Zittel, S.: ACTROS -- die neue schwere Lastwagenbaureihe von Mercedes-Benz, ATZ 98, 1996, Nr. 9

2. Alber, P., McKellip, S.: ACTROS -- Optimierte passive Sicherheit, ATZ 98, 1996

3. Morschheuser, K.: Airbag im Rahmenfahrzeug, ATZ 97, 1995, S. 450 ff.

T 3.94 Module component: Fundamentals of Catalytic Exhaust Gas Aftertreatment [T-MACH-105044]

Coordinators: Prof. Dr. Olaf Deutschmann
Prof. Dr. Jan-Dierk Grunwaldt
Dr.-Ing. Heiko Kubach
Hon.-Prof. Dr. Egbert Lox

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2134138**	Fundamentals of catalytic exhaust gas aftertreatment	**2 SWS**	**Lecture /** 🗣	**Lox, Grunwaldt, Deutschmann**
Exams					
ST 2026	**76-T-MACH-105044**	Fundamentals of Catalytic Exhaust Gas Aftertreatment			**Lox**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral examination, Duration approx. 25 min., no auxiliary means

Prerequisites
none

Additional Information
The course is offered in German

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Fundamentals of catalytic exhaust gas aftertreatment

2134138, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Organizational issues
Wenn Sie beabsichtigen, an der Vorlesung teilzunehmen, melden Sie sich bitte unter info@ifkm.kit.edu mit dem Betreff "Anmeldung Vorlesung Lox" an. Das hilft uns bei der Planung. Der Dozent hat eine sehr weite Anreise und wir möchten verhindern, dass die Mindestteilnehmerzahl nicht erreicht wird.

T 3.95 Module component: Fundamentals of Chemical Engineering [T-CIWVT-114347]

Coordinators: Prof. Dr.-Ing. Gregor Wehinger
Organisation: KIT Department of Chemical and Process Engineering
Part of: M-WIWI-107750 - Additional Fundamentals of Engineering

Type	Credits	Grading	Term offered	Version
Written examination	3 CP	graded	Each winter term	1

Courses					
WT 26/27	**2200310**	Introduction to Chemical Engineering	**2 SWS**	**Lecture / 🗣**	**Wehinger, Dozierende der KIT-Fakultät**
Exams					
ST 2026	**7200310**	Introduction to Chemical Engineering			**Wehinger**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Learning control is a wirtten exam lastin 90 minutes.

Prerequisites
None

T 3.96 Module component: Fundamentals of Production Management [T-WIWI-102606]

Coordinators: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101437 - Industrial Production I

Type	Credits	Grading	Term offered	Version
Written examination	5,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2581950**	Fundamentals of Production Management	**2 SWS**	**Lecture / 🗣**	**Schultmann**
ST 2026	**2581951**	Übungen Grundlagen der Produktionswirtschaft	**2 SWS**	**Practice / 🗣**	**Frank, Fuhg**
Exams					
ST 2026	**7981950**	Fundamentals of Production Management			**Schultmann**
WT 26/27	**7981950**	Fundamentals of Production Management			**Schultmann**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (90 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Below you will find excerpts from courses related to this module component:

V Fundamentals of Production Management

2581950, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This lecture focuses on strategic production management with respect to various economic aspects. Interdisciplinary approaches of systems theory will be used to describe the challenges of industrial production. This course will emphasize the importance of R&D as the central step in strategic corporate planning to ensure future long-term success. In the field of site selection and planning for firms and factories, attention will be drawn upon individual aspects of existing and greenfield sites as well as existing distribution and supply centres. Students will obtain knowledge in solving internal and external transport and storage problems.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h

• Preparation and follow-up of course content: 60 h

• Exam preparation and participation in the assessment: 45 h

Total workload: 165 h (corresponds to 5.5 ECTS credits)

Organizational issues
Blockveranstaltung, siehe Institutsaushang

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.97 Module component: Gear Cutting Technology [T-MACH-102148]

Coordinators: Dr.-Ing. Jürgen Hoffmeister
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101265 - Vehicle Development
M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each winter term	2

Courses					
WT 26/27	2149655	Gear Technology	2 SWS	Lecture / 🗣	Hoffmeister

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral examination, duration approx. 20 minutes

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Gear Technology

2149655, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Based on the gearing theory, manufacturing processes and machine technologies for producing gearings, the needs of modern gear manufacturing will be discussed in the lecture. For this purpose, various processes for various gear types are taught which represent the state of the art in practice today. A classification in soft and hard machining and furthermore in cutting and non-cutting technologies will be made. For comprehensive understanding the processes, machine technologies, tools and applications of the manufacturing of gearings will be introduced and the current developments presented. For assessment and classification of the applications and the performance of the technologies, the methods of mass production and manufacturing defects will be discussed. Sample parts, reports from current developments in the field of research and an excursion to a gear manufacturing company round out the lecture.

Learning Outcomes:

The students …

- can describe the basic terms of gearings and are able to explain the imparted basics of the gearwheel and gearing theory.
- are able to specify the different manufacturing processes and machine technologies for producing gearings. Furthermore they are able to explain the functional principles and the dis-/advantages of these manufacturing processes.
- can apply the basics of the gearing theory and manufacturing processes on new problems.
- are able to read and interpret measuring records for gearings. are able to make an appropriate selection of a process based on a given application
- can describe the entire process chain for the production of toothed components and their respective influence on the resulting workpiece properties.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.98 Module component: Geological Hazards and Risk [T-PHYS-103525]

Coordinators: Prof. Dr. Andreas Rietbrock
Dr. Andreas Schäfer
Organisation: KIT Department of Physics
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Version
Examination of another type	6 CP	graded	Each winter term	3

Courses					
WT 26/27	**4060121**	Geological Hazards and Risk	**2 SWS**	**Lecture /**	**Schäfer, Rietbrock**
WT 26/27	**4060122**	Exercises on Geological Hazards and Risk	**2 SWS**	**Practice /**	**Schäfer, Rietbrock**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Workload
180 hours

T 3.99 Module component: Global Optimization I [T-WIWI-102726]

Coordinators: Prof. Dr. Oliver Stein
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-101414 - Methodical Foundations of OR

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2550134**	Global Optimization I	**2 SWS**	**Lecture /** 🗣	**Stein**
Exams					
ST 2026	**7900205_SS2026_HK**	Global Optimization I			**Stein**
WT 26/27	**7900004_WS2627_NK**	Global Optimization I			**Stein**

Legend: 🖥 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is in the form of a written examination in English (60 min.) (according to § 4(2), 1 SPO). The successful completion of the exercises is required for admission to the written exam.

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Prerequisites
None

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-103638 - Global Optimization I and II must not have been started.

Recommendations
None

Additional Information
Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from courses related to this module component:

V Global Optimization I

2550134, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Algorithms (Kelley's cutting plane method, Frank-Wolfe method, primal-dual interior point methods)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *nonconvex* optimization problems forms the contents of the lecture "Global Optimization II". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the convex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the convex case in practice.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
O. Stein, Basic Concepts of Global Optimization, Springer, 2024

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

T 3.100 Module component: Global Optimization I and II [T-WIWI-103638]

Coordinators: Prof. Dr. Oliver Stein
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101414 - Methodical Foundations of OR

Type	Credits	Grading	Term offered	Version
Written examination	9 CP	graded	Each summer term	1

Courses					
ST 2026	**2550134**	Global Optimization I	**2 SWS**	**Lecture /** 🗣	**Stein**
ST 2026	**2550135**	Exercise to Global Optimization I	**1 SWS**	**Practice /** 🗣	**Stein, Huber**
ST 2026	**2550136**	Global Optimization II	**2 SWS**	**Lecture /** 🗣	**Stein**
Exams					
ST 2026	**7900207_SS2026_HK**	Global Optimization I and II			**Stein**
WT 26/27	**7900006_WS2627_NK**	Global Optimization I and II			**Stein**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment of the lecture is a written examination in English (120 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

Prerequisites
None

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-102726 - Global Optimization I must not have been started.
2. The module component T-WIWI-102727 - Global Optimization II must not have been started.

Recommendations
None

Additional Information
Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from courses related to this module component:

V Global Optimization I

2550134, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Algorithms (Kelley's cutting plane method, Frank-Wolfe method, primal-dual interior point methods)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *nonconvex* optimization problems forms the contents of the lecture "Global Optimization II". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the convex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the convex case in practice.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
O. Stein, Basic Concepts of Global Optimization, Springer, 2024

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

V **Global Optimization II** **Lecture (V)**
2550136, SS 2026, 2 SWS, Language: English, Open in study portal **On-Site**

Content
In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the nonconvex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the nonconvex case in practice.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h

• Preparation and follow-up of course content: 45 h

• Exam preparation and participation in the assessment: 30 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
O. Stein, Basic Concepts of Global Optimization, Springer, 2024

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

T 3.101 Module component: Global Optimization II [T-WIWI-102727]

Coordinators: Prof. Dr. Oliver Stein
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101414 - Methodical Foundations of OR

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	2

Courses					
ST 2026	**2550136**	Global Optimization II	**2 SWS**	**Lecture / 🗣**	**Stein**
ST 2026	**2550137**	Exercise to Global Optimization II	**1 SWS**	**Practice / 🗣**	**Stein, Huber**
Exams					
ST 2026	**7900206_SS2026_HK**	Global Optimization II			**Stein**
WT 26/27	**7900005_WS2627_NK**	Global Optimization II			**Stein**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment of the lecture is a written examination in English (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Prerequisites
None

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-103638 - Global Optimization I and II must not have been started.

Additional Information
Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from courses related to this module component:

V Global Optimization II

2550136, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the nonconvex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the nonconvex case in practice.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h

• Preparation and follow-up of course content: 45 h

• Exam preparation and participation in the assessment: 30 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
O. Stein, Basic Concepts of Global Optimization, Springer, 2024

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

T 3.102 Module component: Global Production [T-MACH-114800]

Coordinators: Prof. Dr.-Ing. Gisela Lanza
Michael Martin

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2149613**	Global Production	**2 SWS**	**Lecture /**	**Lanza, Martin**
Exams					
ST 2026	**76T-MACH-114800-WING**	Global Production			**Lanza**
WT 26/27	**76- T-MACH-114800-WING**	Global Production			**Lanza**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Exam (60 min)

A grade bonus can be earned for successful participation in online case studies. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the course.

Prerequisites
T-MACH-108848 - Globale Produktion und Logistik - Teil 1: Globale Produktion must not be commenced.
T-MACH-105158 - Globale Produktion und Logistik - Teil 1: Globale Produktion must not be commenced.
T-MACH-110337 - Globale Produktion und Logistik must not be commenced.

Additional Information
The course is offered in English.

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V Global Production

2149613, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
The course examines the planning, design and operation of global production networks of manufacturing companies. It gives an overview of the influencing factors and challenges of global production. In-depth knowledge of common methods and procedures for planning, designing and managing global production networks is imparted.

Therefore, the lecture first of all discusses the connections and interdependencies between the business strategy and the production strategy and illustrates necessary tasks for the definition of a production strategy. Methods for site selection, for the site-specific adaptation of product design and production technology as well as for the establishment of new production sites and for the adaptation of existing production networks to changing framework conditions are subsequently taught within the context of the design of the network footprint. With regard to the management of global production networks, the lecture addresses challenges associated with coordination, procurement and order management in global networks.

The lecture is complemented by an exercise that discusses the use of Industry 4.0 applications in the context of global production as well as current trends with regard to the planning, design and management of global production networks. The exercise is not relevant for Mechanical Engineering

The topics include:

- Basic conditions and influencing factors of global production (historical development, targets, chances and threats)
- Framework for planning, designing and managing global production networks
- Production strategies for global production networks
    - From business strategy to production strategy
    - Tasks of the production strategy (product portfolio management, circular economy, planning of production depth, production-related research and development)
- Design of global production networks
    - Basic types of network structures
    - Planning process for the design of the network footprint
    - Adaptation of the network footprint
    - Site selection
    - Location-specific adaptation of production technology and product design
- Management of global production networks
    - Network coordination
    - Procurement process
    - Order management

Exercise contents only for WiWis:
Exercise for Global Production coverring topics with respect to trends in resilience, sustainability and digitalisation in global production networks.

Learning Outcomes:

The students …

- can explain the challenges and enablers of global production networks and evaluate methods for decision support.
- are able to explain factors influencing decision-making in the design and operation of a global production network.
- are able to distinguish between corporate and business unit strategy as well as forms of growth and outsourcing.
- can explain the objectives of production and production network strategies as well as the ideal-typical forms of strategy
- are able to identify ideal-typical network structures of global production networks.
- can apply a network adjustment, taking into account the relevant aspects.
- can systematically analyse, evaluate and select new locations in the global production network.
- are able to apply challenges and solutions for location-specific manufacturing technology and product design.
- can evaluate the suitability of different forms of co-location of R&D and site roles for the sites in a production network.
- are able to explain the role distribution of sites, the management of external suppliers, order processing and demand planning in global production networks.

Workload MACH:
regular attendance: 21 hours
self-study: 99 hours

Workload WiWi:
regular attendance: 26 hours
self-study: 124 hours

Recommendations:
Combination with Strategic Decision-Making in Global Production Network Design: A Seminar on Optimisation and Simulation (76-T-MACH-113372) is recommended.

Literature
Medien
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt

empfohlene Sekundärliteratur:
Abele, E. et al: Handbuch Globale Produktion, Hanser Fachbuchverlag, 2006 (deutsch)

Media
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/)

recommended secondary literature:
Abele, E. et al: Global Production – A Handbook for Strategy and Implementation, Springer 2008 (english)

T 3.103 Module component: Handling Characteristics of Motor Vehicles I [T-MACH-105152]

Coordinators: Dr.-Ing. Fabian Weitz
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101264 - Handling Characteristics of Motor Vehicles

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each winter term	1

Courses					
WT 26/27	**2113807**	Handling Characteristics of Motor Vehicles I	**2 SWS**	**Block / 🗣**	**Weitz**
Exams					
ST 2026	**76-T-MACH-105152**	Handling Characteristics of Motor Vehicles I			**Weitz**
WT 26/27	**76-T-MACH-105152**	Handling Characteristics of Motor Vehicles I			**Weitz**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Verbally

Duration about 30 up to 40 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Handling Characteristics of Motor Vehicles I

2113807, WS 26/27, 2 SWS, Language: German, Open in study portal

Block (B)
On-Site

Content
1. Problem definition: Control loop driver - vehicle - environment (e.g. coordinate systems, modes of motion of the car body and the wheels)

2. Simulation models: Creation from motion equations (method according to D'Alembert, method according to Lagrange, programme packages for automatically producing of simulation equations), model for handling characteristics (task, motion equations)

3. Tyre behavior: Basics, dry, wet and winter-smooth roadway

Learning Objectives:

The students know the basic connections between drivers, vehicles and environment. They can build up a vehicle simulation model, with which forces of inertia, aerodynamic forces and tyre forces as well as the appropriate moments are considered. They have proper knowledge in the area of tyre characteristics, since a special meaning comes to the tire behavior during driving dynamics simulation. Consequently they are ready to analyze the most importent influencing factors on the driving behaviour and to contribute to the optimization of the handling characteristics.

Organizational issues
Termine und Nähere Informationen: siehe ILIAS oder Institutshomepage

Dates and further information will be published on the homepage of the institute.

Die Vorlesung wird als Videostream zur Verfügung gestellt. Sie finden den Videostream und das Vorlesungsmaterial auf ILIAS. Das ILIAS-Passwort erhalten Sie unter https://fast-web-01.fast.kit.edu/PasswoerterIlias/

Literature
1. Willumeit, H.-P.: Modelle und Modellierungsverfahren in der Fahrzeugdynamik,
B. G. Teubner Verlag, 1998

2. Mitschke, M./Wallentowitz, H.: Dynamik von Kraftfahrzeugen, Springer-Verlag, Berlin, 2004

3. Gnadler, R.; Unrau, H.-J.: Umdrucksammlung zur Vorlesung Fahreigenschaften von Kraftfahrzeugen I

T 3.104 Module component: Handling Characteristics of Motor Vehicles II [T-MACH-105153]

Coordinators: Dr.-Ing. Fabian Weitz
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101264 - Handling Characteristics of Motor Vehicles

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2114838**	Handling Characteristics of Motor Vehicles II	**2 SWS**	**Lecture /** 🗣	**Weitz**
Exams					
ST 2026	**76-T-MACH-105153**	Handling Characteristics of Motor Vehicles II			**Weitz**
WT 26/27	**76-T-MACH-105153**	Handling Characteristics of Motor Vehicles II			**Weitz**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral Examination

Duration about 30 up to 40 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Handling Characteristics of Motor Vehicles II

2114838, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Vehicle handling: Bases, steady state cornering, steering input step, single sine, double track switching, slalom, cross-wind behavior, uneven roadway

2. stability behavior: Basics, stability conditions for single vehicles and for vehicles with trailer

Learning Objectives:

The students have an overview of common test methods, with which the handling of vehicles is gauged. They are able to interpret results of different stationary and transient testing methods. Apart from the methods, with which e.g. the driveability in curves or the transient behaviour from vehicles can be registered, also the influences from cross-wind and from uneven roadways on the handling characteristics are well known. They are familiar with the stability behavior from single vehicles and from vehicles with trailer. Consequently they are ready to judge the driving behaviour of vehicles and to change it by specific vehicle modifications.

Literature
1. Zomotor, A.: Fahrwerktechnik: Fahrverhalten, Vogel Verlag, 1991

2. Mitschke, M./Wallentowitz, H.: Dynamik von Kraftfahrzeugen, Springer-Verlag, Berlin, 2004

3. Gnadler, R.; Unrau, H.-J.: Umdrucksammlung zur Vorlesung Fahreigenschaften von Kraftfahrzeugen II

T 3.105 Module component: Health Statistics [T-WIWI-115240]

Coordinators: TT-Prof. Dr. Johannes Bracher
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2500066**	Health Statistics	**2 SWS**	**Lecture / 🗣**	**Bracher**
WT 26/27	**2500071**	Tutorial in Health Statistics	**2 SWS**	**Practice / 🗣**	**Bracher**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Assessment takes the form of a written examination (90 minutes). If there are few participants, an oral examination (approx. 25 minutes) will be administered instead.

Prerequisites
None

Recommendations
Knowledge of the subject matter covered in the course "Introduction to Econometrics" [2520016] is required.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Health Statistics

2500066, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
This course provides an introduction to statistical and mathematical tools for the health sciences and epidemiology, with a particular focus on infectious diseases. Students will acquire an understanding of epidemiological data and their analysis. This includes notions of disease burden and risk, statistical questions in diagnostics and treatment, as well as dynamic and statistical models of disease spread over time and space. Examples using real and simulated data will be run in R.

Students are expected to have solid prior knowledge in statistics (introductory courses and Introduction to Econometrics / Einführung in die Ökonometrie).

The total workload for this course (4.5 credit points) is approximately 135 hours.

Literature
Leonhard Held: Clinical Biostatistics (Online-Buch)

Ottar Bjornstad: Epidemics: Models and Data Using R (Springer)

T 3.106 Module component: High Performance Powder Metallurgy Materials [T-MACH-102157]

Coordinators: apl. Prof. Dr. Günter Schell
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2126749**	Advanced powder metals	**2 SWS**	**Lecture /**	**Schell**
Exams					
ST 2026	**76-T-MACH-102157**	High Performance Powder Metallurgy Materials			**Schell**
WT 26/27	**76-T-MACH-102157**	High Performance Powder Metallurgy Materials			**Schell**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral exam, 20- 30 min

Prerequisites
none

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Advanced powder metals

2126749, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Literature

- W. Schatt ; K.-P. Wieters ; B. Kieback. ".Pulvermetallurgie: Technologien und Werkstoffe", Springer, 2007
- R.M. German. "Powder metallurgy and particulate materials processing. Metal Powder Industries Federation, 2005
- F. Thümmler, R. Oberacker. "Introduction to Powder Metallurgy", Institute of Materials, 1993

T 3.107 Module component: HR-Management 1: HR Strategies in the Age of AI [T-WIWI-113745]

Coordinators: Prof. Dr. Petra Nieken
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-105928 - HR Management & Digital Workplace
M-WIWI-106860 - Leadership & Sustainable HR-Management

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2573005**	HR-Management 1: HR strategies in the age of AI	**2 SWS**	**Lecture / 🗣**	**Nieken**
WT 26/27	**2573006**	Übung zu HR-Management 1: HR Strategies in the age of AI	**1 SWS**	**Practice / 🗣**	**Nieken, Mitarbeiter**
Exams					
ST 2026	**7900134**	HR-Management 1: HR strategies in the age of AI (formerly Human Resource Management)			**Nieken**
WT 26/27	**7900200**	HR-Management 1: HR strategies in the age of AI (formerly Human Resource Management)			**Nieken**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment is conducted in the form of an oral (approx. 30 minutes) or written (60 minutes) examination (according to §4(2), 1 examination regulations). The exam is offered every semester and can be retaken at any regular examination date.

Prerequisites
None

Recommendations
Prior attendance of the Business Administration module is recommended.

Below you will find excerpts from courses related to this module component:

V HR-Management 1: HR strategies in the age of AI

2573005, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

In this course, students will acquire fundamental knowledge in the field of human resource management and delve deeply into the future of work. We explore not only classical topics but also the significance of artificial intelligence in the workplace, along with selected aspects related to sustainability and shaping the future of work. Drawing from microeconomic and behavioral economic approaches, we analyze various processes and tools in human resource management. We evaluate their alignment with corporate strategy. We investigate how we can design workplaces sustainably while considering the individual needs of employees. In addition, we look at how AI is transforming our work environment and the opportunities and challenges it presents.
Going beyond theoretical concepts, we validate our insights using real-world data from research papers and current events. Discussions are strongly encouraged!

Learning Outcomes

The student

- understands the processes and instruments of human resource management.
- analyzes different methods and evaluates their usefulness with a special focus on AI.
- analyzes different processes and evaluates the strengths and weaknesses.
- understands the challenges of human resource management and its link to corporate strategy with a special focus on AI and sustainability aspects.
- posses knowledge about the applicability and challenges of different scientific research methods and open science.

Workload

The total workload for this course is approximately 135 hours.

Lecture: 32 hours

Preparation of lecture: 52 hours

Exam preparation: 51 hours

Literature

Mandatory literature:

- Slides and current research papers (will be provided during the lecture)

Supplementary literature:

- Personalmanagement, Stock-Homburg, 2019
- Personnel Economics, Kuhn, 2017
- Current research papers and case studies (will be provided during the lecture)

T 3.108 Module component: HR-Management 2: Organization, Fairness & Leadership [T-WIWI-114178]

Coordinators: Prof. Dr. Petra Nieken
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101668 - Economic Policy I
M-WIWI-106860 - Leadership & Sustainable HR-Management

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2573001**	HR-Management 2: Organization, Fairness & Leadership	**2 SWS**	**Lecture /** 🗣	**Nieken**
ST 2026	**2573002**	Übung zu HR-Management 2: Organization, Fairness & Leadership	**1 SWS**	**Practice /** 🗣	**Nieken, Mitarbeiter, Gorny**
Exams					
ST 2026	**7900133**	HR-Management 2: Organization, Fairness & Leadership (formerly Personnel Policies and Labor Market Institutions)			**Nieken**
WT 26/27	**7900202**	HR-Management 2: Organisation, Fairness & Leadership (ehemals Personalpolitik und Arbeitsmarktinstitutionen)			**Nieken**

Legend: 🖥 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment of this course is a written examination of 1 hour. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites
None

Recommendations
Completion of module Business Administration is recommended.

Basic knowledge of microeconomics, game theory, and statistics is recommended.

Below you will find excerpts from courses related to this module component:

V HR-Management 2: Organization, Fairness & Leadership

Lecture (V)
On-Site

2573001, SS 2026, 2 SWS, Language: German, Open in study portal

Content
In the course, we explore central aspects of the working world. Students gain a deep understanding of the dynamics of wage and collective bargaining negotiations and critically engage with compensation structures within companies. A special focus lies in creating a sustainable workplace that meets both employees' needs and society's ecological and social demands. Additionally, we address topics related to diversity and inclusion. Students develop innovative approaches to leadership and new forms of work that are increasingly relevant in the modern work environment. Our analyses are based on microeconomic and behavioral economic approaches, evaluating their alignment with corporate strategy. We move beyond theoretical concepts, examining our insights using real-world data from research papers and current events. Discussions are explicitly encouraged!

Aim
The student

- understands the process and instruments of HR-Management with a focus on fair working conditions, sustainability, and leadership.
- analyzes various methods and evaluates their usefulness, particularly regarding fairness and leadership in organizations.
- analyzes various processes and assesses their strengths and weaknesses.
- evaluates the strengths and weaknesses of existing structures and regulations based on systematic criteria.
- possess knowledge about the applicability and challenges of different scientific research methods

Workload
The total workload for this course is approximately 135 hours.

Lecture 32 hours

Preparation of lecture 52 hours

Exam preparation 51 hours

Literature

- Arbeitsmarktökonomik, W. Franz, Springer, 2013
- The Nature of Leadership, Antonakis, J. Day, D. 2017

T 3.109 Module component: Hydraulic Engineering and Water Management [T-BGU-101667]

Coordinators: Prof. Dr. Mario Jorge Rodrigues Pereira da Franca
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	4 CP	graded	Each term	1 semesters	1

Courses					
WT 26/27	**6200511**	Hydraulic Engineering	**2 SWS**	**Lecture / 🗣**	**Rodrigues Pereira da Franca**
WT 26/27	**6200512**	Hydraulic Engineering - Excercise	**1 SWS**	**Practice / 🗣**	**Seidel**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
written exam with 60 minutes

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
120 hours

T 3.110 Module component: Hydrogen and reFuels - Energy Conversion in Combustion Engines [T-MACH-111585]

Coordinators: Dr.-Ing. Heiko Kubach
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101275 - Combustion Engines I

Type	Credits	Grading	Term offered	Expansion	Version
Oral examination	4 CP	graded	Each winter term	1 semesters	2

Courses					
WT 26/27	**2134155**	Hydrogen and reFuels - Energy Conversion in Combustion Engines	**3 SWS**	**Lecture / Practice /** 🗣	**Koch**
Exams					
ST 2026	**76-T-MACH-105564**	Hydrogen and reFuels - Energy Conversion in Combustion Engines			**Koch**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral exam, appr. 25 minutes, no auxillary means

Prerequisites
T-MACH-113979 must not have been started.

Workload
120 hours

T 3.111 Module component: Hydrology [T-BGU-101693]

Coordinators: Prof. Dr.-Ing. Erwin Zehe
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	4 CP	graded	Each term	1 semesters	2

Courses					
WT 26/27	**6200513**	Hydrology	**2 SWS**	**Lecture /** 🗣	**Zehe, Wienhöfer**
WT 26/27	**6200514**	Tutorial Hydrology	**1 SWS**	**Practice /** 🗣	**Zehe, Wienhöfer**
Exams					
ST 2026	**8230101693**	Hydrology			**Wienhöfer, Zehe**

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
written exam, 60 min.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
120 hours

T 3.112 Module component: Ignition Systems [T-MACH-105985]

Coordinators: Dr.-Ing. Olaf Toedter
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Version
Oral examination	4 CP	graded	1

Courses					
WT 26/27	**2133125**	Ignition systems	**3 SWS**	**Lecture /**	**Toedter**
Exams					
ST 2026	**76-T-MACH-105985**	Ignition systems			**Toedter**
WT 26/27	**76-T-MACH-105985**	Ignition systems			**Koch**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral exam, 20 min

Prerequisites
none

Additional Information
This course is offered in German.

Workload
120 hours

T 3.113 Module component: Industrial Organization [T-WIWI-102844]

Coordinators: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Irregular	1

Courses					
ST 2026	**2560238**	Industrial Organization	**2 SWS**	**Lecture /** 🗣	**Reiß**
ST 2026	**2560239**	Übung zu Industrieökonomie	**1 SWS**	**Practice /** 🗣	**Reiß, Potarca**
Exams					
ST 2026	**7910002**	Industrial Organization			**Reiß**

Legend: 🖳 Online, 🖳🗣 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendations
Completion of the module Economics [WW1VWL] is assumed.

Additional Information
This course is not given in summer 2017.

Below you will find excerpts from courses related to this module component:

V Industrial Organization

2560238, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Verpflichtende Literatur:

H. Bester (2012): Theorie der Industrieökonomik, Springer-Verlag.

Ergänzende Literatur:

J. Tirole (1988): Theory of Industrial Organization, MIT Press.

D. Carlton / J. Perloff (2005): Modern Industrial Organization, Pearson.

P. Belleflamme / M. Peitz (2010): Industrial Organization

T 3.114 Module component: Integrated Production Planning in the Age of Industry 4.0 [T-MACH-109054]

Coordinators: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101272 - Integrated Production Planning

Type	Credits	Grading	Term offered	Version
Written examination	9 CP	graded	Each summer term	1

Courses					
ST 2026	**2150660**	Integrated Production Planning in the Age of Industry 4.0	**6 SWS**	**Lecture / Practice / 🗣**	**Lanza**
Exams					
ST 2026	**76-T-MACH-109054**	Integrated Production Planning in the Age of Industry 4.0			**Lanza**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written Exam (120 min)

Prerequisites
"T-MACH-108849 - Integrierte Produktionsplanung im Zeitalter von Industrie 4.0" as well as "T-MACH-102106 Integrierte Produktionsplanung" must not be commenced.

Additional Information
The course is offered in German.

Workload
270 hours

Below you will find excerpts from courses related to this module component:

V Integrated Production Planning in the Age of Industry 4.0

2150660, SS 2026, 6 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Integrated Production Planning in the age of Industry 4.0 will be taught in the context of this engineering science lecture. In addition to a comprehensive introduction to Industry 4.0, the following topics will be addressed at the beginning of the lecture:

- Basics, history and temporal development of production
- Integrated production planning and integrated digital engineering
- Principles of integrated production systems and further development with Industry 4.0

Building on this, the phases of integrated production planning are taught in accordance with VDI Guideline 5200, whereby special features of parts production and assembly are dealt with in the context of case studies:

- Factory planning system
- Definition of objectives
- Data collection and analysis
- Concept planning (structural development, structural dimensioning and rough layout)
- Detailed planning (PPS, process simulation as a validation tool, planning of conveyor technology and storage systems for linking production and IT systems in the I4.0 factory)
- Preparation and monitoring of implementation
- Start-up and series support

The lecture contents are complemented by numerous current practical examples with a strong Industry 4.0 reference. Aspects of sustainability are anchored in all units and thus basic knowledge of sustainable production planning is taught. Within the exercises the lecture contents are deepened and applied to specific problems and tasks.

Learning Outcomes:
The students …

- can discuss basic questions of production technology.
- are able to apply the methods of integrated production planning to new problems.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques for a specific problem.
- can apply the learned methods of integrated production planning to new problems.
- can use their knowledge targeted for efficient production technology.
- know the basic features of sustainable production planning and can apply underlying knowledge.

Workload:

MACH:
regular attendance: 63 hours
self-study: 177 hours
WING:
regular attendance: 63 hours
self-study: 207 hours

Organizational issues
Vorlesungstermine dienstags 14.00 Uhr und donnerstags 14.00 Uhr, Übungstermine donnerstags 15.45 Uhr. Bekanntgabe der konkreten Übungstermine erfolgt in der ersten Vorlesung

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.115 Module component: Integrative Strategies in Production and Development of High Performance Cars [T-MACH-105188]

Coordinators: Karl-Hubert Schlichtenmayer
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2150601**	Integrative Strategies in Production and Development of High Performance Cars	**2 SWS**	**Lecture /** 🗣	**Schlichtenmayer**
Exams					
ST 2026	**76-T-MACH-105188**	Integrative Strategies in Production and Development of High Performance Cars			**Schlichtenmayer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Exam (60 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Integrative Strategies in Production and Development of High Performance Cars

Lecture (V)
On-Site

2150601, SS 2026, 2 SWS, Language: German, Open in study portal

Content
The lecture deals with the technical and organizational aspects of integrated development and production of sports cars on the example of Porsche AG. The lecture begins with an introduction and discussion of social trends. The deepening of standardized development processes in the automotive practice and current development strategies follow. The management of complex development projects is a first focus of the lecture. The complex interlinkage between development, production and purchasing are a second focus. Methods of analysis of technological core competencies complement the lecture. The course is strongly oriented towards the practice and is provided with many current examples.

The main topics are:

- Introduction to social trends towards high performance cars
- Automotive Production Processes
- Integrative R&D strategies and holistic capacity management
- Management of complex projects
- Interlinkage between R&D, production and purchasing
- The modern role of manufacturing from a R&D perspective
- Global R&D and production
- Methods to identify core competencies

Learning Outcomes:

The students …

- are capable to specify the current technological and social challenges in automotive industry.
- are qualified to identify interlinkages between development processes and production systems.
- are able to explain challenges and solutions of global markets and global production of premium products.
- are able to explain modern methods to identify key competences of producing companies.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.116 Module component: International Finance [T-WIWI-102646]

Coordinators: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101402 - eFinance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Grading	Term offered	Version
Written examination	3 CP	graded	see Annotations	1

Courses					
ST 2026	**2530570**	International Finance	**2 SWS**	**Lecture / 🗣**	**Walter, Uhrig-Homburg**
Exams					
ST 2026	**7900097**	International Finance			**Uhrig-Homburg**
WT 26/27	**7900052**	International Finance			**Uhrig-Homburg**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The success control takes place in form of a written examination (60 min). If the number of participants is low, an oral examination may also be offered. The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Recommendations
None

Additional Information
The course is offered as a 14-day or block course.

Below you will find excerpts from courses related to this module component:

V International Finance

2530570, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 25 h

• Exam preparation and participation in the assessment: 20 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
Kickoff am Mittwoch, 29.04.26, 16:00 - 19:15 Uhr im Raum 320 im Geb. 09.21 (Blücherstr. 17). Die Veranstaltung wird samstags als Blockveranstaltung angeboten (nach dem Kickoff nach Absprache).

Literature
Weiterführende Literatur:

- Eiteman, D. et al., Multinational Business Finance, 13. Auflage, 2012.
- Solnik, B. und D. McLeavey, Global Investments, 6. Auflage, 2008.

T 3.117 Module component: Introduction to Bionics [T-MACH-111807]

Coordinators: apl. Prof. Dr. Hendrik Hölscher
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	3

Courses					
ST 2026	**2142151**	Introduction to Biomimetics	**2 SWS**	**Lecture / 🗣**	**Hölscher**
Exams					
ST 2026	**76-T-MACH-102172**	Introduction into Biomimetics			**Hölscher**
WT 26/27	**76-T-MACH-102172**	Introduction into Biomimetics			**Hölscher**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
written exam (duration: 60 minutes)

Prerequisites
none

Additional Information
Module component T-MACH-102172 may not be started

Below you will find excerpts from courses related to this module component:

V Introduction to Biomimetics

2142151, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Bionics focuses on the design of technical products following the example of nature. For this purpose we have to learn from nature and to understand its basic design rules. Therefore, the lecture focuses on the analysis of the fascinating effects used by many plants and animals. Possible implementations into technical products are discussed in the end.

The students should be able analyze, judge, plan and develop biomimetic strategies and products.

Basic knowledge in physics and chemistry

The successfull attandence of the lecture is controlled by a written examination.

Organizational issues
Im ILIAS werden Materialien (Videos, Originalliteratur, Übungen) zur Vertiefung zur Verfügung gestellt.

Für die schriftliche Klausur werden zwei Termine angeboten (zweite Woche nach Vorlesungsende im Sommersemester und eine Woche vor Vorlesungsbeginn im Wintersemester).

Literature
Folien und Literatur werden in ILIAS zur Verfügung gestellt.

T 3.118 Module component: Introduction to Ceramics [T-MACH-100287]

Coordinators: Prof. Dr. Kaline Pagnan Furlan
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Written examination	6 CP	graded	Each winter term	2

Courses					
WT 26/27	**2125757**	Introduction to Ceramics	**3 SWS**	**Lecture /**	**Pagnan Furlan, Wagner, Ribas Gomes**
Exams					
ST 2026	**76-T-MACH-100287**	Introduction to Ceramics			**Pagnan Furlan, Wagner, Ribas Gomes**
WT 26/27	**76-T-MACH-100287**	Introduction to Ceramics			**Pagnan Furlan, Wagner, Ribas Gomes**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of an written exam (60 min) taking place at a specific date.

The re-examination is offered at a specific date.

Prerequisites
None

Workload
180 hours

Below you will find excerpts from courses related to this module component:

V Introduction to Ceramics

2125757, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
This course provides a comprehensive introduction to ceramic materials, covering chemical bonding, crystal structures, crystal defects, phases, and phase diagrams. Students learn about powder preparation, shaping, and sintering (solid- and liquid-phase), as well as microstructure development and grain growth. The course explores mechanical, electrical, and other functional properties, linking structure and processing to performance. Lectures are complemented by exercises to apply theory to practical problems and design considerations.

Literature

- Callister William D., Rethwisch David G., Scheffler Michael: *Materialwissenschaften und Werkstofftechnik*, Wiley-VCH Verlag, Weinheim, 2013.
  Online verfügbar: http://textbooks.wiley-vch.de/book/callister0072/ *
- Salmang H., Scholze H., Telle R.: *Keramik*, Springer Berlin Heidelberg, 2007.
  Online verfügbar: https://link.springer.com/book/10.1007/978-3-540-49469-0 *
- Kollenberg Wolfgang: *Technische Keramik*, Vulkan-Verlag, Essen, 2004.
  Online-Katalog: Link zur Bibliothek
- Richerson David W.: *Modern ceramic engineering*, CRC Press, Boca Raton, FL, 2018.
  Verfügbar im Netz des KIT: https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&db=nlabk&AN=1802218 *

** Zugang möglich im Netz des KIT.*

T 3.119 Module component: Introduction to Econometrics [T-WIWI-114622]

Coordinators: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each summer term	2

Courses					
ST 2026	**2520016**	Introduction to Econometrics	**2 SWS**	**Lecture /** 🗣	**Schienle, Bracher**
ST 2026	**2520017**	Übungen zu Einführung in die Ökonometrie	**2 SWS**	**Practice**	**Schienle, Rüter, Bracher, Leimenstoll**
Exams					
ST 2026	**7900044**	Introduction in Econometrics			**Schienle**
WT 26/27	**7900002**	Introduction in Econometrics			**Schienle**

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination lasting 1 hour.

Grade Bonus through Bonus Exercises: By achieving qualified participation in at least 80% of the bonus exercises accompanying the lectures, students can earn a grade bonus for the examinations directly following the semester. This bonus of three points (out of a maximum of 90 points for the exam) will only be credited if the examination is considered passed without the application of this bonus. The grade bonus can thus result in an improvement of up to one grade increment.

Prerequisites
None

Recommendations
For successful participation, sound knowledge of statistics is helpful. It is recommended to have completed the courses Statistics I and Statistics II beforehand.

Below you will find excerpts from courses related to this module component:

V Introduction to Econometrics

2520016, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Learning objectives:

- Familiarity with the basic concepts and methods of econometrics
- Preparation of simple econometric surveys

Content:

- Simple and multiple linear regression (estimating parameters, confidence interval, testing, prognosis, testing assumptions)
- Model assessment

Requirements:

Knowledge of the lectures Statistics I + II is required.

Workload:

Total workload for 5 CP: approx. 150 hours

Attendance: 30 hours

Preparation and follow-up: 120 hours

Literature

Von Auer: Ökonometrie ISBN 3-540-00593-5

Goldberger: A course in Econometrics ISBN 0-674-17544-1

Gujarati. Basic Econometrics ISBN 0-07-113964-8

Schneeweiß: Ökonometrie ISBN 3-7908-0008-2

T 3.120 Module component: Introduction to Energy Economics [T-WIWI-102746]

Coordinators: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101464 - Energy Economics

Type	Credits	Grading	Term offered	Version
Written examination	5,5 CP	graded	Each summer term	8

Courses					
ST 2026	**2581010**	Introduction to Energy Economics	**2 SWS**	**Lecture /** 🗣	**Fichtner**
ST 2026	**2581011**	Übungen zu Einführung in die Energiewirtschaft	**2 SWS**	**Practice /** 🗣	**Layer, Fichtner, Raab**
Exams					
ST 2026	**7981010**	Introduction to Energy Economics			**Fichtner**

Legend: 💻 Online, 🎛 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (90 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None.

Below you will find excerpts from courses related to this module component:

V Introduction to Energy Economics

2581010, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

1. Introduction: terms, units, conversions
2. The energy carrier gas (reserves, resources, technologies)
3. The energy carrier oil (reserves, resources, technologies)
4. The energy carrier hard coal (reserves, resources, technologies)
5. The energy carrier lignite (reserves, resources, technologies)
6. The energy carrier uranium (reserves, resources, technologies)
7. The final carrier source electricity
8. The final carrier source heat
9. Other final energy carriers (cooling energy, hydrogen, compressed air)

The student is able to

- characterize and judge the different energy carriers and their peculiarities,
- understand contexts related to energy economics.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h

• Preparation and follow-up of course content: 60 h

• Exam preparation and participation in the assessment: 45 h

Total workload: 165 h (corresponds to 5.5 ECTS credits)

Literature
Weiterführende Literatur:

Pfaffenberger, Wolfgang. Energiewirtschaft. ISBN 3-486-24315-2
Feess, Eberhard. Umweltökonomie und Umweltpolitik. ISBN 3-8006-2187-8
Müller, Leonhard. Handbuch der Elektrizitätswirtschaft. ISBN 3-540-67637-6
Stoft, Steven. Power System Economics. ISBN 0-471-15040-1
Erdmann, Georg. Energieökonomik. ISBN 3-7281-2135-5

T 3.121 Module component: Introduction to Engineering Geology [T-BGU-101500]

Coordinators: Prof. Dr. Philipp Blum
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	1

Courses					
WT 26/27	**6339057**	Introduction to Engineering Geology	**4 SWS**	**Lecture / Practice**	**Blum, Menberg, Steger**
Exams					
ST 2026	**8210_0100016**	Introduction to Engineering Geology			**Blum**

Prerequisites
none

Workload
150 hours

T 3.122 Module component: Introduction to Engineering Mechanics I: Statics and Strength of Materials [T-MACH-102208]

Coordinators: Prof. Dr.-Ing. Alexander Fidlin
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101259 - Engineering Mechanics

Type	Credits	Grading	Term offered	Version
Written examination	3 CP	graded	Each summer term	3

Courses					
ST 2026	**2162265**	Introduction to Engineering Mechanics I: Statics and Strength of Materials (Tutorial)	**2 SWS**	**Practice /** 🗣	**Fidlin, Ströhle, Thasan**
ST 2026	**2162274**	Introduction to Engineering Mechanics I: Statics and Strength of Materials	**2 SWS**	**Lecture /** 🗣	**Fidlin, Ströhle**
Exams					
ST 2026	**76-T-MACH-102208-1**	Introduction to Engineering Mechanics I: Statics (75min)			**Fidlin, Ströhle**
ST 2026	**76-T-MACH-102208-2**	Introduction to Engineering Mechanics I: Statics and Strength of Materials (120 Min)			**Fidlin, Ströhle**

Legend: 💻 Online, 💐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written examination (120 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination takes place in every semester. Re-examinations are offered at eyery ordinary examination date.

For students of economics the assessement consists of a written examination (Statics - 75 min.)

Permitted utilities: non-programmable calculator

Prerequisites
None

Additional Information
The course is offered in German.

Workload
90 hours

T 3.123 Module component: Introduction to Engineering Mechanics II : Dynamics [T-MACH-102210]

Coordinators: Prof. Dr.-Ing. Alexander Fidlin
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101261 - Emphasis in Fundamentals of Engineering
M-WIWI-107750 - Additional Fundamentals of Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each winter term	2

Courses					
WT 26/27	**2161276**	Introduction to Engineering Mechanics II : Dynamics	**2 SWS**	**Lecture /** 🗣	**Fidlin, Ströhle**
Exams					
ST 2026	**76-T-MACH-102210**	Introduction to Engineering Mechanics II : Dynamics			**Fidlin, Ströhle**

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written examination (75 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination is offered every semester. Re-examinations are offered at every ordinary examination date.

Permitted utilities: non-programmable calculator, literature.

Prerequisites
None

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Introduction to Engineering Mechanics II : Dynamics

2161276, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

T 3.124 Module component: Introduction to Finance and Accounting [T-WIWI-112820]

Coordinators: Dr. Torsten Luedecke
Prof. Dr. Martin Ruckes
Prof. Dr. Marcus Wouters

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-105769 - Financing and Accounting

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each summer term	2

Courses					
ST 2026	**2500002**	Jahresabschluss und Bewertung	**1 SWS**	**Lecture**	**Ruckes, Luedecke**
ST 2026	**2500025**	Tutorial Introduction to Finance and Accounting	**2 SWS**	**Tutorial**	**Wouters, Ruckes, Assistenten, Kohl, Fkyerat**
ST 2026	**2610026**	Introduction to Finance and Accounting	**2 SWS**	**Lecture /**	**Ruckes, Wouters, Thimme**
Exams					
ST 2026	**7900043**	Financing and Accounting			**Ruckes, Wouters, Luedecke**
WT 26/27	**7900005**	Financing and Accounting			**Ruckes, Wouters, Luedecke**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written examination (2.5 hours) takes place as part of the examination course "Financing and Accounting" and covers the content of the two courses "Introduction to Finance and Accounting" and "Annual Financial Statements and Valuation". The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible on every regular examination date.

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V Jahresabschluss und Bewertung

2500002, SS 2026, 1 SWS, Language: German, Open in study portal

Lecture (V)

Content
Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (6 SWS × 15 weeks): 90 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 150 h (corresponds to 5 ECTS credits)

V Tutorial Introduction to Finance and Accounting

2500025, SS 2026, 2 SWS, Language: German, Open in study portal

Tutorial (Tu)

Content
Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (6 SWS × 15 weeks): 90 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 150 h (corresponds to 5 ECTS credits)

V

Introduction to Finance and Accounting

2610026, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The lecture covers the following topics:

- Investment and Finance
  - Valuation of Bonds and Stocks
  - Capital Budgeting
  - Portfolio Theory
- Financial Accounting
- Management Accounting

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (6 SWS × 15 weeks): 90 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 150 h (corresponds to 5 ECTS credits)

Literature
Ausführliche Literaturhinweise werden in den Materialen zur Vorlesung gegeben.

T 3.125 Module component: Introduction to Game Theory [T-WIWI-102850]

Coordinators: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	3

Courses					
ST 2026	**2520525**	Introduction to Game Theory	**2 SWS**	**Lecture /** 🗣	**Rosar, Puppe, Ammann**
ST 2026	**2520526**	Übungen zu Einführung in die Spieltheorie	**1 SWS**	**Practice /** 🗣	**Puppe, Rosar, Ammann**
Exams					
ST 2026	**7910001**	Introduction to Game Theory			**Puppe, Rosar**
WT 26/27	**7900006**	Introduction to Game Theory			**Puppe, Rosar**

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 minutes) according to Section 4(2),1 of the examination regulation.

The exam takes place in the recess period and can be repeated at every ordinary examination date.

Recommendations
Knowledge from the lecture "Economics I: Microeconomics" is recommended. Furthermore, basic knowledge of mathematics and statistics is assumed.

Below you will find excerpts from courses related to this module component:

V Introduction to Game Theory

2520525, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The course focusses on non-cooperative game theory. It discusses models, solution concepts, and applications for simultaneous games as well as sequential games. Various solution concepts, e.g., Nash equilibrium and subgame-perfect equilibrium, are introduced along with more advanced concepts.

This course offers an introduction to the theoretical analysis of strategic interaction situations. At the end of the course, students shall be able to analyze situations of strategic interaction systematically and to use game theory to predict outcomes and give advice in applied economics settings.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Verpflichtende Literatur:

Gibbons (1992): A Primer in Game Theory, Harvester-Wheatsheaf.

Ergänzende Literatur:

Berninghaus/Ehrhart/Güth (2010): Strategische Spiele, Springer Verlag.

Binmore (1991): Fun and Games, DC Heath.

Fudenberg/Tirole (1991): Game Theory, MIT Press.

Heifetz (2012): Game Theory, Cambridge Univ. Press.

T 3.126 Module component: Introduction to GIS for Students of Natural, Engineering and Geo Sciences [T-BGU-101681]

Coordinators: Dr.-Ing. Sven Wursthorn
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Version
Written examination	3 CP	graded	Each winter term	5

Courses					
WT 26/27	**6071101**	Introduction to GIS for Students of Natural Sciences, Engineering and Geosciences, L+E	**4 SWS**	**Lecture / Practice /** 🗣	**Wursthorn**
Exams					
ST 2026	**8280101681**	Introduction to GIS for Students of Natural, Engineering and Geo Sciences			**Wursthorn**

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
written exam, 90 min.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-BGU-103541 - Introduction to GIS for Students of Natural, Engineering and Geo Sciences, Prerequisite must have been passed.

Workload
90 hours

T 3.127 Module component: Introduction to GIS for Students of Natural, Engineering and Geo Sciences, Prerequisite [T-BGU-103541]

Coordinators: Dr.-Ing. Sven Wursthorn
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Expansion	Version
Coursework	3 CP	pass/fail	Each winter term	1 semesters	6

Courses					
WT 26/27	**6071101**	Introduction to GIS for Students of Natural Sciences, Engineering and Geosciences, L+E	**4 SWS**	**Lecture / Practice /** 🗣	**Wursthorn**
Exams					
ST 2026	**8280103541**	Introduction to GIS for Students of Natural, Engineering and Geo Sciences			**Wursthorn**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Performance is assessed through worksheets. Students must submit 5 out of 7 worksheets.

Prerequisites
none

Recommendations
none

Additional Information
none

Workload
90 hours

T 3.128 Module component: Introduction to Microsystem Technology - Practical Course [T-MACH-108312]

Coordinators: Dr. Arndt Last
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Coursework	3 CP	pass/fail	Each term	3

Courses					
ST 2026	**2143877**	Introduction to Microsystem Technology - Practical Course	**2 SWS**	**Practical course /** 🗣	**Last**
WT 26/27	**2143877**	Introduction to Microsystem Technology - Practical Course	**2 SWS**	**Practical course /** 🗣	**Last**
Exams					
ST 2026	**76-T-MACH-108312**	Introduction to Microsystem Technology - Practical Course			**Last**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
This practical course concludes with a written examination (duration 1 h). The assessment is not graded and may be repeated until it is passed.

Prerequisites
none

Workload
90 hours

Below you will find excerpts from courses related to this module component:

V Introduction to Microsystem Technology - Practical Course

2143877, SS 2026, 2 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
In the practical training includes nine experiments:

1. X-ray optics
2. UVL + REM
3. Micromixer
4. Atomic force microscopy
5. 3D-Printing
6. Light dirffraction at Chromium masks
7. Moulding
8. SAW-bio-sensors
9. Nano3D-printer - material transfer of thin foils
10. Electro spinning

Each student takes part in only four experiments.
The experiments are carried out at real workstations at the IMT and coached by IMT-staff.

Organizational issues
Das Praktikum findet 14.-18.9.2026 an vier halben Tagen in den Laboren des IMT am KIT-CN statt. Treffpunkt: Eingang Bau 301.

Das "Laborpraktikum" ist das selbe wie das "Praktikum", nur unbenotet! Beide mit schriftlicher Klausur in der Woche danach, voraussichtlich am 24.9.2026.

Wer teilnehmen möchte, muss sich ab 6.7.2026, 8h00 über das Campussystem unter Veranstaltungen (nicht unter Prüfungen!) auf die Warteliste setzen. Die endgültige Entscheidung, ob man teilnehmen kann, erfolgt erst 31.8.2026.

Literature
Menz, W., Mohr, J.: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 1997
Unterlagen zum Praktikum zur Vorlesung ' Grundlagen der Mikrosystemtechnik'

V

Introduction to Microsystem Technology - Practical Course

Practical course (P)
On-Site

2143877, WS 26/27, 2 SWS, Language: German, Open in study portal

Organizational issues
Das Praktikum findet in den Laboren des IMT am CN statt. Treffpunkt: Bau 301, vor dem Eingang.

Das "Laborpraktikum" ist das selbe wie das "Praktikum", nur unbenotet! Beide mit schriftlicher Klausur.

Wer teilnehmen möchte, muss sich ab 18.1.2027, 8h00 über das Campussystem unter Veranstaltungen (nicht unter Prüfungen!) auf die Warteliste setzen. Die endgültige Entscheidung, ob man teilnehmen kann, erfolgt erst 10.2.2027.

Literature
Menz, W., Mohr, J.: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 1997
Unterlagen zum Praktikum zur Vorlesung ' Grundlagen der Mikrosystemtechnik'

T 3.129 Module component: Introduction to Microsystem Technology I [T-MACH-114100]

Coordinators: Dr. Vlad Badilita
Prof. Dr. Jan Gerrit Korvink

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each winter term	1

Courses					
WT 26/27	**2141861**	Introduction to Microsystem Technology I	**2 SWS**	**Lecture / 🗣**	**Korvink, Badilita**
Exams					
ST 2026	**76-T-MACH-114100**	Introduction to Microsystem Technology I			**Badilita**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
written examination (60 min)

Prerequisites
T-MACH-114035 and T-MACH-105182 must not have started

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Introduction to Microsystem Technology I

2141861, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Literature
Mikrosystemtechnik für Ingenieure, W. Menz und J. Mohr, VCH Verlagsgesellschaft, Weinheim 2005

M. Madou
Fundamentals of Microfabrication
Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T 3.130 Module component: Introduction to Microsystem Technology II [T-MACH-114101]

Coordinators: Dr. Vlad Badilita
Prof. Dr. Jan Gerrit Korvink

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2142874**	Introduction to Microsystem Technology II	**2 SWS**	**Lecture /** 🗣	**Korvink, Badilita**
Exams					
ST 2026	**76-T-MACH-114101**	Introduction to Microsystem Technology II			**Badilita**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
written examination (60 min)

Prerequisites
T-MACH-114035 and T-MACH-105183 must not have started

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Introduction to Microsystem Technology II

2142874, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
- Introduction in Nano- and Microtechnologies
- Lithography
- LIGA-technique
- Mechanical microfabrication
- Patterning with lasers
- Assembly and packaging
- Microsystems

Organizational issues
Topic: Grundlagen der Mikrosystemtechnik II (MST II) SS 21
Time: Thursdays 14:00 - 15:30
10.91 Redtenbacher-Hörsaal

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005

M. Madou
Fundamentals of Microfabrication
Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T 3.131 Module component: Introduction to Operations Research I and II [T-WIWI-102758]

Coordinators: Prof. Dr. Stefan Nickel
Prof. Dr. Steffen Rebennack
Prof. Dr. Oliver Stein

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101418 - Introduction to Operations Research

Type	Credits	Grading	Term offered	Version
Written examination	9 CP	graded	see Annotations	2

Courses					
ST 2026	**2500008**	Computer Exercises on Introduction to Operations Research I	**1 SWS**	**Tutorial /**	**Dunke**
ST 2026	**2550040**	Introduction to Operations Research I	**2 SWS**	**Lecture /**	**Rebennack**
ST 2026	**2550043**	Tutorials on Introduction to Operations Research I	**2 SWS**	**Tutorial /**	**Dunke**
WT 26/27	**2500030**	Computer Exercises on Introduction to Operations Research II	**1 SWS**	**Tutorial /**	**Dunke**
WT 26/27	**2530043**	Introduction to Operations Reseasrch II	**2 SWS**	**Lecture /**	**Rebennack**
WT 26/27	**2530044**		**2 SWS**	**Tutorial /**	**Dunke**
Exams					
ST 2026	**1**	Introduction to Operations Research I and II			**Stein**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.
In each term (usually in March and August), one examination is held for both courses.
The overall grade of the module is the grade of the written examination.

Prerequisites
None

Recommendations
Knowledge of Mathematics I and II is recommended, as well as programming knowledge for the software laboratory.
It is strongly recommended to attend the course Introduction to Operations Research I
[2550040] before attending the courseIntroduction to Operations Research II
[2530043].

Workload
270 hours

Below you will find excerpts from courses related to this module component:

V Introduction to Operations Research I

2550040, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Examples for typical OR problems.

Linear Programming: Basic notions, simplex method, duality, special versions of the simplex method (dual simplex method, three phase method), sensitivity analysis, parametric optimization, game theory.

Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal and minimal cost flows in networks.

Learning objectives:

The student

- names and describes basic notions of linear programming as well as graphs and networks,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve optimization problems independently,
- validates, illustrates and interprets the obtained solutions.

Literature

- Nickel, Rebennack, Stein, Waldmann: Operations Research, 3. Auflage, Springer, 2022
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

V Introduction to Operations Reseasrch II

2530043, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Integer and combinatorial optimization: basic concepts, cutting plane methods, branch-and-bound methods, branch-and-cut methods, heuristic methods.

Nonlinear optimization: basic concepts, optimality conditions, solution methods for convex and nonconvex optimization problems.

Dynamic and stochastic models and methods: Dynamic optimization, Bellman methods, lot-sizing models and dynamic and stochastic models of inventory, queues.

Learning Objectives:

The student

- knows and describes the basic concepts of integer and combinatorial optimization, nonlinear optimization and dynamic optimization,
- knows the methods and models indispensable for a quantitative analysis,
- models and classifies optimization problems and selects appropriate solution procedures to solve simple optimization problems independently,
- validates, illustrates and interprets obtained solutions.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (5 SWS × 15 weeks): 75 h

• Preparation and follow-up of course content: 110 h

• Exam preparation and participation in the assessment: 85 h

Total workload: 270 h (corresponds to 9 ECTS credits)

Literature

- Nickel, Rebennack, Stein, Waldmann: Operations Research, 3. Auflage, Springer, 2022
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

T 3.132 Module component: Introduction to Programming with Java [T-WIWI-102735]

Coordinators: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101581 - Introduction to Programming

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2511000**	Introduction to Programming with Java	**3 SWS**	**Lecture /**	**Zöllner**
WT 26/27	**2511002**	Tutorials for Introduction to Programming with Java	**1 SWS**	**Tutorial /**	**Zöllner, Stegmaier, Boualili**
WT 26/27	**2511003**	Computer Lab for Introduction to Programming with Java	**2 SWS**	**/**	**Zöllner, Stegmaier, Boualili**
Exams					
ST 2026	**7900042**	Introduction to Programming with Java			**Zöllner**
WT 26/27	**79AIFB_Prog1**	Introduction to Programming with Java			**Zöllner**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Assessment takes the form of a written examination (60 min) at the end of the lecture period. Admission to the written examination requires successful and active participation in the computer lab.

The exam is offered every semester and may be retaken on any regular exam date.

Additional Information
The computer lab course serves the practical application, consolidation, and independent implementation of the theoretical language skills and concepts taught in the lecture. Achieving the intended practical competence in software development / programming requires continuous, supervised practice as well as direct hands-on application of the course content in the data center. Active participation and the timely submission of specified programming implementations ensure that students have demonstrated the essential practical core skills for independent problem-solving and code generation, which is a mandatory prerequisite for successfully taking the written exam.

Modalities and Organization:

- Registration for the computer lab course takes place during the first week of lectures.
- The criteria for active participation (e.g., minimum number of successfully passed programming implementations / assignments) and further details regarding the lab schedule will be announced in the first lecture and via the course website.

Below you will find excerpts from courses related to this module component:

V Introduction to Programming with Java

2511000, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
The lecture "Introduction to Programming with Java " introduces systematic programming and provides essential practical basics for all advanced computer science lectures.

Based on considerations of the structured and systematic design of algorithms, the most important constructs of modern higher programming languages as well as programming methods are explained and illustrated with examples. One focus of the lecture is on teaching the concepts of object-oriented Programming. Java is used as the programming language. Knowledge of this language is required in advanced computer science lectures.

At the end of the lecture period, a written examination will be held for which admission must be granted during the semester after successful participation in the practices. The exact details will be announced in the lecture.

Learning objectives:

- Knowledge of the fundamentals, methods and systems of computer science.
- The students acquire the ability to independently solve algorithmic problems in the programming language Java, which dominates in business applications.
- In doing so, they will be able to find strategic and creative answers in finding solutions to well-defined, concrete and abstract problems.

Workload:

The total workload for this course is approximately 150 hours. For further information see German version.

Literature
Ratz, D. Schulmeister-Zimolong, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. 9. Aktualisierte und erweiterte Auflage, Hanser 2024.

T 3.133 Module component: Introduction to Public Finance [T-WIWI-102877]

Coordinators: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101403 - Public Finance

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2560131**	Introduction to Public Finance	**3 SWS**	**Lecture /**	**Wigger**
Exams					
ST 2026	**790fiwi**	Introduction to Public Finance			**Wigger**
WT 26/27	**790fiwi**	Introduction to Public Finance			**Wigger**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Success is assessed in the form of a written examination (60 minutes). The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Below you will find excerpts from courses related to this module component:

V Introduction to Public Finance

2560131, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
The course *Introduction to Public Finance* provides an overview of the fundamental issues in public economics. The first part of the course deals with normative theories about the economic role of the state in a market economy. Welfare economics theory is offered as a base model, with which alternative normative theories are compared and contrasted. Within this theoretical framework, arguments concerning efficiency and equity are developed as justification for varying degrees of economic intervention by the state. The second part of the course deals with the positivist theory of public economics. Processes of public decision making are examined and the conditions that lead to market failures resulting from collective action problems are discussed. The third part of the course examines a variety of public spending programs, including social security systems, the public education system, and programs aimed at reducing poverty. The fifth part of the course addresses the key theoretical and political issues associated with fiscal federalism.

Learning goals:

Students are able to:

- critically assess the economic role of the state in a market economy
- explain and discuss key concepts in public finance, including: public goods; economic externalities; and market failure
- explain and critically discuss competing theoretical approaches to public finance, including welfare economics and public choice theory
- explain the theory of bureaucracy according to Weber and critically assess its strengths and weaknesses
- evaluate the incentives inherent in the bureaucratic model, as well as the more recent introduction of market-oriented incentives associated with public-sector reform

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Literatur:

Wigger, B. U. 2006. *Grundzüge der Finanzwissenschaft.* Springer: Berlin.

T 3.134 Module component: Introduction to Stochastic Optimization [T-WIWI-106546]

Coordinators: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101414 - Methodical Foundations of OR
M-WIWI-103278 - Optimization under Uncertainty

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	3

Courses					
ST 2026	**2550470**	Introduction to Stochastic Optimization	**2 SWS**	**Lecture /**	**Rebennack**
ST 2026	**2550471**	Übung zur Einführung in die Stochastische Optimierung	**1 SWS**	**Practice /**	**Rebennack, Kandora**
ST 2026	**2550474**	Rechnerübung zur Einführung in die Stochastische Optimierung	**2 SWS**	**Others**	**Rebennack, Kandora**
Exams					
ST 2026	**7900311**	Introduction to Stochastic Optimization			**Rebennack**
WT 26/27	**7900242**	Introduction to Stochastic Optimization			**Rebennack**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of a written exam (60 minutes). The exam takes place in every semester.

Prerequisites
None.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V **Introduction to Stochastic Optimization** **Lecture (V) Online**
2550470, SS 2026, 2 SWS, Language: German, Open in study portal

Content
This lecture covers the modelling and analysis of mathematical optimisation problems in which the data relevant to decision-making is not fully known at the time the decision is made. It is assumed that at least information on the distribution of the uncertain data is available and can be taken into account in the decision-making process or the associated mathematical model. The lecture provides an overview of the key properties of the resulting stochastic optimisation problems, as well as suitable solution methods (Lagrange relaxation, L-shaped method).

The lecture is structured as follows:

- Introductory example
- Modelling of uncertainties
- Value function
- Value of the stochastic solution
- Lagrange relaxation
- L-shaped method
- Sample average approximation

The tutorial and computer-based exercise offered alongside the lecture provide an opportunity to explore the lecture material in greater depth, practise the concepts and implement a solution method in the GAMS modelling language.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (5 SWS × 15 weeks): 75 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Weiterführende Literatur:

J. R. Birge, F. Louveaux, Introduction to Stochastic Programming, Springer, 2011

S. Nickel, S. Rebennack, O. Stein, K.-H. Waldmann, Operations Research, Springer Gabler, 2022

A. J. King, S. W. Wallace, Modeling with Stochastic Programming, Springer, 2012

T 3.135 Module component: Investments [T-WIWI-102604]

Coordinators: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101435 - Essentials of Finance

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2530575**	Investments	**2 SWS**	**Lecture /** 🗣	**Uhrig-Homburg, Müller**
ST 2026	**2530576**	Übung zu Investments	**1 SWS**	**Practice /** 🗣	**Uhrig-Homburg, Kargus, Müller**
Exams					
ST 2026	**7900109**	Investments			**Uhrig-Homburg**
WT 26/27	**7900054**	Investments			**Uhrig-Homburg**

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination (75 minutes). The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be earned for successful participation in the exercises by submitting correct solutions to at least 50% of the bonus exercises set. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites
None

Recommendations
Knowledge of Business Administration: Finance and Accounting [2610026] is recommended.

Below you will find excerpts from courses related to this module component:

V Investments

2530575, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 60 h

• Exam preparation and participation in the assessment: 45 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Weiterführende Literatur:

Bodie/Kane/Marcus (2010): Essentials of Investments, 8. Aufl., McGraw-Hill Irwin, Boston

T 3.136 Module component: Laboratory Production Metrology [T-MACH-108878]

Coordinators: Dr.-Ing. Martin Benfer
Prof. Dr.-Ing. Gisela Lanza

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each summer term	6

Courses					
ST 2026	**2150550**	Laboratory Production Metrology	**3 SWS**	**Practical course /** 🗣	**Lanza, Benfer**
Exams					
ST 2026	**76-T-MACH-108878**	Laboratory Production Metrology			**Lanza**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Alternative Test Achievement:
Group presentation of 15 min at the beginning of each experiment and evaluation of the participation during the experiments and
Oral Exam (approx. 15 min)

Prerequisites
T-MACH-114827 must not have been started.

Additional Information
The course is offered in German.

Due to capacity reasons, the course is limited to 15 students. If necessary, a selection process will be conducted. Places will be allocated based on the students' study progress. Details will be announced on ILIAS.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Laboratory Production Metrology

2150550, SS 2026, 3 SWS, Language: German, Open in study portal

Practical course (P)
On-Site

Content
During this course, students get to know measurement systems that are used in a production system. In the age of Industry 4.0, sensors are becoming more important. Therefore, the application of in-line measurement technology such as machine vision and non-destructive testing is focussed. Additionally, laboratory based measurement technologies such as computed tomography are addressed. The students learn the theoretical background as well as practical applications for industrial examples. The students use sensors by themselves during the course. Additionally, they are trained on how to integrate sensors in production processes and how to analyze measurement data with suitable software.

The following topics are addressed:

- Classification and examples for different measurement technologies in a production environment
- Machine vision with optical sensors
- Information fusion based on optical measurements
- Robot-based optical measurements
- Non-destructive testing by means of acoustic measurements
- Coodinate measurement technology
- Industrial computed tomography
- Measurement uncertainty evaluation
- Analysis of production data by means of data mining

Learning Outcomes:

The students …

- are able to name, describe and mark out different measurement technologies that are relevant in a production environment.
- are able to conduct measurements with the presented in-line and laboratory based measurement systems.
- are able to analyze measurement results and asses the measurement uncertainty of these.
- are able to deduce whether a work piece fulfills quality relevant specifications by analysing measurement results.
- are able to use the presented measurement technologies for a new task.

Workload:

regular attendance: 31,5 hours
self-study: 88,5 hours

Organizational issues
Aus organisatorischen Gründen ist die Teilnehmerzahl für die Lehrveranstaltung begrenzt. Infolgedessen wird ein Auswahlprozess stattfinden. Die Bewerbung erfolgt über die Homepage des wbk (http://www.wbk.kit.edu/studium-und-lehre.php).

For organizational reasons the number of participants for the course is limited. Hence a selection process will take place. Applications are made via the homepage of wbk (KIT - wbk Institute of Production Science Education).

Literature
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt. Ebenso wird auf gängie Fachliteratur verwiesen.

Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/). Additional reference to literature will be provided, as well.

T 3.137 Module component: Large Diesel and Gas Engines for Ship Propulsions [T-MACH-110816]

Coordinators: Dr. German Weisser
Organisation:
Part of: M-MACH-101303 - Combustion Engines II

Type	Credits	Grading	Term offered	Expansion	Version
Oral examination	4 CP	graded	Each summer term	1 semesters	1

Courses					
ST 2026	**2134154**	Large Diesel and Gas Engines for Ship Propulsions	**2 SWS**	**Lecture /** 🗣	**Weisser**
Exams					
ST 2026	**76-T-MACH-110816**	Großdiesel- und -gasmotoren für Schiffsantriebe			**Weisser**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral exam, 20 minutes

Prerequisites
None

Additional Information
This course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Large Diesel and Gas Engines for Ship Propulsions

2134154, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

T 3.138 Module component: Learning Factory “Global Production“ [T-MACH-105783]

Coordinators: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	6 CP	graded	Each winter term	6

Courses					
WT 26/27	**2149612**	Learning Factory “Global Production“	**6 SWS**	/	**Lanza**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Alternative test achievement (graded):

- Knowledge acquisition in the context of the seminar (4 achievements approx. 20 min each) with weighting 35%.
- Interaction between participants with weighting 20%.
- Scientific colloquium (in groups of 3 students approx. 45 min each) with weighting 45%.

The overall impression is rated.

Prerequisites
none

Additional Information
The course is offered in German.

Due to capacity reasons, the course is limited to 20 students. If necessary, a selection process will be conducted. Places will be allocated based on the students’ study progress. Details will be announced on ILIAS.

Due to the limited number of participants, advance registration is required ((http://www.wbk.kit.edu/studium-und-lehre.php).

Students should have previous knowledge in at least one of the following areas:

- Integrated Production Planning
- Global Production and Logistics
- Quality Management
- Circular Factory

Workload
180 hours

Below you will find excerpts from courses related to this module component:

V Learning Factory “Global Production“

2149612, WS 26/27, 6 SWS, Language: German, Open in study portal — **Blended (On-Site/Online)**

Content
The Learning Factory Global Production serves as a modern teaching environment for the challenges of global production. These challenges are brought to life using the example of electric motor manufacturing under real production conditions. The course is divided into e-learning units and face-to-face sessions. The e-learning units serve to teach essential basics and deepen specific topics (e.g., site selection, Industry 4.0, and production network planning). The face-to-face sessions focus on the case-specific application of relevant methods for planning and controlling global production systems. The Lean & Industry 4.0 unit examines classic methods and tools for designing lean production systems (e.g., Kanban and JIT/JIS, line balancing). A Six Sigma project is used to teach essential methods for quality assurance in complex production systems and to provide practical experience. The “Agile Global Production Networks” unit examines the operation and design of global production networks. Participants are familiarized with the basics of global production and immediately apply the methods they have learned to the assembly of electric motors. The Circular Production module offers insights into the theoretical and practical complexities and solution strategies of remanufacturing.

Main focus of the lecture:

- Site selection
- Lean & Industry 4.0
- Six Sigma 4.0 – Quality management in production
- Agile global production networks
- Circular production

Learning Outcomes:

Students are able to …

- evaluate and select location alternatives using appropriate methods and procedures.
- apply lean management methods and tools to plan and control location-appropriate production systems.
- use the Six Sigma system in a targeted manner and are capable of goal-oriented process management.
- depending on company-specific circumstances, apply methods for planning global production networks, outline a suitable network, and classify and evaluate it based on specific criteria.
- apply methods of circular production and demonstrate how products can be designed for circularity.
- apply the methods and approaches learned for problem solving in a global production environment and reflect on their effectiveness.

Workload:

e-Learning: ~ 36 h
regular attendence: ~ 64 h
self-study: ~ 80 h

Organizational issues
Termine werden über die Institutshomepage bekanntgegeben.

Aus organisatorischen Gründen ist die Teilnehmerzahl für die Lehrveranstaltung auf 20 Teilnehmer begrenzt. Infolgedessen wird ein Auswahlprozess stattfinden. Die Bewerbung erfolgt über die Homepage des wbk (http://www.wbk.kit.edu/studium-und-lehre.php)

Aufgrund der begrenzten Teilnehmerzahl ist eine Voranmeldung erforderlich.

Die Studierenden sollten Vorkenntnisse in mindestens einem der folgenden Bereiche haben:

- Integrierte Produktionsplanung
- Globale Produktion und Logistik
- Qualitätsmanagement
- Circular Factory

For organisational reasons, the number of participants for the course is limited to 20. As a result, a selection process will take place. Applications must be submitted via the wbk homepage (http://www.wbk.kit.edu/studium-und-lehre.php).

Due to the limited number of participants, advance registration is required.

Students should have previous knowledge in at least one of the following areas:

- Integrated Production Planning
- Global Production and Logistics
- Quality Management
- Circular Factory

Literature
Medien:
E-Learning Plattform ilias, Powerpoint, Fotoprotokoll. Die Medien werden über ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
E-learning platform ilias, powerpoint, photo protocol. The media are provided through ilias (https://ilias.studium.kit.edu/).

T 3.139 Module component: Logistics and Supply Chain Management [T-WIWI-102870]

Coordinators: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101437 - Industrial Production I

Type	Credits	Grading	Term offered	Version
Written examination	3,5 CP	graded	Each summer term	2

Courses					
ST 2026	**2581996**	Logistics and Supply Chain Management	**2 SWS**	**Lecture /** 🗣	**Schultmann, Rudi**
Exams					
ST 2026	**7981996**	Logistics and Supply Chain Management			**Schultmann**
WT 26/27	**7981996**	Logistics and Supply Chain Management			**Schultmann**

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of an oral (approx. 30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Below you will find excerpts from courses related to this module component:

V Logistics and Supply Chain Management

2581996, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Students are introduced to the methods and tools of logistics and supply chain management. They students learn the key terms and components of supply chains together with key economic trade-offs. In detail, students gain knowledge of decisions in supply chain management, such as facility location, supply chain planning, inventory management, pricing and supply chain cooperation. In this manner, students will gain knowledge in analyzing, designing and steering of decisions in the domain of logistics and supply chain management.

- Introduction: Basic terms and concepts
- Facility location and network optimization
- Supply chain planning I: flexibility
- Supply chain planning II: forecasting
- Inventory management & pricing
- Supply chain coordination I: the Bullwhip-effect
- Supply chain coordination II: double marginalization
- Supply chain risk management

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 40 h

• Exam preparation and participation in the assessment: 35 h

Total workload: 105 h (corresponds to 3.5 ECTS credits)

Literature
Wird in der Veranstaltung bekannt gegeben.

T 3.140 Module component: Machine Tools and High-Precision Manufacturing Systems [T-MACH-110963]

Coordinators: Prof. Dr.-Ing. Jürgen Fleischer
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101286 - Machine Tools and Industrial Handling

Type	Credits	Grading	Term offered	Version
Oral examination	9 CP	graded	Each winter term	2

Courses					
WT 26/27	**2149910**	Machine Tools and High-Precision Manufacturing Systems	**6 SWS**	**Lecture / Practice /** 🗣	**Fleischer**
Exams					
ST 2026	**76-T-MACH-110963-WING**	Machine Tools and High-Precision Manufacturing Systems			**Fleischer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral exam (approx. 45 minutes)

Prerequisites
T-MACH-102158 - Machine Tools and Industrial Handling must not be commenced.
T-MACH-109055 - Machine Tools and Industrial Handling must not be commenced.
T-MACH-110962 - Machine Tools and High-Precision Manufacturing Systems must not be commenced.

Additional Information
The course is offered in German.

Workload
270 hours

Below you will find excerpts from courses related to this module component:

V **Machine Tools and High-Precision Manufacturing Systems** **Lecture / Practice (VÜ) On-Site**
2149910, WS 26/27, 6 SWS, Language: German, Open in study portal

Content
The lecture gives an overview of the construction, use and application of machine tools and high-precision manufacturing systems. In the course of the lecture a well-founded and practice-oriented knowledge for the selection, design and evaluation of machine tools and high-precision manufacturing systems is conveyed. First, the main components of the systems are systematically explained and their design principles as well as the integral system design are discussed. Subsequently, the use and application of machine tools and high-precision manufacturing systems will be demonstrated using typical machine examples. Based on examples from current research and industrial applications, the latest developments are discussed, especially concerning the implementation of Industry 4.0 and artificial intelligence.
Guest lectures from industry round off the lecture with insights into practice.

The individual topics are:

- Structural components of dynamic manufacturing Systems
- Feed axes: High-precision positioning
- Spindles of cutting machine Tools
- Peripheral Equipment
- Machine control unit
- Metrological Evaluation
- Maintenance strategies and condition Monitoring
- Process Monitoring
- Development process for machine tools and high-precision manufacturing Systems
- Machine examples

Learning Outcomes:

The students …

- are able to assess the use and application of machine tools and high-precision manufacturing systems and to differentiate between them in terms of their characteristics and design.
- can describe and discuss the essential elements of machine tools and high-precision manufacturing systems (frame, main spindle, feed axes, peripheral equipment, control unit).
- are able to select and dimension the essential components of machine tools and high-precision manufacturing systems.
- are capable of selecting and evaluating machine tools and high-precision manufacturing systems according to technical and economic criteria.

Workload:

MACH:
regular attendance: 63 hours
self-study: 177 hours
WING/TVWL:
regular attendance: 63 hours
self-study: 207 hours

Organizational issues
Vorlesungstermine montags und mittwochs, Übungstermine donnerstags.
Bekanntgabe der konkreten Übungstermine erfolgt in der ersten Vorlesung.

Lectures on Mondays and Wednesdays, tutorial on Thursdays.
The tutorial dates will announced in the first lecture.

Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Medien:
Skript zur Veranstaltung wird über Ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.141 Module component: Management Accounting 1 [T-WIWI-102800]

Coordinators: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101498 - Management Accounting

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	see Annotations	2

Courses					
ST 2026	**2579900**	Management Accounting 1	**2 SWS**	**Lecture /**	**Wouters**
ST 2026	**2579901**	Tutorial Management Accounting 1 (Bachelor)	**2 SWS**	**Practice /**	**Dickemann**
ST 2026	**2579902**	Tutorial Management Accounting 1 (Master)	**2 SWS**	**Practice /**	**Dickemann**
Exams					
ST 2026	**79-2579900-B**	Management Accounting 1 (Bachelor)			**Wouters**
ST 2026	**79-2579900-M**	Management Accounting 1 (Mastervorzug und Master)			**Wouters**
WT 26/27	**79-2579900-B**	Management Accounting 1 (Bachelor)			**Wouters**
WT 26/27	**79-2579900-M**	Management Accounting 1 (Mastervorzug und Master)			**Wouters**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Recommendations
We recommend that you take part in our exercise for the lecture.

Additional Information
The course "Management Accounting 1" and the corresponding assessment for first-time examinees will be offered for the last time in the **summer semester 2026**.

The exercise is offered separately for Bachelor's students as well as for students in the Master's transfer and Master's program.

Note for exam registration:

- Bachelor students: 79-2579900-B Management Accounting 1 (Bachelor)
- Students in the Master's transfer and Master's program: 79-2579900-M Management Accounting 1 (Master's transfer and Master)

Below you will find excerpts from courses related to this module component:

V Management Accounting 1

2579900, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content
The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA1 are: short-term planning, investment decisions, budgeting and activity-based costing.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Learning objectives:

- Students have an understanding of theory and applications of management accounting topics.
- They can use financial information for various purposes in organizations.

Examination:

- The assessment consists of a written exam (120 minutes) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

Workload:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Bitte beachten Sie:
- die Vorlesung Management Accounting 1 wird letztmalig im SoS 2026 und
- die Vorlesung Management Accounting 2 wird letztmalig im WS 2026/27 angeboten.

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Publisher: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- In addition, several papers that will be available on ILIAS.

V Tutorial Management Accounting 1 (Bachelor)

Practice (Ü)
On-Site

2579901, SS 2026, 2 SWS, Language: English, Open in study portal

Content
see Module Handbook

Organizational issues
Bitte beachten Sie:
- die Übung Management Accounting 1 wird letztmalig im SoS 2026 und
- die Übung Management Accounting 2 wird letztmalig im WS 2026/27 angeboten.

V Tutorial Management Accounting 1 (Master)

Practice (Ü)
On-Site

2579902, SS 2026, 2 SWS, Language: English, Open in study portal

Content
see Module Handbook

Organizational issues
Bitte beachten Sie:
- die Übung Management Accounting 1 wird letztmalig im SoS 2026 und
- die Übung Management Accounting 2 wird letztmalig im WS 2026/27 angeboten.

T 3.142 Module component: Management Accounting 2 [T-WIWI-102801]

Coordinators: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101498 - Management Accounting

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	see Annotations	2

Courses					
WT 26/27	**2579903**	Management Accounting 2	**2 SWS**	**Lecture /**	**Wouters**
WT 26/27	**2579904**	Tutorial Management Accounting 2 (Bachelor)	**2 SWS**	**Practice /**	**Fimpel, Binti Mohamad Riduan**
WT 26/27	**2579905**	Tutorial Management Accounting 2 (Master)	**2 SWS**	**Practice /**	**Fimpel, Binti Mohamad Riduan**
Exams					
ST 2026	**79-2579903-B**	Management Accounting 2 (Bachelor)			**Wouters**
ST 2026	**79-2579903-M**	Management Accounting 2 (Mastervorzug und Master)			**Wouters**
WT 26/27	**79-2579903-B**	Management Accounting 2 (Bachelor)			**Wouters**
WT 26/27	**79-2579903-M**	Management Accounting 2 (Mastervorzug und Master)			**Wouters**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None

Recommendations
It is recommended:

- to take part in the course "Management Accounting1" before this course
- participation in the exercise for the lecture "Management Accounting 2"

Additional Information
The course "Management Accounting 2" and the corresponding assessment for first-time examinees will be offered for the last time in the **winter semester 2026/2027**.

The exercise for the lecture is offered separately for Bachelor's students as well as for students in the Master's transfer and Master's program.

Note for exam registration: Bachelor students:

- 79-2579903-B Management Accounting 2 (Bachelor)
- Students in the Master's transfer and Master's program: 79-2579903-M Management Accounting 2 (Master's transfer and Master)

Below you will find excerpts from courses related to this module component:

V **Management Accounting 2** — **Lecture (V) Online**
2579903, WS 26/27, 2 SWS, Language: English, Open in study portal

Content
The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA2 are: cost estimation, product costing and cost allocation, financial performance measures, transfer pricing, strategic performance measurement systems.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Learning objectives:

- Students have an understanding of theory and applications of management accounting topics. They can use financial information for various purposes in organizations.

Recommendations:

- It is recommended to take part in the course "Management Accounting 1" before this course.

Examination:

- The assessment consists of a written exam (120 min) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

Workload:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 55 h

• Exam preparation and participation in the assessment: 50 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Das derzeitige Modul „Management Accounting“ (MA) läuft mit dem Wintersemester 2026/27 aus, und das neue Modul „Environmental Management Accounting“ (EMA) beginnt mit dem Sommersemester 2027. Siehe dazu die Hinweise auf unserer Homepage

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Verlag: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- Zusätzlich werden Artikel auf ILIAS zur Vergügung gestellt.

V Tutorial Management Accounting 2 (Bachelor)

2579904, WS 26/27, 2 SWS, Language: English, Open in study portal

Practice (Ü)
On-Site

Content
see ILIAS

Organizational issues
Das derzeitige Modul „Management Accounting“ (MA) läuft mit dem Wintersemester 2026/27 aus, und das neue Modul „Environmental Management Accounting“ (EMA) beginnt mit dem Sommersemester 2027. Siehe dazu die Hinweise auf unserer Homepage

V Tutorial Management Accounting 2 (Master)

2579905, WS 26/27, 2 SWS, Language: English, Open in study portal

Practice (Ü)
On-Site

Content
see ILIAS

Organizational issues
Das derzeitige Modul „Management Accounting“ (MA) läuft mit dem Wintersemester 2026/27 aus, und das neue Modul „Environmental Management Accounting“ (EMA) beginnt mit dem Sommersemester 2027. Siehe dazu die Hinweise auf unserer Homepage

T 3.143 Module component: Management and Marketing [T-WIWI-111594]

Coordinators: Prof. Dr. Martin Klarmann
Prof. Dr. Hagen Lindstädt
Prof. Dr. Petra Nieken
Prof. Dr. Orestis Terzidis

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-105768 - Management and Marketing

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2600023**	Management	**2 SWS**	**Lecture /** 🗣	**Nieken, Lindstädt, Terzidis**
WT 26/27	**2610026**	Marketing	**2 SWS**	**Lecture /** 🗣	**Klarmann**
Exams					
ST 2026	**7900184**	Management and Marketing			**Nieken, Terzidis, Klarmann**
WT 26/27	**7900012**	Management and Marketing			**Nieken, Terzidis, Klarmann, Lindstädt**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written exam (90 min) on the two courses "Management" and "Marketing". The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

Prerequisites
None

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V Management

2600023, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h
• Preparation and follow-up of course content: 50 h
• Exam preparation and participation in the assessment: 40 h
Total workload: 150 h (corresponds to 5 ECTS credits)

V Marketing

2610026, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h
• Preparation and follow-up of course content: 50 h
• Exam preparation and participation in the assessment: 40 h
Total workload: 150 h (corresponds to 5 ECTS credits)

Literature
Ausführliche Literaturhinweise werden in den Materialen zur Vorlesung gegeben.

T 3.144 Module component: Managing Organizations [T-WIWI-102630]

Coordinators: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101425 - Strategy and Organization

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	5

Courses					
WT 26/27	**2577902**	Managing Organizations	**2 SWS**	**Lecture /**	**Lindstädt**
Exams					
ST 2026	**7900066**	Managing Organizations			**Lindstädt**
WT 26/27	**7900049**	Managing Organizations			**Lindstädt**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Managing Organizations

2577902, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This course enables participants to make a sound assessment of existing organizational structures and regulations. Students learn concepts and models for designing organizational structures, regulating organizational processes, and managing organizational change.

Through intensive exposure to real-world case studies, students are encouraged to learn and apply strategic actions in real-world business settings. The course features an action-oriented approach and provides students with a realistic understanding of the possibilities and limitations of rational design approaches.

Content in Keywords:

- Fundamentals of organizational management: fundamental concepts and theoretical background knowledge
- Management of organizational structures and processes: Corporate headquarters, departmental organization, instruction structure and incentive systems
- Ideal organizational structures: organic vs. mechanistic, Mintzberg's types, relationship to strategy and 7S model
- Management of organizational change (change management): Change processes within an organization, management of revolutionary change

Structure:

Lectures in the course are available to students online as recordings, while class dates are reserved for active discussion of real-world case studies.

Learning Objectives:

Upon completion of the course, students will be able to,

- critically evaluate existing organizational structures and regulations
- compare alternative structural options in a practical setting and evaluate and interpret their effectiveness and efficiency
- analyze and evaluate change processes in organizational management
- apply theoretical knowledge in practical situations

Recommendations:

None.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 40 h

• Exam preparation and participation in the assessment: 35 h

Total workload: 105 h (corresponds to 3.5 ECTS credits)

Competence Certificate:

The assessment of success takes place in the form of a written examination (60min.) (according to §4(2), 1 SPO) at the beginning of the lecture-free period of the semester. The examination is offered every semester and can be repeated at any regular examination date.
A bonus can be earned through successful participation in the exercise. If the grade on the written exam is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the lecture.

Literature

- Laux, H.; Liermann, F.: *Grundlagen der Organisation*, Springer. 6. Aufl. Berlin 2005.
- Lindstädt, H.: *Organisation*, in Scholz, C. (Hrsg.): Vahlens Großes Personallexikon, Verlag Franz Vahlen. 1. Aufl. München, 2009.
- Schreyögg, G.: *Organisation. Grundlagen moderner Organisationsgestaltung*, Gabler. 4. Aufl. Wiesbaden 2003.

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

T 3.145 Module component: Managing the Marketing Mix [T-WIWI-102805]

Coordinators: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101424 - Foundations of Marketing

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each summer term	3

Courses					
ST 2026	**2571152**	Managing the Marketing Mix	**2 SWS**	**Lecture /**	**Klarmann**
ST 2026	**2571153**	Übung zu Marketing Mix (Bachelor)	**1 SWS**	**Practice /**	**Daumann, Weber**
Exams					
ST 2026	**7900023**	Managing the Marketing Mix			**Klarmann**
WT 26/27	**7900061**	Managing the Marketing Mix			**Klarmann**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment of success takes place through the preparation and presentation of a case study (max. 30 points) as well as a written exam with additional aids in the sense of an open book exam (max. 60 points). In total, a maximum of 90 points can be achieved in the course. Further details will be announced during the lecture.

Prerequisites
None

Additional Information
The course is compulsory in the module "Foundations of Marketing".
For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Managing the Marketing Mix

2571152, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The content of this course concentrates on the elements of the marketing mix. Therefore the main chapters are brand management, pricing, promotion and sales management.

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

This course is compulsory within or the module "Foundations of Marketing" and must be examined.

Learning objectives:

student

- know the meaning of the branding, the brand positioning and the possibilities of the brand value calculation
- understand the price behavior of customers and can apply this knowledge to the practice
  know different methods for price determination (conjoint analysis, cost-plus determination, target costing, customer surveys, bidding procedures) and price differentiation
- are able to name and explain the relevant communication theories
- can identify crisis situations and formulate appropriate response strategies
- can name and judge different possibilities of the Intermediaplanung
- know various design elements of advertising communication
- understand the measurement of advertising impact and can apply it
- know the basics of sales organization
- are able to evaluate basic sales channel decisions

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Achtung Raumwechsel, neuer Raum Gebäude 10.50 Raum 701.3 ab 11.5.26

Literature
Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

V

Übung zu Marketing Mix (Bachelor)

2571153, SS 2026, 1 SWS, Language: German, Open in study portal

Practice (Ü)
On-Site

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
20.5.26, 11:30 - 13:00 Uhr Seminarraum 025/026 Geb. 01.87

3.6.2026, 15:45 - 17:15 Uhr Seminarraum 025/026 Geb. 01.87

10.6.26, 11:30 - 13:00 Uhr Seminarraum 025/026 Geb. 01.87

17.6.2026, 14:00 - 15:45 Uhr Seminarraum 025/026 Geb. 01.87

24.6.2026, 14:00 - 15:45 Uhr Raum wird noch bekannt gegeben

1.7.2026, 14:00 - 15:45 Uhr Seminarraum 025/026 Geb. 01.87

8.7.2026, 14:00 - 15:45 Uhr Raum wird noch bekannt gegeben

15.7.2026, 14:00 - 15:45 Uhr Raum wird noch bekannt gegeben

22.7.2026, 14:00 - 15:45 Uhr Seminarraum 025/026 Geb. 01.87

29.7.2026, 14:00 - 15:45 Uhr Seminarraum 025/026 Geb. 01.87

T 3.146 Module component: Manufacturing Measurement Technology [T-ETIT-106057]

Coordinators: Prof. Dr.-Ing. Michael Heizmann
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-ETIT-106581 - Measurement, Control, and Manufacturing Measurement Technology

Type	Credits	Grading	Term offered	Version
Written examination	3 CP	graded	Each summer term	1

Courses					
ST 2026	**2302116**	Manufacturing Measurement Technology	**2 SWS**	**Lecture /**	**Heizmann, Schmerbeck**
Exams					
ST 2026	**7302116**	Manufacturing Measurement Technology			**Heizmann**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

T 3.147 Module component: Material Flow in Production and Logistics [T-MACH-112968]

Coordinators: Prof. Dr.-Ing. Kai Furmans
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106995 - Automation and Material Flow in Logistics

Type	Credits	Grading	Term offered	Expansion	Version
Oral examination	4 CP	graded	Each summer term	1 semesters	4

Courses					
ST 2026	**2118181**	Material flow in production and logistics	**3 SWS**	**Lecture /**	**Furmans**
Exams					
ST 2026	**76-T-MACH-112968**	Material Flow in Production and Logistics			**Furmans**

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
The assessment consists of an oral exam (approx. 20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites
none

Recommendations
none

Additional Information
The course is offered in German.

Workload 120 hours

In-class study 45 hours

Independent study 75 hours

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Material flow in production and logistics

2118181, SS 2026, 3 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Course content:

- Material flow elements (conveyor line, branch, merge)
- Description of networked Material Flow models with graphs, matrices, etc.
- Queueing theory: Calculation of waiting times, utilisation rates, etc.
- Storage and picking
- Shuttle systems, automated storage and retrieval systems
- Value stream analysis
- Lean manufacturing topics

Learning objectives:

After successfully completing the course, you will be able to do the following independently and as part of a team:

- Describe a material flow system accurately in a conversation with experts.
- Model and parameterise the system load and the typical material flow elements.
- Design a material flow system for a specific task.
- Set the performance of a system depending on the requirements.
- Conceptually expand the limits of today's methods and system components as needed.

Description:

The course is divided into 6 thematic blocks, each of which is divided into the following phases and dates:

Off-campus:

- self-study
- exercise

On-campus:

- classroom sessions with practical application

Organizational issues
vorläufige Termine: (Doppelblock, 7 Mal im Semester)

- 22.04.2026 (13:30–16:00): Einführungsveranstaltung
- 29.04.2026 (13:00–15:30): Themenblock 1
- 06.05.2026 (14:00–16:30): Themenblock 2
- 20.05.2026 (13:00–15:30): Themenblock 3
- 03.06.2026 (14:00–16:30): Themenblock 4 & 5.1
- 24.06.2026 (13:00–15:30): Themenblock 5.2
- 08.07.2026 (14:00–16:30): Fragestunde
- 15.07.2026 (14:00–16:30): Ausweichtermin

Ort: IFL (Selmayr-Hörsaal)

Anmerkungen: Im Rahmen des Inverted Classroom Modells erfolgt die Vermittlung der theoretischen Inhalte sowie der Übungen vollständig online. Die Präsenzveranstaltungen auf dem Campus dienen ausschließlich dazu, das erlernte Wissen in realitätsnahen Szenarien praktisch anzuwenden.

Empfehlungen:

- (von Vorteil): Statistische Grundkenntnisse und –verständnis.
- (von Vorteil): Kenntnisse in einer gängigen Programmiersprache (Java, Python, …).

Literature
Arnold, Dieter; Furmans, Kai: Materialfluss in Logistiksystemen; Springer-Verlag Berlin Heidelberg, 7. Auflage 2019

T 3.148 Module component: Material Science II for Business Engineers [T-MACH-102079]

Coordinators: Dr.-Ing. Susanne Wagner
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101261 - Emphasis in Fundamentals of Engineering
M-MACH-101262 - Emphasis Materials Science
M-WIWI-107750 - Additional Fundamentals of Engineering

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each summer term	2

Courses					
ST 2026	**2126782**	Materials Science II for Industrial Engineers	**2 SWS**	**Lecture /** 🗣	**Wagner**
Exams					
ST 2026	**76-T-MACH-102079**	Material Science II for Business Engineers			**Wagner**
WT 26/27	**76-T-MACH-102079**	Material Science II			**Wagner**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of a written examination (150 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination takes place every semester. Re-examinations are offered at every ordinary examination date. The examination at the end of the winter term is carried out by a written or oral exam.

Prerequisites
T-MACH-102078 „Werkstoffkunde I für Wirtschaftsingenieure" has to be completed beforehand.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-102078 - Materials Science I must have been passed.

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V Materials Science II for Industrial Engineers

2126782, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature
Weiterführende Literatur:

- Werkstoffwissenschaften - Eigenschaften, Vorgänge, Technologien, B. Ilscher, Springer – Verlag, Berlin Heidelberg New York, ISBN 3-540-10725-5
- Werkstoffwissenschaften, Schatt, Werner / Worch, Hartmut (Hrsg.) Wiley-VCH, Weinheim, ISBN-10: 3-527-30535-1
- Metallkunde für das Maschinenwesen I/II, K.G. Schmitt-Thomas, Springer-Verlag, ISBN 3-540-51913-0
- Materials Science and Engineering – An Introduction, William D. Callister (Jr.), John Wiley & Son, ISBN-10: 978-0-471-73696-7

T 3.149 Module component: Materials Science I [T-MACH-102078]

Coordinators: Dr.-Ing. Susanne Wagner
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101260 - Materials Science

Type	Credits	Grading	Term offered	Version
Written examination	3 CP	graded	Each winter term	2

Courses					
WT 26/27	**2125760**	Materials Science I for Industrial Engineers	**2 SWS**	**Lecture /**	**Wagner**
Exams					
ST 2026	**76-T-MACH-102078**	Materials Science I			**Wagner, Pagnan Furlan**
WT 26/27	**76-T-MACH-102078**	Materials Science I			**Wagner, Pagnan Furlan**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment takes the form of a written online examination (120 minutes) during the lecture-free period of the semester in the KIT computer pool rooms, in accordance with Section 4(2), No. 1 of the Study and Examination Regulations (SPO). The examination is offered every semester and can be retaken at any regular examination date.

Prerequisites
None

Workload
90 hours

Below you will find excerpts from courses related to this module component:

V Materials Science I for Industrial Engineers

2125760, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Literature
Weiterführende Literatur:

Werkstoffwissenschaften - Eigenschaften, Vorgänge, Technologien, B. Ilscher, Springer – Verlag, Berlin Heidelberg New York, ISBN 3-540-10725-5
Werkstoffwissenschaften, Schatt, Werner / Worch, Hartmut (Hrsg.) Wiley-VCH, Weinheim, ISBN-10: 3-527-30535-1
Metallkunde für das Maschinenwesen I/II, K.G. Schmitt-Thomas, Springer-Verlag, ISBN 3-540-51913-0
Materials Science and Engineering – An Introduction, William D. Callister (Jr.), John Wiley & Son, ISBN-10: 978-0-471-73696-7 .

T 3.150 Module component: Mathematical Methods in Hydraulics [T-MACH-113912]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101266 - Automotive Engineering
M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	5 CP	graded	Each winter term	1 semesters	4

Courses					
WT 26/27	**2113090**	Mathematical Methods of Fluid Power	**2 SWS**	**Lecture /** 🗣	**Geimer**
Exams					
ST 2026	**76-T-MACH-113912**	Mathematical Methods in Hydraulics			**Geimer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written examination, duration: 90 minutes

Prerequisites
Please note that the module component T-MACH-113913 - Exercises, courses, tutorials on mathematical methods in hydraulics is a prerequisite for the examination and can only be completed in the winter term, winter semester.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-113913 - Tutorial Mathematical Methods in Hydraulics must have been passed.

Additional Information
The course is offered in German.

Further information can be found on our homepage:
https://www.fast.kit.edu/mobima/13438_17892.php

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V Mathematical Methods of Fluid Power

2113090, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

- Fundamentals of hydraulics,
- Description of components for converting mechanical energy into hydraulic energy and vice versa (pumps and motors),
- Presentation of components for controlling pressure and volume flow (pressure and flow valves)
- Illustration and description of hydraulic systems
- Solution methods for the pressure curve over time
- Simulation approaches for hydraulic networks

Organizational issues
weitere Informationen finden Sie hier: https://www.fast.kit.edu/mobima/13438_17892.php

T 3.151 Module component: Mathematics I - Final Exam for WiIng B.Sc. 2026 [T-MATH-115205]

Coordinators: Prof. Dr. Daniel Hug
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-MATH-107813 - Mathematics 1 for WiIng B.Sc. 2026

Type	Credits	Grading	Version
Written examination	5 CP	graded	1

T 3.152 Module component: Mathematics I - Midterm Exam for WiIng B.Sc. 2026 [T-MATH-115204]

Coordinators: Prof. Dr. Daniel Hug
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-MATH-107813 - Mathematics 1 for WiIng B.Sc. 2026

Type	Credits	Grading	Version
Written examination	5 CP	graded	1

T 3.153 Module component: Mathematics II - Final Exam for WiIng B.Sc. 2026 [T-MATH-115207]

Coordinators: Prof. Dr. Daniel Hug
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-MATH-107814 - Mathematics 2 for WiIng B.Sc. 2026

Type	Credits	Grading	Version
Written examination	3,5 CP	graded	1

T 3.154 Module component: Mathematics II - Midterm Exam for WiIng B.Sc. 2026 [T-MATH-115206]

Coordinators: Prof. Dr. Daniel Hug
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-MATH-107814 - Mathematics 2 for WiIng B.Sc. 2026

Type	Credits	Grading	Version
Written examination	3,5 CP	graded	1

T 3.155 Module component: Mathematics III - Final Exam for WiIng B.Sc. 2026 [T-MATH-115208]

Coordinators: Prof. Dr. Daniel Hug
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-MATH-107815 - Mathematics 3 for WiIng B.Sc. 2026

Type	Credits	Grading	Version
Written examination	4 CP	graded	1

T 3.156 Module component: Measurement and Control Technology [T-ETIT-112852]

Coordinators: Prof. Dr.-Ing. Michael Heizmann
Prof. Dr.-Ing. Sören Hohmann

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: M-ETIT-106581 - Measurement, Control, and Manufacturing Measurement Technology

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	6 CP	graded	Each summer term	1 semesters	1

Courses					
ST 2026	**2302300**	Measurement and Control Technology	**2 SWS**	**Lecture /** 🗣	**Heizmann, Hohmann, Piscol, Baßler**
ST 2026	**2302301**	Practice to 2302300 Measurement and Control Technology	**2 SWS**	**Practice /** 🗣	**Heizmann, Hohmann, Piscol, Baßler**
Exams					
ST 2026	**7302300**	Measurement and Control Technology			**Heizmann, Hohmann**

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment of success takes place in the form of a written examination lasting 120 minutes. The module grade is the grade of the written examination.

Prerequisites
none

Recommendations
Kenntnisse aus „Signale und Systeme“ sind hilfreich.

T 3.157 Module component: Mechanical Design A [T-MACH-112984]

Coordinators: Prof. Dr.-Ing. Tobias Düser
Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106527 - Mechanical Design A

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	7 CP	graded	Each winter term	1 semesters	3

Courses					
WT 26/27	**2145170**	Mechanical Design A	**3 SWS**	**Lecture /** 🗣	**Matthiesen, Düser, Grauberger**
WT 26/27	**2145194**	Tutorial for Mechanical Design A	**1 SWS**	**Practice /** 🗣	**Matthiesen, Düser, Grauberger**
Exams					
ST 2026	**76-T-MACH-112984**	Mechanical Design A			**Matthiesen, Düser, Grauberger**
WT 26/27	**76-T-MACH-112984**	Mechanical Design A			**Matthiesen, Düser, Grauberger**

Legend: 🖳 Online, 🖳🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written exam with a duration of 90 Minutes

Prerequisites
Admission to the exam only with succesful completion of Workshop Mechanical Design A (T-MACH-112981)

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-112981 - Mechanical Design A, Workshop must have been passed.

Recommendations
None

Additional Information
Students are familiar with the basic machine elements of technical systems and are able to analyze them in a system context

The course is offered in German.

Workload
210 hours

Below you will find excerpts from courses related to this module component:

V Mechanical Design A

2145170, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Students are introduced to fundamental topics in Mechanical Design A. The focus is on the analysis of existing systems and the development of knowledge for fundamental elements and functionality of technical systems. The course is divided into the following topics:

- Springs
- Technical systems
- Bearings
- Seals
- Component connection
- Gearbox

Literature
Alle genannten Bücher können über die KIT-Bibliothek in physischer Form oder als eBook eingesehen/bezogen werden.

- Konstruktionselemente des Maschinenbaus 1 - Grundlagen der Berechnung und Gestaltung von Maschinenelementen; Steinhilper, Sauer; Springer Verlag, ISBN 978-3-662-66822-1 oder eBook ISBN 978-662-66823-8
- Konstruktionselemente des Maschinenbaus 2 - Grundlagen von Maschinenelementen für Antriebsaufgaben; Steinhilper, Sauer; Springer Verlag, ISBN 978-3-662-67013-2 oder eBook ISBN 978-3-662-67014-9
- Technisches Zeichnen: Grundlagen, Normen, Beispiele, Darstellende Geometrie; Hoischen, Hans; Cornelson, ISBN 978-3-064-52361-6

V Tutorial for Mechanical Design A

Practice (Ü)
On-Site

2145194, WS 26/27, 1 SWS, Language: German, Open in study portal

Content
Specific applications and tasks in the subject areas of MKL A:

- Springs
- Technical systems
- Bearings
- Seals
- Component connection
- Gearbox

Literature
Alle genannten Bücher können über die KIT-Bibliothek in physischer Form oder als eBook eingesehen/bezogen werden.

- Konstruktionselemente des Maschinenbaus 1 - Grundlagen der Berechnung und Gestaltung von Maschinenelementen; Steinhilper, Sauer; Springer Verlag, ISBN 978-3-662-66822-1 oder eBook ISBN 978-662-66823-8
- Konstruktionselemente des Maschinenbaus 2 - Grundlagen von Maschinenelementen für Antriebsaufgaben; Steinhilper, Sauer; Springer Verlag, ISBN 978-3-662-67013-2 oder eBook ISBN 978-3-662-67014-9
- Technisches Zeichnen: Grundlagen, Normen, Beispiele, Darstellende Geometrie; Hoischen, Hans; Cornelson, ISBN 978-3-064-52361-6

T 3.158 Module component: Mechanical Design A, Workshop [T-MACH-112981]

Coordinators: Prof. Dr.-Ing. Tobias Düser
Prof. Dr.-Ing. Sven Matthiesen

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106527 - Mechanical Design A

Type	Credits	Grading	Term offered	Expansion	Version
Coursework	2 CP	pass/fail	Each winter term	1 semesters	2

Courses					
WT 26/27	**2145171**	Mechanical Design A - Workshop	**1 SWS**	**Seminar / 🗣**	**Matthiesen, Düser, Grauberger**

Legend: 💻 Online, 🎛 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Concomitant to the lecture, a workshop with 3 workshop sessions takes place over the semester. During the workshop the students are divided into groups and their mechanical design knowledge will be tested during a colloquium at the beginning of every single workshop session. The attendance is mandatory and will be controlled.

The pass of the colloquia and the process of the workshop task are required for the successful participation.

Prerequisites
None

Recommendations
None

Additional Information
The course is offered in German.

Workload
60 hours

Below you will find excerpts from courses related to this module component:

V Mechanical Design A - Workshop

2145171, WS 26/27, 1 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
In addition to the MD A lecture, the students are familiarized with the design process in a series of three workshops. The focus here is on application-oriented learning and understanding. For example, the students independently disassemble and assemble small demonstrator systems and thus gain a better understanding of the relevant problems in the field of mechanical design.

Organizational issues
Dauer eines Workshop Slots: 1,5 h (Informationen zu den Terminen und der Anmeldung im MKL A ILIAS Kurs)

Literature
Alle genannten Bücher können über die KIT-Bibliothek in physischer Form oder als eBook eingesehen/bezogen werden.

- Konstruktionselemente des Maschinenbaus 1 - Grundlagen der Berechnung und Gestaltung von Maschinenelementen; Steinhilper, Sauer; Springer Verlag, ISBN 978-3-662-66822-1 oder eBook ISBN 978-662-66823-8
- Konstruktionselemente des Maschinenbaus 2 - Grundlagen von Maschinenelementen für Antriebsaufgaben; Steinhilper, Sauer; Springer Verlag, ISBN 978-3-662-67013-2 oder eBook ISBN 978-3-662-67014-9
- Technisches Zeichnen: Grundlagen, Normen, Beispiele, Darstellende Geometrie; Hoischen, Hans; Cornelson, ISBN 978-3-064-52361-6

T 3.159 Module component: Mechatronical Systems and Products [T-MACH-112647]

Coordinators: Prof. Dr.-Ing. Sören Hohmann
Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-106236 - Mechatronic Product Design

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each winter term	2

Courses					
ST 2026	**2303003**	Exercises for 2303161 Mechatronical Systems and Products	**1 SWS**	**Practice / 🗣**	**Matthiesen, Hohmann, Teltschik**
ST 2026	**2303161**	Mechatronical Systems and Products	**2 SWS**	**Lecture / 🏵**	**Matthiesen, Hohmann**
Exams					
ST 2026	**76-T-MACH-105574**	Mechatronical Systems and Products			**Matthiesen**
WT 26/27	**76-T-MACH-105574**	Mechatronical Systems and Products			**Matthiesen, Grauberger**

Legend: 💻 Online, 🏵 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
written exam (60 min)

Additional Information
The course is offered in German.

Workload
120 hours

T 3.160 Module component: Metal Forming [T-MACH-105177]

Coordinators: Prof. Dr.-Ing. Thomas Herlan
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	2

Courses					
ST 2026	**2150681**	Metal Forming	**2 SWS**	**Lecture /** 🗣	**Herlan**
Exams					
ST 2026	**76-T-MACH-105177**	Metal Forming			**Herlan**

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral Exam (20 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Metal Forming** — **Lecture (V) On-Site**
2150681, SS 2026, 2 SWS, Language: German, Open in study portal

Content
At the beginning of the lecture the basics of metal forming are briefly introduced. The focus of the lecture is on massive forming (forging, extrusion, rolling) and sheet forming (car body forming, deep drawing, stretch drawing). This includes the systematic treatment of the appropriate metal forming Machines and the corresponding tool technology. Aspects of tribology, as well as basics in material science and aspects of production planning are also discussed briefly. The plastic theory is presented to the extent necessary in order to present the numerical simulation method and the FEM computation of forming processes or tool design. The lecture will be completed by product samples from the forming technology.

The topics are as follows:

- Introduction and basics
- Hot forming
- Metal forming machines
- Tools
- Metallographic fundamentals
- Plastic theory
- Tribology
- Sheet forming
- Extrusion
- Numerical simulation
- Sustainability in forming technology
- I4.0 and AI applications
- Production planning and quality assurance

Learning Outcomes:

The students …

- are able to reflect the basics, forming processes, tools, Machines and equipment of metal forming in an integrated and systematic way.
- are capable to illustrate the differences between the forming processes, tools, machines and equipment with concrete examples and are qualified to analyze and assess them in terms of their suitability for the particular application.
- are also able to transfer and apply the acquired knowledge to other metal forming problems.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Vorlesungstermine freitags, wöchentlich.
Die konkreten Termine werden in der ersten Vorlesung bekannt gegeben und auf der Institutshomepage und ILIAS veröffentlicht.

Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/)

T 3.161 Module component: Microactuators [T-MACH-101910]

Coordinators: Prof. Dr. Manfred Kohl
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	3

Courses					
ST 2026	**2142881**	Microactuators	**2 SWS**	**Lecture /**	**Kohl**
Exams					
ST 2026	**76-T-MACH-101910**	Microactuators			**Kohl**
ST 2026	**76T-MACH-101910_2**	Microactuators			**Kohl**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
written exam, 60 min.

Prerequisites
T-MACH-114036 must not be started

Additional Information
The course is offered in German

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Microactuators

2142881, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
- Basic knowledge in the material science of the actuation principles
- Layout and design optimization
- Fabrication technologies
- Selected developments
- Applications

The lecture includes amongst others the following topics:

- Microelectromechnical systems: linear actuators, microrelais, micromotors
- Medical technology and life sciences: Microvalves, micropumps, microfluidic systems
- Microrobotics: Microgrippers, polymer actuators (smart muscle)
- Information technology: Optical switches, mirror systems, read/write heads

Literature
- Folienskript "Mikroaktorik"
- D. Jendritza, Technischer Einsatz Neuer Aktoren: Grundlagen, Werkstoffe, Designregeln und Anwendungsbeispiele, Expert-Verlag, 3. Auflage, 2008
- M. Kohl, Shape Memory Microactuators, M. Kohl, Springer-Verlag Berlin, 2004
- N.TR. Nguyen, S.T. Wereley, Fundamentals and applications of Microfluidics, Artech House, Inc. 2002
- H. Zappe, Fundamentals of Micro-Optics, Cambride University Press 2010

T 3.162 Module component: Microeconometrics [T-WIWI-112153]

Coordinators: Prof. Dr. Fabian Krüger
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Irregular	1

Courses					
ST 2026	**2500019**	Tutorial in Microeconometrics	**2 SWS**	**Practice / 🗣**	**Krüger**
ST 2026	**2500032**	Microeconometrics	**2 SWS**	**Lecture / 🗣**	**Krüger**
Exams					
ST 2026	**7700082**	Microeconometrics			**Krüger**
WT 26/27	**7700004**	Microeconometrics			**Krüger**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written examination (90 minutes) according to § 4(2), 1 of the examination regulation.

A bonus can be acquired by successful completion of an assignment (written report + short in-class presentation) during the semester. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4).

Prerequisites
None

Recommendations
Students are expected to have a good working knowledge of the linear regression model (e.g. by having attended the course `Volkswirtschaftslehre III: Einführung in die Ökonometrie', or attending it in the same semester as `Microeconometrics').

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Microeconometrics
2500032, SS 2026, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Microeconometrics is concerned with modeling data from an individual (`micro') unit like a person, household or firm. The response variables of interest are often discrete. For example, a person's type of employment may be coded as a binary variable (e.g. working in IT sector versus not working in IT sector), and a person's choice of transportation mode can be cast as a multinomial variable (e.g. bike, train, car, or other). These dependent variables often require nonlinear regression modeling.

The course first introduces maximum likelihood estimation which is particularly useful in microeconometrics. We then discuss econometric models for various types of response variables, as well as methods for estimation and model evaluation. Throughout the course, implementation via R software plays an important role.

Prerequisites: Course participants are expected to have a good working knowledge of the linear regression model (e.g. by having attended the course `Einführung in die Ökonometrie', or attending it in the same semester as `Microeconometrics').

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h

• Preparation and follow-up of course content: 45 h

• Exam preparation and participation in the assessment: 30 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Winkelmann, R., Boes, S. (2006): Analysis of Microdata. Springer.

T 3.163 Module component: Mobile Machines [T-MACH-105168]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Version
Oral examination	8 CP	graded	Each summer term	4

Courses					
ST 2026	**2114073**	Mobile Machines	**4 SWS**	**Lecture / 🗣**	**Geimer**
Exams					
ST 2026	**76-T-MACH-105168**	Mobile Machines			**Geimer**
WT 26/27	**76T-MACH-105168**	Mobile Machines			**Geimer**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of an oral exam (approx. 40 min) taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
none

Recommendations
Knowledge of hydraulics is assumed. Prior attendance of the course "Mathematical Methods of Hydraulics"[2113090] is recommended.

Additional Information
The course is offered in German.

Further information can be found on our homepage: https://www.fast.kit.edu/mobima/13438_11975.php

Workload
240 hours

Below you will find excerpts from courses related to this module component:

V Mobile Machines

2114073, SS 2026, 4 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

- Introduction of the required components and machines
- Basics of the structure of the whole system
- Practical insight in the development techniques

Knowledge in Fluid Power is required.

Recommendations:

It is recommended to attend the course *Fluid Power* [2113092] or *Mathematische Methoden der Hydraulik* [2113090] beforehand.

- regular attendance: 42 hours
- self-study: 184 hours

T 3.164 Module component: Mobility and Infrastructure [T-BGU-101791]

Coordinators: Prof. Dr.-Ing. Peter Vortisch
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-BGU-101067 - Mobility and Infrastructure

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	9 CP	graded	Each term	1 semesters	4

Courses					
ST 2026	**6200404**	Spatial Planning and Planning Law	**2 SWS**	**Lecture /**	**Wilske**
ST 2026	**6200405**	Exercises to Spatial Planning and Planning Law	**1 SWS**	**Practice /**	**Wilske, Mitarbeiter/ innen**
ST 2026	**6200406**	Transportation Systems	**2 SWS**	**Lecture /**	**Vortisch**
ST 2026	**6200407**	Exercises to Transportation Systems	**1 SWS**	**Practice /**	**Vortisch, Mitarbeiter/ innen**
ST 2026	**6200408**	Design Basics in Highway Engineering	**2 SWS**	**Lecture /**	**Zimmermann, Stelzenmüller**
ST 2026	**6200409**	Exercises to Design Basics in Highway Engineering	**1 SWS**	**Practice /**	**Zimmermann, Stelzenmüller**
Exams					
ST 2026	**8234101791**	Mobility and Infrastructure			**Vortisch**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
written exam, 150 min.

Prerequisites
None

Recommendations
For students from the KIT-Department of Economics and Management it is recommended to take part in the excercises.

Additional Information
none

Workload
270 hours

T 3.165 Module component: Modeling and OR-Software: Introduction [T-WIWI-106199]

Coordinators: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101413 - Applications of Operations Research

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	4

Courses					
ST 2026	**2550490**	Modellieren und OR-Software: Einführung	**3 SWS**	**Practical course /**	**Nickel, Linner, Pomes**
Exams					
ST 2026	**7900153**	Modeling and OR-Software: Introduction			**Nickel**
WT 26/27	**7900081**	Modeling and OR-Software: Introduction			**Nickel**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment is a written examination (60 min.). The successful completion of the exercises is required for admission to the written exam.
The examination is held in every semester.
The retake exam is offered exclusively for students taking the exam as a repeat attempt (retake exam).

Recommendations
Firm knowledge of the contents from the lecture *Introduction to Operations Research I* [2550040] of the module *Operations Research.*

Additional Information
Due to capacity restrictions, registration before course start is required. For further information, see the webpage of the course. Registration is possible in the Wiwi portal. The lecture is offered in every term. The planned lectures and courses for the next three years are announced online at https://dol.ior.kit.edu/Lehrveranstaltungen.php.
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Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Modellieren und OR-Software: Einführung

2550490, SS 2026, 3 SWS, Language: German, Open in study portal

Practical course (P)
Blended (On-Site/Online)

Content
After an introduction to general concepts of modelling tools (implementation, data handling, result interpretation, …) CPLEX in combination with Python will be discussed which can be used to solve OR problems on a computer-aided basis. Subsequently, a broad range of exercises will be discussed. The main goals of the exercises from literature and practical applications are to learn the process of modeling optimization problems as linear or mixed-integer programs, to efficiently utilize the presented tools for solving these optimization problems and to implement heuristic solution procedures for mixed-integer programs.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Die Teilnehmerzahl für diese Veranstaltung ist begrenzt.

Die Bewerbung erfolgt über das Wiwi-Portal.

Die Nachklausur zu dieser Veranstaltung wird nur für Nachschreibende angeboten.

T 3.166 Module component: Nonlinear Optimization I [T-WIWI-102724]

Coordinators: Prof. Dr. Oliver Stein
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101414 - Methodical Foundations of OR
M-WIWI-103278 - Optimization under Uncertainty

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	4

Courses					
WT 26/27	**2550111**	Nonlinear Optimization I	**2 SWS**	**Lecture /** 🗣	**Stein**
WT 26/27	**2550112**	Exercises Nonlinear Optimization I	**1 SWS**	**Practice /** 🗣	**Stein, Schwarze, Huber**
Exams					
ST 2026	**7900202_SS2026_NK**	Nonlinear Optimization I			**Stein**
WT 26/27	**7900001_WS2627_HK**	Nonlinear Optimization I			**Stein**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam. The exam takes place in the semester of the lecture and in the following semester.
The examination can also be combined with the examination of Nonlinear Optimization II [2550113]. In this case, the duration of the written examination takes 120 minutes.

Prerequisites
The module component exam T-WIWI-103637 "Nonlinear Optimization I and II" may not be selected.

Additional Information
Part I and II of the lecture are held consecutively in the *same* semester.

Below you will find excerpts from courses related to this module component:

V Nonlinear Optimization I

2550111, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality condtions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
O. Stein, Basic Concepts of Nonlinear Optimization, Springer, Berlin, 2024

Additional Literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 3.167 Module component: Nonlinear Optimization I and II [T-WIWI-103637]

Coordinators: Prof. Dr. Oliver Stein
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101414 - Methodical Foundations of OR

Type	Credits	Grading	Term offered	Version
Written examination	9 CP	graded	Each winter term	6

Courses					
WT 26/27	**2550111**	Nonlinear Optimization I	**2 SWS**	**Lecture /** 🗣	**Stein**
WT 26/27	**2550112**	Exercises Nonlinear Optimization I	**1 SWS**	**Practice /** 🗣	**Stein, Schwarze, Huber**
WT 26/27	**2550113**	Nonlinear Optimization II	**2 SWS**	**Lecture /** 🗣	**Stein**
Exams					
ST 2026	**7900204_SS2026_NK**	Nonlinear Optimization I and II			**Stein**
WT 26/27	**7900003_WS2627_HK**	Nonlinear Optimization I and II			**Stein**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consits of a written exam in English (120 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

Prerequisites
None.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-102724 - Nonlinear Optimization I must not have been started.
2. The module component T-WIWI-102725 - Nonlinear Optimization II must not have been started.

Additional Information
Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from courses related to this module component:

V Nonlinear Optimization I

2550111, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality condtions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
O. Stein, Basic Concepts of Nonlinear Optimization, Springer, Berlin, 2024

Additional Literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

V **Nonlinear Optimization II** **Lecture (V)**
2550113, WS 26/27, 2 SWS, Language: English, Open in study portal **On-Site**

Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
O. Stein, Basic Concepts of Nonlinear Optimization, Springer, Berlin, 2024

Additional Literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 3.168 Module component: Nonlinear Optimization II [T-WIWI-102725]

Coordinators: Prof. Dr. Oliver Stein
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101414 - Methodical Foundations of OR

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	3

Courses					
WT 26/27	**2550112**	Exercises Nonlinear Optimization I	**1 SWS**	**Practice /** 🗣	**Stein, Schwarze, Huber**
WT 26/27	**2550113**	Nonlinear Optimization II	**2 SWS**	**Lecture /** 🗣	**Stein**
WT 26/27	**2550114**	Exercise to Nonlinear Optimization II	**1 SWS**	**Practice /** 🗣	**Stein, Schwarze, Huber**
Exams					
ST 2026	**7900203_SS2026_NK**	Nonlinear Optimization II			**Stein**
WT 26/27	**7900002_WS2627_HK**	Nonlinear Optimization II			**Stein**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consits of a written exam (60 minutes) in English according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

The exam can also be combined with the examination of *Nonlinear Optimization I* [2550111]. In this case, the duration of the written exam takes 120 minutes.

Prerequisites
None.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-103637 - Nonlinear Optimization I and II must not have been started.

Additional Information
Part I and II of the lecture are held consecutively in the same semester.

Below you will find excerpts from courses related to this module component:

V Nonlinear Optimization II

2550113, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
O. Stein, Basic Concepts of Nonlinear Optimization, Springer, Berlin, 2024

Additional Literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 3.169 Module component: Novel Actuators and Sensors [T-MACH-102152]

Coordinators: Prof. Dr. Manfred Kohl
Dr. Martin Sommer

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each winter term	4

Courses					
WT 26/27	**2141865**	Novel actuators and sensors	**2 SWS**	**Lecture /**	**Kohl, Sommer**
Exams					
ST 2026	**76-T-MACH-102152**	Novel Actuators and Sensors			**Sommer, Kohl**
ST 2026	**76T-MACH-102152_2**	Novel Actuators and Sensors			**Kohl**
WT 26/27	**76-T-MACH-102152**	Novel Actuators and Sensors			**Kohl, Sommer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
written exam, 60 minutes

Prerequisites
T-MACH-114036 must not be started

Additional Information
The course is offered in German

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Novel actuators and sensors

2141865, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Literature
- Vorlesungsskript "Neue Aktoren" und Folienskript "Sensoren"
- Donald J. Leo, Engineering Analysis of Smart Material Systems, John Wiley & Sons, Inc., 2007
- "Sensors Update", Edited by H.Baltes, W. Göpel, J. Hesse, VCH, 1996, ISBN: 3-527-29432-5
- "Multivariate Datenanalyse – Methodik und Anwendungen in der Chemie", R. Henrion, G. Henrion, Springer 1994, ISBN 3-540-58188-X

T 3.170 Module component: Optimization under Uncertainty [T-WIWI-106545]

Coordinators: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-103278 - Optimization under Uncertainty

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	3

Courses					
WT 26/27	**2550464**	Optimization Under Uncertainty	**2 SWS**	**Lecture /**	**Rebennack, Kandora**
WT 26/27	**2550465**	Übungen zu Optimierungsansätze unter Unsicherheit	**1 SWS**	**Practice /**	**Rebennack**
WT 26/27	**2550466**		**2 SWS**	**Others**	**Rebennack**
Exams					
ST 2026	**7900309**	Optimization under Uncertainty			**Rebennack**
WT 26/27	**7900240**	Optimization under Uncertainty			**Rebennack**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites
None.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Optimization Under Uncertainty

2550464, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
This lecture covers the modelling and analysis of mathematical optimisation problems in which the data relevant to decision-making is not fully known at the time the decision is made. It begins with an overview of various modelling approaches in this context, including robust optimisation, (two-stage) stochastic optimisation and the use of chance constraints. The course then delves deeper into robust optimisation: the focus here is on the fundamental concepts of robust optimisation and on reformulating various classes of robust optimisation problems into a form suitable for solution methods.

The lecture is structured as follows:

- Revision of fundamentals (fundamentals of optimisation / probability theory)
- Modelling uncertainties
- Decision-making under uncertainty
- Robust optimisation
- Two-stage robust optimisation

The tutorial and computer-based exercise offered alongside the lecture provide an opportunity to explore the lecture material in greater depth, practise the concepts and implement them in the GAMS modelling language using a case study.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature

Weiterführende Literatur:

A. Ben-Tal, L. El Ghaoui, A. Nemirovski, Robust Optimization, Princeton Series in Applied Mathematics, 2009

X. A. Sun, A. J. Conejo, Robust Optimization in Electric Energy Systems, Springer, 2022

T 3.171 Module component: Optoelectronic Components [T-ETIT-101907]

Coordinators: TT-Prof. Dr. Tobias Huber-Loyola
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2309486**	Optoelectronic Components	**2 SWS**	**Lecture /**	**Huber-Loyola, Gablinger, Sauter**
ST 2026	**2309487**	Optoelectronic Components (Tutorial)	**1 SWS**	**Practice /**	**Huber-Loyola**
Exams					
ST 2026	**7309486**	Optoelectronic Components			**Randel**
WT 26/27	**7309486**	Optoelectronic Components			**Randel**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Type of Examination: oral exam

Duration of Examination: approx. 30 minutes

Modality of Exam: Oral examination, usually one examination day per month during the Summer and Winter terms. An extra questions-and-answers session will be held if students wish so.

Prerequisites
none

Recommendations
Minimal background required: Calculus, differential equations, Fourier transforms and p-n junction physics.

T 3.172 Module component: Overview of Manufacturing Technologies für Industrial Engineers [T-MACH-114686]

Coordinators: Prof. Dr.-Ing. Volker Schulze
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101276 - Manufacturing Technology

Type	Credits	Grading	Term offered	Expansion	Version
Coursework	1 CP	pass/fail	Each winter term	1 semesters	1

Courses					
WT 26/27	**2149674**	Overview of ManufacturingTechnologies for Industrial Engineers	**1 SWS**	**Lecture /** 🗣	**Schulze**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Control of success is evaluated on the basis of regular attendance.
Regular attendance is achieved when the student has actively participated in at least 80 % of the course hours that have taken place.
If attendance is less than 80 %, the examiner may decide on a case-by-case basis what additional tasks must be completed in order to still achieve the learning objectives of the course. In the case of absence for an important reason (e.g., illness with a doctor's note), regular attendance is usually recognized.

Additional Information
The course is offered in German.

Workload
30 hours

Below you will find excerpts from courses related to this module component:

V Overview of ManufacturingTechnologies for Industrial Engineers

Lecture (V)
On-Site

2149674, WS 26/27, 1 SWS, Language: German, Open in study portal

Content
The lecture provides an overview of the various manufacturing processes and the systematics of their classification according to DIN 8580. The focus is on processes that are not covered in the other courses of the module.

The aim of the lecture is to place manufacturing technology within the context of production engineering and to provide an overview of manufacturing processes. To this end, the lecture conveys fundamental knowledge of manufacturing technology and covers the main types of manufacturing processes.

The specific topics include:

- Primary shaping (casting, plastics engineering, sintering, additive manufacturing processes)
- Forming (sheet-metal forming, massive forming)
- Cutting (machining with defined and undefined cutting edges, separating, ablating)
- Joining
- Coating
- Chaning material properties

Learning Outcomes:

The students ...

- are able to classify the manufacturing processes according to their fundamental mode of operation based on the six main groups defined in DIN 8580.
- are capable of naming the essential manufacturing processes of the six main groups (DIN 8580) and explaining their functions.
- are able to select suitable manufacturing processes for given components.

Workload:

regular attendance: 6 hours
self-study: 24 hours

Literature
Medien:
Skript zur Veranstaltung wird über ilias (https://ilias.studium.kit.edu/)
bereitgestellt.

Media:
Lecture notes will be provided in ilias (https://ilias.studium.kit.edu/).

T 3.173 Module component: PH APL-ING-TL01 [T-WIWI-106291]

Organisation: University
Part of: M-WIWI-101404 - Extracurricular Module in Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	3 CP	graded	Once	1

T 3.174 Module component: PH APL-ING-TL02 [T-WIWI-106292]

Organisation: University
Part of: M-WIWI-101404 - Extracurricular Module in Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	3 CP	graded	Once	1

T 3.175 Module component: PH APL-ING-TL03 [T-WIWI-106293]

Organisation: University
Part of: M-WIWI-101404 - Extracurricular Module in Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	3 CP	graded	Once	1

T 3.176 Module component: PH APL-ING-TL04 ub [T-WIWI-106294]

Organisation: University
Part of: M-WIWI-101404 - Extracurricular Module in Engineering

Type	Credits	Grading	Term offered	Version
Coursework	0 CP	pass/fail	Once	1

T 3.177 Module component: PH APL-ING-TL05 ub [T-WIWI-106295]

Organisation: University
Part of: M-WIWI-101404 - Extracurricular Module in Engineering

Type	Credits	Grading	Term offered	Version
Coursework	0 CP	pass/fail	Once	1

T 3.178 Module component: PH APL-ING-TL06 ub [T-WIWI-106296]

Organisation: University
Part of: M-WIWI-101404 - Extracurricular Module in Engineering

Type	Credits	Grading	Term offered	Version
Coursework	0 CP	pass/fail	Once	1

T 3.179 Module component: PH APL-ING-TL07 [T-WIWI-108384]

Organisation: University
Part of: M-WIWI-101404 - Extracurricular Module in Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	3 CP	graded	Once	1

T 3.180 Module component: Physical Basics of Laser Technology [T-MACH-102102]

Coordinators: Dr.-Ing. Johannes Schneider
Dr. Daniel Weygand

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Oral examination	5 CP	graded	Each winter term	5

Courses					
WT 26/27	**2181612**	Physical basics of laser technology	**3 SWS**	**Lecture / Practice /** 🗣	**Schneider**
Exams					
ST 2026	**76-T-MACH-102102**	Physical Basics of Laser Technology			**Schneider**
WT 26/27	**76-T-MACH-102102**	Physical Basics of Laser Technology			**Schneider**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
oral examination (ca. 25-30 min)

no tools or reference materials

Prerequisites
It is not possible, to combine this module component with Laser Material Processing [T-MACH-112763], Laser Application in Automotive Engineering [T-MACH-105164] or Physical Basics of Laser Technology [T-MACH-109084].

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-MACH-112763 - Laser Material Processing must not have been started.

Recommendations
Basic knowledge of physics, chemistry and material science

Additional Information
The course is offered in German.

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V Physical basics of laser technology

2181612, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
Based on the description of the physical basics about the formation and the properties of laser light the lecture goes through the different types of laser beam sources used in industry these days. The lecture focuses on the usage of lasers especially in materials engineering. Other areas like measurement technology or medical applications are also mentioned.

- physical basics of laser technology
- laser beam sources (solid state, diode, gas, liquid and other lasers)
- beam properties, guiding and shaping
- lasers in materials processing
- lasers in measurement technology
- lasers for medical applications
- savety aspects

The lecture is complemented by a tutorial.

The student

- can explain the principles of light generation, the conditions for light amplification as well as the basic structure and function of different laser sources.
- can describe the influence of laser, material and process parameters for the most important methods of laser-based materials processing and choose laser sources suitable for specific applications.
- can illustrate the possible applications of laser sources in measurement and medicine technology
- can explain the requirements for safe handling of laser radiation and for the design of safe laser systems.

Basic knowledge of physics, chemistry and material science is assumed.

regular attendance: 33,5 hours
self-study: 116,5 hours

The assessment consists of an oral exam (ca. 30 min) taking place at the agreed date (according to Section 4(2), 2 of the examination regulation). The re-examination is offered upon agreement.

It is allowed to select only one of the lectures "Laser in automotive engineering" (2182642) or "Physical basics of laser technology" (2181612) during the Bachelor and Master studies.

Organizational issues
Termine für die Übung werden in der Vorlesung bekannt gegeben!

Literature
M. W. Sigrist: Laser: Theorie, Typen und Anwendungen, 2018, Springer Spektrum

T. Graf: Laser - Grundlagen der Laserstrahlerzeugung 2015, Springer Vieweg

R. Poprawe: Lasertechnik für die Fertigung, 2005, Springer

H. Hügel, T. Graf: Materialbearbeitung mit Laser, 2023, Springer Vieweg

J. Eichler, H.-J. Eichler: Lasers - Basics, Advances and Applications, 2018, Springer

W. T. Silfvast: Laser Fundamentals, 2008, Cambridge University Press

W. M. Steen: Laser Material Processing, 2010, Springer

R. Poprawe, et al.: Tailored Light 1 - High Power Lasers for Production, 2018, Springer

R. Poprawe, et al.: Tailored Light 2 - Laser Applications, 2024, Springer

T 3.181 Module component: Physics for Engineers [T-MACH-100530]

Coordinators: apl. Prof. Dr. Alexander Nesterov-Müller
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101287 - Microsystem Technology

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each summer term	1

Courses					
ST 2026	**2142890**	Physics for Engineers	**4 SWS**	**Lecture / Practice /** 🗣	**Nesterov-Müller**
Exams					
ST 2026	**76-T-MACH-100530**	Physics for Engineers			**Nesterov-Müller**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
written exam 90 min

Prerequisites
none

Additional Information
The course is offered in German.

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V **Physics for Engineers** **Lecture / Practice (VÜ) On-Site**
2142890, SS 2026, 4 SWS, Language: German, Open in study portal

Content
1) Foundations of solid state physics

- Wave particle dualism
- Tunnelling
- Schrödinger equation
- H-atom

2) Electrical conductivity of solids

- solid state: periodic potentials
- Pauli Principle
- band structure
- metals, semiconductors and isolators
- p-n junction / diode

3) Optics

- quantum mechanical principles of the laser
- linear optics
- non-linear optics

Exercises are used for complementing and deepening the contents of the lecture as well as for answering more extensive questions raised by the students and for testing progress in learning of the topics.

The student

- has the basic understanding of the physical foundations to explain the relationship between the quantum mechanical principles and the optical as well as electrical properties of materials
- can describe the fundamental experiments, which allow the illustration of these principles

regular attendance: 22,5 hours (lecture) and 22,5 hours (excerises)
self-study: 105 hours

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Literature

- Tipler und Mosca: Physik für Wissenschaftler und Ingenieure, Elsevier, 2004
- Haken und Wolf: Atom- und Quantenphysik. Einführung in die experimentellen und theoretischen Grundlagen, 7. Aufl., Springer, 2000
- Harris, Moderne Physik, Pearson Verlag, 2013

T 3.182 Module component: Platform Economy [T-WIWI-107506]

Coordinators: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101421 - Supply Chain Management
M-WIWI-101434 - eBusiness and Service Management
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each winter term	4

Courses					
WT 26/27	**2540468**	Platform Economy	**2 SWS**	**Lecture /** 🗣	**Weinhardt, Fegert, van Dinther**
WT 26/27	**2540469**	Übung zu Platform Economy	**1 SWS**	**Practice /** 🗣	**Stano, Miskiw**
Exams					
ST 2026	**7900266**	Platform Economy			**Weinhardt**

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative exam assessment. The assessment is carried out in the form of a one-hour written examination and by carrying out a case study. Details on the assessment will be announced during the lecture.

Prerequisites
see below

Recommendations
None

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Platform Economy

2540468, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Lecture and Exercise

The "Platform Economy" lecture provides a broad range of knowledge related to online platforms and their business models, examining their significance for users, operators, and society as a whole. The course is structured into 8 topical blocks, each exploring a different aspect of the platform economy in depth. Each block is led by a different lecturer who is an expert in the respective topic. The key topics covered in the lecture include:

Network Effects and Two-Sided Markets

- Business Models and Auctions
- Energy Market Engineering
- Digital Involvement: Crowd X & Citizen Science
- Digital Democracy and Social Media
- Analyzing User Behavior
- Trust and Reputation in Digital Platforms
- Ethical Considerations in the Platform Economy

To reinforce the lecture material, each block is accompanied by interactive exercises that encourage a deeper understanding of the topics. In these exercises, students will engage in discussions and explore practical examples that illustrate the theoretical concepts introduced during the lectures. The lecture and exercise also offer a chance to get an idea of the lectures offered during the master's program at our chair.

Case Study

In addition to the lectures, you will work on a case study in small groups. Your task will be to develop a business model for an innovative and novel online platform, which will be presented to you by one of our experts, either from the academic team or the industry. This case study offers a chance to gain deeper insights into current trends in the platform economy and to apply the knowledge acquired throughout the course in a practical, hands-on way.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature

- Bundesministerium für Wirtschaft und Energie (2017). „Kompetenzen für eine digitale Sourveränität“(abrufbar unter https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/kompetenzen-fuer-eine-digitale-souveraenitaet.html)
- Bundesministerium für Wirtschaft und Energie (2017). „Weißbuch Digitale Plattformen.“ (abrufbar unter https://www.bmwi.de/Redaktion/DE/Publikationen/Digitale-Welt/weissbuch-digitale-plattformen.pdf?__blob=publicationFile&v=8)
- Easley, D., and Kleinberg, J. 2010. “Network Effects,” in Networks, Crowds, and Markets: Reasoning about a Highly Connected World, Cambridge University Press, pp. 509–542.
- Eisenmann, T., Parker, G., and Van Alstyne, M. W. 2006. “Strategies for two-sided markets,” Harvard Business Review 84(10), pp. 1–11.
- Gassmann, O., Frankenberger, K., and Csik, M. 2013. Geschäftsmodelle entwickeln: 55 innovative Konzepte mit dem St. Galler Business Model Navigator, Hanser.
- Wattenhofer, R. 2016. “The science of the blockchain.” CreateSpace Independent Publishing Platform.
- Roth, A. 2002. “The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics,” Econometrica 70(4): 1341-1378, 2002.
- Weinhardt, C. ,Holtmann, C., Neumann, D., Market Engineering. Wirtschaftsinformatik, 2003.
- Wolfstetter, E., 1999. “Topics in Microeconomics - Industrial Organization, Auctions, and Incentives,” Cambridge, Cambridge University Press.
- Teubner, T., and Hawlitschek, F. (in press). “The economics of P2P online sharing,” in The Sharing Economy: Possibilities, Challenges, and the way forward, Praeger Publishing.

V Übung zu Platform Economy

Practice (Ü)
On-Site

2540469, WS 26/27, 1 SWS, Language: German, Open in study portal

Content

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

T 3.183 Module component: Polymer Engineering I [T-MACH-102137]

Coordinators: Dr.-Ing. Wilfried Liebig
Prof. Dr.-Ing. Kay Weidenmann

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each winter term	2

Courses					
WT 26/27	**2173590**	Polymer Engineering I	**2 SWS**	**Lecture /** 🗣	**Weidenmann, Liebig**
Exams					
ST 2026	**76-T-MACH-102137**	Polymer Engineering I			**Liebig**
WT 26/27	**76-T-MACH-102137**	Polymer Engineering I			**Liebig, Weidenmann**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral exam, about 25 minutes

Prerequisites
T-MACH-114007 must not have been started

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Polymer Engineering I** **Lecture (V) On-Site**
2173590, WS 26/27, 2 SWS, Language: German, Open in study portal

Content
1. Economical aspects of polymers
2. Introductiom of mechanical,
chemical end electrical properties
3. Processing of polymers
(introduction)
4. Material science of polymers
5. Synthesis

learning objectives:

The field of Polymer Engineering includes synthesis, material science, processing, construction, design, tool engineering, production technology, surface engineering and recycling. The aim is, to equip the students with knowledge and technical skills, and to use the material "polymer" meeting its requirements in an economical and ecological way.

The students

- are able to describe and classify polymers
  based on the fundamental synthesis processing techniques
- can find practical applications for state-of-the-art polymers and manufacturing technologies
- are able to apply the processing techniques, the application of polymers and polymer composites regarding to the basic principles of material science
- can describe the special mechanical, chemical and elctrical prooperties of polymers and correlate these properties to the chemical bindings.
- can define application areas and the limitation in the use of polymers

requirements:
none

workload:

regular attendance: 21 hours
self-study: 99 hours

Literature
Literaturhinweise, Unterlagen und Teilmanuskript werden in der Vorlesung ausgegeben.

T 3.184 Module component: Polymer Engineering II [T-MACH-102138]

Coordinators: Dr.-Ing. Wilfried Liebig
Prof. Dr.-Ing. Kay Weidenmann

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	2

Courses					
ST 2026	**2174596**	Polymer Engineering II	**2 SWS**	**Lecture / 🗣**	**Liebig**
Exams					
ST 2026	**76-T-MACH-102138**	Polymerengineering II			**Liebig**
WT 26/27	**76-T-MACH-102138**	Polymerengineering II			**Liebig, Weidenmann**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral exam, about 25 minutes

Prerequisites
T-MACH-114007 must not be started.

Recommendations
Knowledge in Polymerengineering I

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Polymer Engineering II

2174596, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
1. Processing of polymers
2. Properties of polymer components
Based on practical examples and components
2.1 Selection of material
2.2 Component design
2.3 Tool engineering
2.4 Production technology
2.5 Surface engineering
2.6 Sustainability, recycling

learning objectives:

The field of Polymer Engineering includes synthesis, material science, processing, construction, design, tool engineering, production technology, surface engineering and recycling. The aim is, that the students gather knowledge and technical skills to use the material "polymer" meeting its requirements in an economical and ecological way.

The students

- can describe and classify different processing techniques
  and can exemplify mould design principles based on technical parts.
- know about practical applications and processing of polymer parts
- are able to design polymer parts according to given restrictions
- can choose appropriate polymers based on the technical requirements
- can decide how to use polymers regarding the production, economical and ecological requirements

requirements:
Polymerengineering I
workload:

The workload for the lecture Polymerengineering II is 120 h per semester and consists of the presence during the lecture (21 h) as well as preparation and rework time at home (99 h).

Literature
Literaturhinweise, Unterlagen und Teilmanuskript werden in der Vorlesung ausgegeben.

Recommended literature and selected official lecture notes are provided in the lecture.

T 3.185 Module component: Power Generation [T-ETIT-101924]

Coordinators: Dr.-Ing. Bernd Hoferer
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-ETIT-106821 - Electric Energy Systems and Power Generation

Type	Credits	Grading	Term offered	Version
Oral examination	3 CP	graded	Each summer term	3

Courses					
ST 2026	**2307356**	Power Generation	**2 SWS**	**Lecture /**	**Hoferer**
Exams					
ST 2026	**7307356**	Power Generation			**Hoferer**
WT 26/27	**7307356**	Power Generation			**Hoferer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Prerequisites
none

T 3.186 Module component: Practical Seminar: Digital Services [T-WIWI-110888]

Coordinators: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-102752 - Fundamentals of Digital Service Systems
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each summer term	1

Assessment
The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion. In the seminar, a maximum score of 60 points can be achieved, consisting of

- maximum 25 points for the documentation (written examination)
- maximum 25 points for the practical assessment
- maximum 10 points for the participation during the discussion sessions

The practical seminar is passed when at least a score of 30 points is achieved.

Prerequisites
None

Recommendations
None

Additional Information
The current range of seminar topics is announced on the following Website:
www.dsi.iism.kit.edu.

T 3.187 Module component: Practical Seminar: Interactive Systems [T-WIWI-111914]

Coordinators: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-105928 - HR Management & Digital Workplace
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each term	2

Courses					
ST 2026	**2500073**	Practical Seminar: AI-based Mental Healthcare	**3 SWS**	**Lecture /**	**Kuhlmeier, Mädche**
ST 2026	**2540555**	Practical Seminar: Interactive Systems	**3 SWS**	**Lecture /**	**Mädche**
WT 26/27	**2540555**	Practical Seminar: Interactive Systems	**3 SWS**	**Lecture /**	**Mädche**
Exams					
WT 26/27	**7900367**	Practical Seminar: Interactive Systems			**Mädche**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment is carried out as an examination of another type. The grading comprises the following components:

- Practical component – execution of a concrete activity, e.g., conducting a survey, performing an experiment, or implementing an application.
- Written documentation – preparation of a structured report that covers objectives, methodology, results, and a reflection on the practical work.
- Active participation in discussions – contribution to the accompanying subject-specific discussions (e.g., seminars, workshops, or online forums).

The overall impression will be assessed. Further details on the assessment's specific design will be provided during the course.
Note: The specific assignment details are available in the announcement on the institute's website https://h-lab.win.kit.edu.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Practical Seminar: AI-based Mental Healthcare

2500073, SS 2026, 3 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Mental health disorders affect a significant share of the global population. Meeting the resulting demand for care is a challenge on two fronts: patients face long waiting times and limited access to support, while mental health practitioners work under significant time pressure with processes that are often still manual and fragmented. Two developments in AI offer complementary responses: AI-based process digitalization can make clinical and therapeutic workflows more efficient for practitioners, while conversational AI agents can extend therapeutic support directly to those who need it. This seminar engages students with both developments: working on real, ongoing projects at the h-lab and its clinical partners, students design, build, and evaluate prototypes of AI-based applications for mental health and acquire the domain knowledge needed to do so responsibly.

Three project briefs are available, each rooted in an active h-lab research project. Students may also propose their own project in the mental health and AI space.

1. **AI-assisted ADHD assessment system** in collaboration with LWL-Klinikum Marsberg, centered on the analysis of primary school reports as a source of retrospective diagnostic evidence. Example tasks include building an OCR and LLM pipeline for extracting and analyzing free-text reports, or evaluating the diagnostic utility of LLM-generated assessments against clinician judgments.
2. **AI-enhanced CBT group therapy platform** in collaboration with Rethink Wellbeing. Example tasks include building a faciliator feedback system that monitors group dynamics and recommends facilitator actions, automating participant or facilitator selection workflows, or evaluating the accuracy and clinical acceptability of AI-generated recommendations.
3. **AI-based Conversational Mental Health Agents**, in collaboration with the Chair of Clinical Psychology and Psychotherapy at the University of Greifswald. The h-lab and its partners developed an LLM-based chatbot that delivers a single-session behavioral activation session for young people with depressive symptoms. Example tasks include improving the behavioral activation module, implementing additional therapeutic modules (cognitive restructuring, sleep hygiene, emotion regulation, social skills) as LLM-based multi-agent systems, or evaluating agent outputs for therapeutic fidelity and safety.

The seminar is structured around **three phases**:

1. I**ntroductory session:** Introduction to designing and evaluating AI-based mental health and the project briefs.
2. **Working phase:** Students design, develop, and evaluate their prototypes (individually or in groups), with ad hoc support from h-lab assistants.
3. **Final presentation**: Groups present their projects, including a demonstration of their working prototype and a discussion of their evaluation approach and preliminary findings. Participants provide feedback to each other's projects. Technical documentation and a brief evaluation report are due at the end of the semester.

Learning Objectives: Upon completion, students will be able to:

- Understand the mental health domain sufficiently to make informed design decisions
- Build functional AI-based application prototypes addressing a concrete need in an active mental health research or practice context
- Design and apply appropriate evaluation strategies for AI-based mental health applications, assessing feasibility, effectiveness, and safety of their prototypes

V **Practical Seminar: Interactive Systems** — **Lecture (V)**
2540555, SS 2026, 3 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

Content
In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

Please find the current open offerings on our website: https://h-lab.iism.kit.edu/thesis.php

V **Practical Seminar: Interactive Systems** — **Lecture (V)**
2540555, WS 26/27, 3 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

Content
The Practical Seminar "Interactive Systems" lets students work on a real-world problem in human-centered systems and develop a running software prototype, closely linked to our research topics. Students receive an individual assignment, coordinate with a supervising researcher, and deliver the prototype together with a short written documentation over a maximum time of six months. Currently offered topics are listed on the Practical Seminarswebsite (https://h-lab.win.kit.edu/thesis.php); proposals fitting to our research topics are also welcome.

Learning objectives

After completing the Practical Seminar, students are able to:

- scope a real-world problem and create a feasible seminar proposal;
- select and apply suitable methods and tools to build and evaluate a running software prototype;
- work independently and self-organized in coordination with a supervisor;
- document the approach, results, and artifact in a concise seminar paper.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

T 3.188 Module component: Practical Seminar: Platform Economy [T-WIWI-112154]

Coordinators: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each term	2

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites
None.

Additional Information
Teaching and learning format: Seminar

Workload
135 hours

T 3.189 Module component: Practical Seminar: The Future of Work [T-WIWI-115269]

Coordinators: Prof. Dr. Petra Nieken
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-105928 - HR Management & Digital Workplace
M-WIWI-106860 - Leadership & Sustainable HR-Management

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each term	1

Courses					
WT 26/27	**2500062**	Practical Seminar: The Future of Work	**3 SWS**	**Project /**	**Nieken, Mitarbeiter**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment takes the form of an examination of another type. It comprises a practical component, a written documentation, and a final presentation including a discussion.
Please note that, in addition to the written documentation, a practical component - for example, the implementation of a working software prototype, the conduct of a data analysis, or the design and execution of an experiment - forms a regular part of the course requirements.

The overall grade is composed of the three weighted components (practical component, written documentation, final presentation).
Points are allocated as follows:

- 25 points maximum for the practical component
- 25 points maximum for the written documentation
- 10 points maximum for the final presentation

Recommendations
Depending on the topic, advanced knowledge of programming, statistics, experimental economics research, or system architectures is strongly recommended. The specifically expected prior knowledge is specified in the respective topic announcement.
The Human Subject Research Hub offers online certificate courses. The foundational courses are recommended for all participants; depending on the topic, you may also complete the method courses. The full course portfolio is available here: https://human.kd2lab.kit.edu/82.php .
The number of participants is limited. If there are more applicants than places, selection is made based on the fit between topic requirements, prior knowledge, motivation, and progress in the program.

Additional Information
The number of participants is limited. Registration takes place via the Wiwi-Portal before the start of each semester.
In addition, interested students may approach the research assistants of Prof. Nieken's chair on their own initiative with a topic proposal. To do so, please send a topic proposal together with a current transcript of records to office-hrm@ibu.kit.edu.
A selection of current topics can additionally be found on the website https://www.ibu.kit.edu/2014.php.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V **Practical Seminar: The Future of Work** — **Project (PRO)** **Blended (On-Site/Online)**
2500062, WS 26/27, 3 SWS, Language: German/English, Open in study portal

Content
Content

Students have the opportunity to work on real research questions from the Chair of Human Resource Management. The chair conducts research on the Future of Work, (digital) leadership, AI, and incentive and motivation systems from an economic perspective. In most cases, the research involves human subjects in the context of empirical studies.

In this practical seminar, students take on a focused, independent research question from the chair's research environment and thereby contribute to the chair's ongoing projects.

The focus is on practical implementation. The course is aimed in particular at students with an affinity for programming and methodology who wish to apply their technical and methodological skills in an economics research context. Students work largely independently on a focused task, with supervision from the chair.

A project typically comprises one of the following building blocks:

- the development and implementation of software
- the analysis of an experimental dataset
- the development and implementation of an experimental design

Learning objectives

Upon successful completion of the course, students will be able to:

- structure and work on a focused scientific or practice-oriented research question from the chair's research environment
- select and implement a suitable methodological and technical solution for a focused task (e.g., implementing software, designing an experiment, or analyzing an experimental dataset)
- document their approach and results in a scientific manner and present them to a specialist audience
- relate their results to the relevant state of research

Workload

- Supervision and in-person appointments: 25 hours
- Familiarization and literature review: 15 hours
- Practical component: 60
- Written documentation: 25 hours
- Final presentation preparation: 10 hours

Total 135 hours

Literature
Weitere Literatur wird in der Veranstaltung bereitgestellt.

T 3.190 Module component: Procedures of Remote Sensing [T-BGU-103542]

Coordinators: Dr.-Ing. Uwe Weidner
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Version
Oral examination	3 CP	graded	2

Courses					
ST 2026	**6020243**	Procedures of Remote Sensing	**2 SWS**	**Lecture /**	**Weidner**
Exams					
ST 2026	**8280103542**	Procedures of Remote Sensing			**Weidner**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-BGU-101638 - Procedures of Remote Sensing, Prerequisite must have been passed.

T 3.191 Module component: Procedures of Remote Sensing, Prerequisite [T-BGU-101638]

Coordinators: Dr.-Ing. Uwe Weidner
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Version
Coursework	1 CP	pass/fail	Each summer term	2

Courses					
ST 2026	**6020244**	Procedures of Remote Sensing, Excercise	**1 SWS**	**Practice / 🗣**	**Weidner**
Exams					
ST 2026	**8284101638**	Procedures of Remote Sensing, Prerequisite			**Weidner**

Legend: 📱 Online, 🎭 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
30 hours

T 3.192 Module component: Process Design for Machining of Metallic Components [T-MACH-114058]

Coordinators: Prof. Dr.-Ing. Volker Schulze
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101276 - Manufacturing Technology

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	4 CP	graded	Each winter term	1 semesters	1

Courses					
WT 26/27	**2149672**	Process Design for Machining of Metallic Components	**3 SWS**	**Lecture / 🗣**	**Schulze**
Exams					
ST 2026	**76-T-MACH-114058**	Process Design for Machining of Metallic Components			**Schulze**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
written exam, duration 60 minutes

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Process Design for Machining of Metallic Components

2149672, WS 26/27, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The objective of the course “Process Development for Machining Metallic Components” is to enable students to descripe essential machining processes for metallic parts. Based on mechanical and materials fundamentals, the course covers all machining methods.

Within this course, students learn theoretical and application aspects of the following topics:

- Orthogonal cutting (cutting forces, rake angle, friction, tool wear)
- Turning and drilling (tool geometry, chip formation, setup times, productivity)
- Milling (face, contour, profile milling; high-speed milling)
- Grinding (wheel composition, thermal effects, surface integrity)
- Honing, lapping, polishing (tolerances, microstructure, surface quality)
- Process chains (raw part → rough machining → finish; handover parameters)
- Modeling and simulation (FEM-based modeling; empirical models)
- Chip formation simulation (numerical prediction of chip shape and breakage)
- Large-scale modeling (wear modeling; sensor integration)
- CNC machining and machine dynamics (G-/M-Codes; axis dynamics; chatter avoidance).

The acquired knowledge is supplemented by practical lectures from industry, which offer valuable insights into current applications, challenges and innovations in machining methods.

Learning Outcomes:

The students ...

- can describe the fundamental mechanisms and characteristic features of individual machining processes (orthogonal cutting, turning, drilling, milling, grinding, honing, lapping, polishing).
- are able to classify machining methods by their operating principle (geometry-defined vs. geometry-indeterminate) and categorize them based on technical parameters (cutting force, feed rate, material removal rate).
- can select an appropriate process for given component requirements (material, geometry, tolerance) and justify their choice.
- are capable of identifying interactions between individual steps in a multi-stage process chain and integrating them effectively.
- can evaluate machining processes with respect to technical factors (material behavior, tool wear, surface integrity) and economic considerations (setup time, productivity, cost metrics) and develop an optimized process strategy.
- are able to apply basic modeling and simulation methods (FEM-based models, empirical approaches) to estimate cutting forces, temperatures, and tool life.
- can interpret numerical chip-formation simulations and use them for process optimization and tool design.
- understand the fundamentals of CNC programming (G- and M-codes) and can analyze machine-dynamic effects (axis dynamics, vibration phenomena, chatter) to ensure stable machining.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Bekanntgabe von möglichen Praxisvorlesungen erfolgt in der ersten Vorlesung.

Literature
Medien:
Skript zur Veranstaltung wird über ilias (https://ilias.studium.kit.edu/)
bereitgestellt.

Media:
Lecture notes will be provided in ilias (https://ilias.studium.kit.edu/).

T 3.193 Module component: Product- and Production-Concepts for Modern Automobiles [T-MACH-110318]

Coordinators: Dr. Stefan Kienzle
Dr. Dieter Steegmüller

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each winter term	1

Courses					
WT 26/27	**2149670**	Product- and Production-Concepts for modern Automobiles	**2 SWS**	**Lecture /**	**Steegmüller, Kienzle**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral Exam (20 min)

Prerequisites
T-MACH-105166 - Materials and Processes for Body Leightweight Construction in the Automotive Industry must not have been started.

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Product- and Production-Concepts for modern Automobiles

2149670, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
The lecture illuminates the practical challenges of modern automotive engineering. As former leaders of the automotive industry, the lecturers refer to current aspects of automotive product development and production.

The aim is to provide students with an overview of technological trends in the automotive industry. In this context, the course also focuses on changes in requirements due to new vehicle concepts, which may be caused by increased demands for individualisation, digitisation and sustainability. The challenges that arise in this context will be examined from both a production technology and product development perspective and will be illustrated with practical examples thanks to the many years of industrial experience of both lecturers.

The topics covered are:

- General conditions for vehicle and body development
- Integration of new drive technologies
- Functional requirements (crash safety etc.), also for electric vehicles
- Development Process at the Interface Product & Production, CAE/Simulation
- Energy storage and supply infrastructure
- Aluminium and lightweight steel construction
- FRP and hybrid parts
- Battery, fuel cell and electric motor production
- Joining technology in modern car bodies
- Modern factories and production processes, Industry 4.0.

Learning Outcomes:

The students …

- are able to name the presented general conditions of vehicle development and are able to discuss their influences on the final product using practical examples.
- are able to name the various lightweight approaches and identify possible areas of application.
- are able to identify the different production processes for manufacturing lightweight structures and explain their functions.
- are able to perform a process selection based on the methods and their characteristics.

Workload:

regular attendance: 25 hours
self-study: 95 hours

Organizational issues
Termine werden über Ilias bekannt gegeben.

Bei der Vorlesung handelt es sich um eine Blockveranstaltung. Eine Anmeldung über Ilias ist erforderlich.

Zur Vertiefung des im Rahmen der Lehrveranstaltung erworbenen Wissens werden die theoretischen Vorlesungseinheiten durch Praxiseinheiten im Umfeld der Karlsruher Forschungsfabrik (https://www.karlsruher-forschungsfabrik.de) unterstützt.

The lecture is a block course. An application in Ilias is mandatory.

The theoretical lectures are complemented by practical lectures in the Karlsruhe Research Factory (https://www.karlsruher-forschungsfabrik.de/en.html) to deepen the acquired knowledge.

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.194 Module component: Production Economics and Sustainability [T-WIWI-102820]

Coordinators: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101437 - Industrial Production I

Type	Credits	Grading	Term offered	Version
Written examination	3,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2581960**	Production Economics and Sustainability	**2 SWS**	**Lecture /** 🗣	**Schultmann, Steins**
Exams					
ST 2026	**7981960**	Production Economics and Sustainability			**Schultmann**
WT 26/27	**7981960**	Production Economics and Sustainability			**Schultmann**

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Workload
105 hours

Below you will find excerpts from courses related to this module component:

V Production Economics and Sustainability

2581960, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The focus of the lecture is on the development of production systems towards more sustainable production. The lecture concentrates on the assessment of economically and ecologically reasonable measures and their potential implementation in companies. Relevant methods (including material flow analysis, life cycle assessment, eco-chart of accounts, investment planning) are also presented in the lecture.

Topics:
- Resources
- Material flow analysis
- Life cycle assessment
- Carbon footprint and water footprint
- Environmental management and environmental controlling
- Investment planning
- Circular planning
- Circular economy

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 40 h

• Exam preparation and participation in the assessment: 35 h

Total workload: 105 h (corresponds to 3.5 ECTS credits)

Literature
wird in der Veranstaltung bekannt gegeben

T 3.195 Module component: Production Technology for E-Mobility [T-MACH-110984]

Coordinators: Prof. Dr.-Ing. Jürgen Fleischer
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	2

Courses					
ST 2026	**2150605**	Production Technology for E-Mobility	**3 SWS**	**Lecture /** 🗣	**Fleischer**
Exams					
ST 2026	**76-T-MACH-112969**	Production Technology for E-Mobility			**Fleischer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Exam (60 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Production Technology for E-Mobility

2150605, SS 2026, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
In the lecture Production Engineering for Electromobility the students should be enabled to design, select and develop production processes for the production of the components of an electric drive train (electric motor, battery cells, fuel cells) by using research-oriented teaching.

Learning Outcomes:

The students are able to:

- describe the structure and function of a fuel cell, an electric traction drive and a batterysystem.
- reproduce the process chains for the production of the components fuel cell, battery and electric traction drive.
- apply methodical tools to solve problems along the process chain.
- derive the challenges in the production of electric drives for electric mobility.
- describe the factors influencing the individual process steps on each other using the process chain of Li-ion battery cells.
- enumerate or describe the necessary process parameters to counteract the influencing factors of the process steps in Li-ion battery cell production.
- apply methodical tools to solve problems along the process chain for the production of Li-ion battery cells.
- derive the challenge of mounting and dismounting battery modules.
- derive the challenges in the production of fuel cells for use in mobility.
- develop solutions to overcome challenges in the production of fuel cells.

Workload:

regular attendance: 42 hours
self-study: 78 hours

Organizational issues
Die Lehrveranstaltung wird letztmalig im Sommersemester 2026 angeboten.
Die schriftliche Prüfung wird für Erstschreiber letztmalig im Wintersemester 26/27 und Wiederholer letztmalig im Sommersemester 2027 angeboten.

Literature
Skript zur Veranstaltung wird über Ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/)

T 3.196 Module component: Production, Logistics and Information Systems [T-WIWI-111602]

Coordinators: Prof. Dr. Wolf Fichtner
Prof. Dr. Alexander Mädche
Prof. Dr. Stefan Nickel
Prof. Dr. Frank Schultmann
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-105770 - Production, Logistics and Information Systems

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2600004**		**2 SWS**	**Lecture**	**Mädche, Kretzer**
WT 26/27	**2600005**	Produktion und Logistik	**2 SWS**	**Lecture /** 🗣	**Fichtner, Nickel, Schultmann**
WT 26/27	**2610029**		**2 SWS**	**Tutorial**	**Ruckes**
Exams					
ST 2026	**7900077**	Production, Logistics and Information Systems			**Schultmann, Nickel, Fichtner, Weinhardt, Mädche, Geyer-Schulz**
WT 26/27	**7900154**	Production, Logistics and Information Systems			**Schultmann, Nickel, Weinhardt, Mädche, Geyer-Schulz, Fichtner**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Exam (90 min). The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

Workload
150 hours

Below you will find excerpts from courses related to this module component:

V 2600004, WS 26/27, 2 SWS, Open in study portal **Lecture (V)**

Content
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (1 SWS × 15 weeks): 15 h
• Preparation and follow-up of course content: 15 h
• Exam preparation and participation in the assessment: 30 h
Total workload: 60 h (corresponds to 2 ECTS credits)

V **Produktion und Logistik** **Lecture (V) On-Site**
2600005, WS 26/27, 2 SWS, Language: German, Open in study portal

Content
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h
• Preparation and follow-up of course content: 35 h
• Exam preparation and participation in the assessment: 25 h
Total workload: 90 h (corresponds to 3 ECTS credits)

V

2610029, WS 26/27, 2 SWS, Language: German, Open in study portal

Tutorial (Tu)

Content

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (6 SWS × 15 weeks): 90 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 150 h (corresponds to 5 ECTS credits)

T 3.197 Module component: Project Course Additive Manufacturing: Design Optimization and Production of Metallic Components [T-MACH-113575]

Coordinators: Prof. Dr.-Ing. Frederik Zanger
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each summer term	4

Courses					
ST 2026	**2150704**	Project Course Additive Manufacturing: Design Optimization and Production of Metallic Components	**3 SWS**	**Practical course /** 🗣	**Zanger, Frey**
Exams					
ST 2026	**76-T-MACH-113575**	Project Course Additive Manufacturing: Design Optimization and Production of Metallic Components			**Zanger**

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Assessment of another type of examination (graded)

The competence certificate is a project work; alternative test achievement according to § 4 Abs. 2 No. 3 of the SPO. Here, the project work, the milestone-based presentation of the results in presentation form (10 min each) and a final oral examination (15 min) are included in the assessment.

Prerequisites
The following module component may not have started:

- T-MACH-114019 - Additive Fertigung metallischer Bauteile: Designoptimierung und Herstellung
- T-MACH-110983 - Projektpraktikum Additive Fertigung: Entwicklung und Fertigung eines additiven Bauteils
- T-MACH-114624 - Projektpraktikum Additive Fertigung: Designoptimierung und Herstellung metallischer Bauteile
- T-MACH-110960 - Projektpraktikum Additive Fertigung: Entwicklung und Fertigung eines additiven Bauteils

Additional Information
The course is offered in German.

Due to capacity reasons, the course is limited to 20 students. If necessary, a selection process will be conducted. Places will be allocated based on the students' study progress. Details will be announced on ILIAS.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Project Course Additive Manufacturing: Design Optimization and Production of Metallic Components

Practical course (P)
On-Site

2150704, SS 2026, 3 SWS, Language: German, Open in study portal

Content
The course “Project Course Additive Manufacturing: Design Optimization and Production of Metallic Components” combines the fundamentals of powder bed fusion laser beam melting (PBF-LB/M) with a development project in collaboration with an industry-relevant application case.

Students learn the basics of the following topics:

- Influence of various process variables on the component quality of parts manufactured using the PBF-LB/M process
- Preparation and simulation of the PBF-LB/M process
- Manufacturing of additive metal components
- Process monitoring and quality assurance in additive manufacturing
- Topology optimization
- Computer-aided manufacturing (CAM) for machining rework

The topics are demonstrated in practice in various workshops on the individual topics and transferred to the development task in teamwork. Finally, the results of the work are additively manufactured and machined. The results are then presented, reflected upon, and discussed.

Attendance of the course “Additive Fertigung metallischer Bauteile” is recommended.

Learning Outcomes:

Students ...

- can describe the characteristics and areas of application of the additive manufacturing process powder bed fusion of metals (PBF-LB/M).
- can describe and implement the creation of a product along the entire additive process chain (CAD, simulation, construction job preparation, CAM) from the initial idea to production.
- are able to discuss the development process for components that are optimized for additive manufacturing.
- are able to perform topology optimization of a component for manufacturing using additive manufacturing.
- are able to simulate the additive process, compensate for process-related distortion, and determine the ideal alignment on the build platform.
- are able to create the necessary support structures for the additive process and derive a build job file.
- are able to create a CAM model for the machining post-processing of additive components and to machine the component.
- can select suitable powder fractions and process variables for the additive manufacturing of high-quality components based on existing test results.

Workload:

regular attendance: 14 hours
self-study: 106 hours

Organizational issues
Das Praktikum wird erstmals im Sommersemester 2026 angeboten.

Unregelmäßige Termine, siehe Zeitplan auf wbk-Homepage.
Irregular dates, see schedule on the wbk homepage.

Literature
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt.

Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.198 Module component: Project in Applied Remote Sensing [T-BGU-101814]

Coordinators: Prof. Dr.-Ing. Stefan Hinz
Dr.-Ing. Uwe Weidner
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Version
Coursework	1 CP	pass/fail	Each summer term	1

Courses					
ST 2026	**6020245**	Project Exercise Applied Remote Sensing	**2 SWS**	**Practice / 🗣**	**Hinz, Weidner, Wursthorn**
Exams					
ST 2026	**8284101814**	Project in Applied Remote Sensing			**Weidner**

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-BGU-101638 - Procedures of Remote Sensing, Prerequisite must have been passed.

Workload
30 hours

T 3.199 Module component: Project Management [T-BGU-113720]

Coordinators: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences
Part of: M-BGU-101004 - Fundamentals of Construction

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	3 CP	graded	Each winter term	1 semesters	1

Courses					
WT 26/27	**6200111**	Project Management	**2 SWS**	**Lecture / Practice /** 🗣	**Haghsheno, Schneider, Gloser**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
preparation of a term paper, appr. 5 pages, with presentation, appr. 10 min., and online test, 45 min.

Prerequisites
The Examination Prerequisite Project Management (T-BGU-113454) has to be passed.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-BGU-113454 - Examination Prerequisite Project Management must have been passed.

Recommendations
participation in the online mock test in the last lecture of the winter semester

Additional Information
None

Workload
90 hours

Below you will find excerpts from courses related to this module component:

V Project Management

6200111, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
This course provides a comprehensive introduction to (construction) project management. It takes a closer look at the organisation and delivery of a construction project from the client's perspective. In this context, a range of competences are presented that should be on hand for the successful execution of project management. In addition, we present a selection of project management methods for individual competences and illustrate them with case studies.

Organizational issues
Vorlesungen: Mittwochs vom 28.10.2026 bis 17.02.2027, jeweils 09:45 – 11:15 Uhr (hybrid)

Übungen: Asynchron ab 18.11.2026, 09.12.2026, 13.01.2027, 10.02.2027 (online)

Literature

- AHRENS, Hannsjörg; BASTIAN, Klemens; MUCHOWSKI, Lucian (Hrsg.) (2021) *Handbuch Projektsteuerung - Baumanagement: Ein praxisorientierter Leitfaden mit zahlreichen Hilfsmitteln und Arbeitsunterlagen*, 6. Auflage, Fraunhofer IRB Verlag, Stuttgart
- GPM Deutsche Gesellschaft für Projektmanagement e. V. (Hrsg.) (2017) *Individual Competence Baseline für Projektmanagement (Version 4.0)*, 1. Auflage, GPM Deutsche Gesellschaft für Projektmanagement e. V., Nürnberg
- HAGHSHENO, Shervin; JOHN, Paul Christian (2024) *Bauherrnseitige Projektmanagement-Dienstleistungen in Deutschland*, Forschungsbericht, DVP – Deutscher Verband für Projektmanagement in der Bau- und Immobilienwirtschaft e. V.
- KOCHENDÖRFER, Bernd; LIEBCHEN, Jens H.; VIERING, Markus G. (2021) *Bau-Projekt-Management: Grundlagen und Vorgehensweisen*, 6. Auflage, Springer Vieweg, Wiesbaden
- SCHULZ, Markus (2020) *Projektmanagement: Zielgerichtet. Effizient. Klar.*, 2. Auflage, UVK Verlag, Tübingen

T 3.200 Module component: Project Workshop: Automotive Engineering [T-MACH-102156]

Coordinators: Dr.-Ing. Michael Frey
Dr.-Ing. Martin Gießler

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101264 - Handling Characteristics of Motor Vehicles
M-MACH-101265 - Vehicle Development
M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Version
Oral examination	6 CP	graded	Each term	1

Courses					
ST 2026	**2115817**	Project Workshop: Automotive Engineering	**3 SWS**	**Lecture /** 🗣	**Gießler, Frey**
WT 26/27	**2115817**	Project Workshop: Automotive Engineering	**3 SWS**	**Lecture /** 🗣	**Gießler, Frey**
Exams					
WT 26/27	**76-T-MACH-102156**	Project Workshop: Automotive Engineering			**Gauterin**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral examination

Duration: duration 30 up to 40 minutes

Auxiliary means: none

Prerequisites
none

Workload
180 hours

Below you will find excerpts from courses related to this module component:

V Project Workshop: Automotive Engineering

2115817, SS 2026, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
During the Project Workshop Automotive Engineering a team of six persons will work on a task given by an German industrial partner using the instruments of project management. The task is relevant for the actual business and the results are intended to be industrialized after the completion of the project workshop.

The team will generate approaches in its own responsibility and will develop solutions for practical application. Coaching will be supplied by both, company and institute.

At the beginning in a start-up meeting goals and structure of the project will be specified. During the project workshop there will be weekly team meetings. Also a milestone meeting will be held together with persons from the industrial company. In a final presentation the project results will be presented to the company management and to institute representatives.

Learning Objectives:

The students are familiar with typical industrial development processes and working style. They are able to apply knowledge gained at the university to a practical task. They are able to analyze and to judge complex relations. They are ready to work self-dependently, to apply different development methods and to work on approaches to solve a problem, to develop practice-oriented products or processes.

Organizational issues
Begrenzte Teilnehmerzahl mit Auswahlverfahren, die Bewerbungen sind am Ende des vorhergehenden Semesters einzureichen.

Raum und Termine: s. Aushang bzw. Homepage

Literature
Steinle, Claus; Bruch, Heike; Lawa, Dieter (Hrsg.), Projektmanagement, Instrument moderner Innovation, FAZ Verlag, Frankfurt a. M., 2001, ISBN 978-3929368277

Skripte werden beim Start-up Meeting ausgegeben.

V

Project Workshop: Automotive Engineering

Lecture (V)
On-Site

2115817, WS 26/27, 3 SWS, Language: German, Open in study portal

Content
During the Project Workshop Automotive Engineering a team of six persons will work on a task given by an German industrial partner using the instruments of project management. The task is relevant for the actual business and the results are intended to be industrialized after the completion of the project workshop.

The team will generate approaches in its own responsibility and will develop solutions for practical application. Coaching will be supplied by both, company and institute.

At the beginning in a start-up meeting goals and structure of the project will be specified. During the project workshop there will be weekly team meetings. Also a milestone meeting will be held together with persons from the industrial company. In a final presentation the project results will be presented to the company management and to institute representatives.

Learning Objectives:

During the Project Workshop Automotive Engineering a team of six persons will work on a task given by an German industrial partner using the instruments of project management. The task is relevant for the actual business and the results are intended to be industrialized after the completion of the project workshop.

The team will generate approaches in its own responsibility and will develop solutions for practical application. Coaching will be supplied by both, company and institute.

At the beginning in a start-up meeting goals and structure of the project will be specified. During the project workshop there will be weekly team meetings. Also a milestone meeting will be held together with persons from the industrial company. In a final presentation the project results will be presented to the company management and to institute representatives.

Organizational issues
Begrenzte Teilnehmerzahl mit Auswahlverfahren, in deutscher Sprache. Bewerbungen sind am Ende des vorhergehenden Semesters einzureichen.
Termin und Raum: siehe Institutshomepage.

Limited number of participants with selection procedure, in German language. Please send the application at the end of the previous semester

Date and room: see homepage of institute.

Literature
Steinle, Claus; Bruch, Heike; Lawa, Dieter (Hrsg.), Projektmanagement, Instrument moderner Innovation, FAZ Verlag, Frankfurt a. M., 2001, ISBN 978-3929368277

Skripte werden beim Start-up Meeting ausgegeben.

The scripts will be supplied in the start-up meeting.

T 3.201 Module component: Project: Data-Driven Engineering Fundamentals [T-MACH-115010]

Coordinators: Prof. Dr.-Ing. Anne Meyer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-107658 - Data Driven Engineering Fundamentals

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	4 CP	graded	Each term	1 semesters	1

Courses					
ST 2026	**2122354**	Project: Data-Driven Engineering Fundamentals	**4 SWS**	**Project /** 🗣	**Meyer**
WT 26/27	**2122354**	Project: Data-Driven Engineering Fundamentals	**4 SWS**	**Seminar /** 🗣	**Meyer**
Exams					
ST 2026	**76-T-MACH-115010**	Project: Data-Driven Engineering Fundamentals			**Meyer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Graded examination of aother type. The following aspects are included in the grade:

- Documentation of the project implementation
- Achievement of the project goals
- Intermediate presentations and final presentation including live demonstration

The overall impression is assessed. The grading scale will be announced in the course.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Project: Data-Driven Engineering Fundamentals

2122354, SS 2026, 4 SWS, Language: English, Open in study portal

Project (PRO)
On-Site

Content
Modern engineering increasingly relies on data-driven solutions across domains such as product design, production systems, logistics, and robotics. To address these developments, this project-based course enables students to work in small teams on a data-driven engineering problem in one of the domains.

The focus is on collaboratively structuring and solving an open-ended task, organizing project work, and selecting or combining suitable methods from machine learning, optimization, and simulation. Students use state-of-the-art tools and software libraries for data-driven engineering applications (depending on the task, e.g., Isaac Sim, PyTorch, ROS2, Gymnasium) to develop, implement, and evaluate a prototypical solution. Students document their work and communicate their results through presentations and suitable media formats.

The course is designed as an on-site project with regular in-person collaboration and supervision. Familiarity with Python programming is strongly recommended. Students should be open to learning and working with operating systems and tools such as Linux, Docker, and Git.

Learning Objectives

After successful completion of the course, students will be able to:

- **Analyze and formulate** an open-ended engineering problem as a data-driven task and select appropriate methods from machine learning, optimization, and simulation.
- **Design, implement, and manage** a team-based project workflow, including task allocation, milestone planning, and effective team communication, using modern tools and software libraries for data-driven engineering applications.
- **Evaluate and communicate** project results effectively to different audiences using appropriate formats, including technical presentations, pitch-style formats, and short project videos.

Additional Information

The number of participants is limited. Information on the application process is available in ILIAS.

Organizational Information

See further details on course organization at: lehre.imi.kit.edu and in ILIAS.

Workload

120 hours

Organizational issues
See ILIAS for time and location / Zeit und Ort siehe ILIAS

V

Project: Data-Driven Engineering Fundamentals

2122354, WS 26/27, 4 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Modern engineering increasingly relies on data-driven solutions across domains such as product design, production systems, logistics, and robotics. To address these developments, this project-based course enables students to work in small teams on a data-driven engineering problem in one of the domains.

The focus is on collaboratively structuring and solving an open-ended task, organizing project work, and selecting or combining suitable methods from machine learning, optimization, and simulation. Students use state-of-the-art tools and software libraries for data-driven engineering applications (depending on the task, e.g., Isaac Sim, PyTorch, ROS2, Gymnasium) to develop, implement, and evaluate a prototypical solution. Students document their work and communicate their results through presentations and suitable media formats.

The course is designed as an on-site project with regular in-person collaboration and supervision. Familiarity with Python programming is strongly recommended. Students should be open to learning and working with operating systems and tools such as Linux, Docker, and Git.

Learning Objectives

After successful completion of the course, students will be able to:

- **Analyze and formulate** an open-ended engineering problem as a data-driven task and select appropriate methods from machine learning, optimization, and simulation.
- **Design, implement, and manage** a team-based project workflow, including task allocation, milestone planning, and effective team communication, using modern tools and software libraries for data-driven engineering applications.
- **Evaluate and communicate** project results effectively to different audiences using appropriate formats, including technical presentations, pitch-style formats, and short project videos.

Additional Information

The number of participants is limited. Information on the application process is available in ILIAS.

Organizational Information

See further details on course organization at: lehre.imi.kit.edu and in ILIAS.

Workload

120 hours

Organizational issues
See ILIAS for time and location / Zeit und Ort siehe ILIAS

T 3.202 Module component: Public Law I & II [T-INFO-110300]

Coordinators: TT-Prof. Dr. Frederike Zufall
Organisation: KIT Department of Informatics
Part of: M-INFO-107555 - German and European Public Law

Type	Credits	Grading	Term offered	Version
Written examination	6 CP	graded	Each summer term	1

Courses					
ST 2026	**24520**	Öffentliches Recht II - Öffentliches Wirtschaftsrecht	**2 SWS**	**Lecture /** 🗣	**Zufall**
WT 26/27	**2424016**	Öffentliches Recht I - Grundlagen	**2 SWS**	**Lecture /** 🗣	**Zufall**
Exams					
ST 2026	**7500298**	Public Law I & II			**Zufall**

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.203 Module component: Public Revenues [T-WIWI-102739]

Coordinators: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101403 - Public Finance
M-WIWI-101499 - Applied Microeconomics
M-WIWI-101668 - Economic Policy I

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	1

Courses					
ST 2026	**2560120**	Public Revenues	**2 SWS**	**Lecture / 🗣**	**Wigger**
ST 2026	**2560121**	Übung zu Öffentliche Einnahmen	**1 SWS**	**Practice / 🗣**	**Wigger, Schmelzer**
Exams					
ST 2026	**790oeff**	Public Revenues			**Wigger**
WT 26/27	**790oeff**	Public Revenues			**Wigger**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination (60 minutes). The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

Recommendations
Basic knowledge of Public Finance is required.

Below you will find excerpts from courses related to this module component:

V Public Revenues

2560120, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Learning goals:

See German version.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Literatur:

- Homburg, S.(2000): *Allgemeine Steuerlehre,* Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4. Aufl., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* und *Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2. Aufl.*,* Springer

T 3.204 Module component: Python Algorithms for Vehicle Technology [T-MACH-110796]

Coordinators: Stephan Rhode
Organisation:
Part of: M-MACH-101265 - Vehicle Development
M-MACH-101266 - Automotive Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2114862**	Python Algorithms for Automotive Engineering	**2 SWS**	**Lecture /**	**Rhode**
Exams					
ST 2026	**76-T-MACH-110796**	Python Algorithm for Vehicle Technology			**Rhode**
WT 26/27	**76-T-MACH-110796**	Python Algorithm for Vehicle Technology			**Rhode**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Examination

Duration: 90 minutes

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Python Algorithms for Automotive Engineering

2114862, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Teaching content:

- Introduction to Python and useful tools and libraries for creating algorithms, graphical representation, optimization, symbolic arithmetic and machine learning
  - Anaconda, Pycharm, Jupyter
  - NumPy, Matplotlib, SymPy, Scikit-Learn
- Methods and tools for creating software
  - Version management GitHub, git
  - Testing software pytest, Pylint
  - Documentation Sphinx
  - Continuous Integration (CI) Travis CI
  - Workflows in Open Source and Inner Source, Kanban, Scrum
- Practical programming projects to:
  - Road sign recognition
  - Vehicle state estimation
  - Calibration of vehicle models by mathematical optimization
  - Data-based modelling of the powertrain of an electric vehicle

Objectives:

The students have an overview of the programming language Python and important Python libraries to solve automotive engineering problems with computer programs. The students know current tools around Python to create algorithms, to apply them and to interpret and visualize their results. Furthermore, the students know
basics in the creation of software to be used in later programming projects in order to develop high-quality software solutions in teamwork. Through practical programming projects (road sign recognition, vehicle state estimation, calibration, data-based modelling), the students can perform future complex tasks from the area of driver assistance systems.

Organizational issues
Die Vorlesung beginnt mit zwei Kick-Off Veranstaltung in Präsenz am Campus Ost, Geb.70.04, Raum 219. Die entsprechenden Termine finden Sie auf der Homepage des Instituts. Die restlichen Termine finden überwiegend digital statt. Weitere Infos über ILIAS.

Literature

- A Whirlwind Tour of Python, Jake VanderPlas, Publisher: O'Reilly Media, Inc. Release Date: August 2016, ISBN: 9781492037859 link
- Scientific Computing with Python 3, Olivier Verdier, Jan Erik Solem, Claus Führer, Publisher: Packt Publishing, Release Date: December 2016, ISBN: 9781786463517 link
- Introduction to Machine Learning with Python, Sarah Guido, Andreas C. Müller, Publisher: O'Reilly Media, Inc., Release Date: October 2016, ISBN: 9781449369880, link
- Clean Code, Robert C. Martin, Publisher: Prentice Hall, Release Date: August 2008, ISBN: 9780136083238, link

T 3.205 Module component: Python-Basics Course [T-MACH-115104]

Coordinators: Prof. Dr.-Ing. Anne Meyer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-107658 - Data Driven Engineering Fundamentals

Type	Credits	Grading	Term offered	Expansion	Version
Coursework	1 CP	pass/fail	Each winter term	1 semesters	1

Courses					
ST 2026	**2122379**	Python-Basics Course	**1 SWS**	**Block /**	**Meyer**
WT 26/27	**2122379**	Python-Basics Course	**1 SWS**	**Block /**	**Meyer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Successful participation in a colloquium in individual performance at the end of the Python course.

Additional Information
Self-study course with on-site assessment

Workload
30 hours

Below you will find excerpts from courses related to this module component:

V Python-Basics Course

2122379, SS 2026, 1 SWS, Language: English, Open in study portal

Block (B) Online

Content
Practice-oriented self-study course on Python programming, Python syntax, programming environments, Python libraries for data science in engineering

Organizational issues
Self-paced course with on-site assessment

V Python-Basics Course

2122379, WS 26/27, 1 SWS, Language: English, Open in study portal

Block (B) Online

Content
Practice-oriented self-study course on Python programming, Python syntax, programming environments, Python libraries for data science in engineering

Organizational issues
Self-paced course with on-site assessment

T 3.206 Module component: Quality Management [T-MACH-115056]

Coordinators: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each winter term	2

Courses					
WT 26/27	**2149667**	Quality Management	**2 SWS**	**Lecture /** 🗣	**Lanza**

Legend: Online, Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
Written Exam (60 min)

Prerequisites
It is not possible to combine this module component with module component Quality Management [T-MACH-112586].

Additional Information
The course is offered in English.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Quality Management** — **Lecture (V) On-Site**
2149667, WS 26/27, 2 SWS, Language: English, Open in study portal

Content
Based on the quality philosophies Total Quality Management (TQM) and Six Sigma, the lecture deals with the requirements of modern quality management. Within this context, the process concept of a modern enterprise and the process-specific fields of application of quality assurance methods are presented. The lecture covers the current state of the art in preventive and non-preventive quality management methods in addition to manufacturing metrology, statistical methods and service related quality management. The content is completed with the presentation of certification possibilities and legal quality aspects.

Main topics of the lecture:

- The term "Quality"
- Total Quality Management (TQM) and Six Sigma
- Universal methods and tools
- QM during early product stages – product denition
- QM during product development and in procurement
- QM in production – manufacturing metrology
- QM in production – statistical methods
- QM in service
- Quality management systems
- Legal aspects of QM

Learning Outcomes:

The students …

- are capable to comment on the content covered by the lecture.
- are capable of substantially quality philosophies.
- are able to apply the QM tools and methods they have learned about in the lecture to new problems from the context of the lecture.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques they have learned about in the lecture for a specific problem.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Vorlesungstermine montags 09:45 Uhr
Übung erfolgt während der Vorlesung

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt:

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.207 Module component: Quantitative Finance [T-WIWI-114340]

Coordinators: Prof. Dr. Julian Thimme
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2500065**	Quantitative Finance	**2 SWS**	**Lecture /** 🗣	**Thimme, Meng**

Legend: Online, Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The assessment of success in this course is carried out as a non exam assessment. The grade is made up as follows:

1. Written elaboration (weighting: 33 %).
2. Working on and presenting data analysis problems in small groups (weighting: 67 %).

Prerequisites
None

Recommendations
Knowledge from the course Business Administration: Finance and Accounting [2610026] is very helpful.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Quantitative Finance

2500065, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
In Quantitative Finance, participants gain in-depth knowledge of analyzing corporate and financial market data to methodically explore key questions in finance. The course begins with a brief introduction to the Python programming language and the development environment used throughout the course. Following this, seven thematically structured modules cover both fundamental issues in finance and the associated empirical analytical methods. In three hackathons, participants work in small teams with real datasets to apply the theoretical concepts to concrete problems and subsequently present their findings.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 55 h

• Exam preparation and participation in the assessment: 50 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
findet in der ersten Semesterhälfte statt

T 3.208 Module component: Rapid Industrialization of Immature Products using the Example of Electric Mobility [T-MACH-113031]

Coordinators: Dr. Jörg Bauer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	4 CP	graded	Each winter term	1 semesters	1

Courses					
WT 26/27	**2149621**	Rapid Industrialization of Immature Products using the Example of Electric Mobility	**2 SWS**	**Lecture /** 🗣	**Bauer**
Exams					
ST 2026	**76-T-MACH-113031**	Rapid Industrialization of Immature Products using the Example of Electric Mobility			**Bauer**

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Written Exam (60 min)

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Rapid Industrialization of Immature Products using the Example of Electric Mobility

Lecture (V) On-Site

2149621, WS 26/27, 2 SWS, Language: German, Open in study portal

Content
The lecture "Rapid Industrialization of Immature Products using the Example of Electric Mobility" deals with production engineering methods for the robust and cost-effective production of technologically novel, so-called "immature" products. In this context, approaches for solving the central challenges resulting from the tension triangle of product development, industrialization and production are identified and discussed.

Based on the motivation for rapid market entry, the current approach involving stakeholders and other participants is explained. On this basis, key enablers for rapid and targeted industrialization are derived and discussed. For example, robust industrial processes based on flexible equipment are an essential core element for cost-effective production. Against this background, industry-relevant concepts for the automation and flexibilization of production processes are presented in the lecture in order to be able to deal efficiently and effectively with product-specific changes on the production side. Therefore, the main goal of an industrialization process is to develop production technologies and processes that enable robust, resource-efficient and cost-effective manufacturing of established and innovative products.

The lecture is structured as follows:

1. Motivation for rapid industrialization (complex market requirements, shortened development and product cycles, decreasing quantities per variant, ...).
2. Industrialization methods (simultaneous engineering, releases, frozen zones, high volumes, ...)
3. Key enablers to accelerate industrialization (simulation and digitalization, flexible and digital production equipment
4. Supply chains and suppliers
5. Testing and deployment
6. Ramp-up

Learning Outcomes:

- The students are familiar with the essential elements of simultaneous engineering and industrialization (motivation, processes, fields of action, challenges).
- The Students know the key enablers for the rapid industrialization of immature products (digitization, flexible production equipment, rapid manufacturing processes for primary production).
- The Students are familiar with the basic principles, methods and procedures of the main enablers. The understanding is deepened through theory, case and practical examples.
- The toolbox of key enablers described in the lecture allows students to select and independently apply the enablers in the context of future challenges.
- The Students are able to disseminate and to apply the knowledge acquired during the lecture in their future working lives.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Blockvorlesung vom 16.11.2026 bis 20.11.2026, täglich von 13:45 bis 18:45 Uhr in der Karlsruher Forschungsfabrik 70.41. Die theoretischen Inhalte der Vorlesung werden durch praktische Aufbauten in der Karlsruher Forschungsfabrik veranschaulicht. Vorlesungsunterlagen und weitere Informationen werden über ILIAS (https://ilias.studium.kit.edu/) zur Verfügung gestellt.

Block course from 16.11.2026 to 20.11.2026, daily from 13:45 to 18:45 in the Karlsruhe Research Factory 70.41. The theoretical contents of the lecture will be illustrated by practical setups in the Karlsruhe Research Factory. Lecture notes and further information will be made available via ILIAS (https://ilias.studium.kit.edu/).

Literature
Foliensatz zur Veranstaltung wird über Ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.209 Module component: Remote Sensing, Exam [T-BGU-101636]

Coordinators: Prof. Dr. Jan Cermak
Prof. Dr.-Ing. Stefan Hinz
Dr.-Ing. Uwe Weidner

Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences

Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each term	2

Courses					
ST 2026	**6020241**	Remote Sensing Systems	**1 SWS**	**Lecture /** 🗣	**Hinz, Cermak**
ST 2026	**6020242**	Remote Sensing Systems, Excercise	**1 SWS**	**Practice /** 🗣	**Pauli**
ST 2026	**6020243**	Procedures of Remote Sensing	**2 SWS**	**Lecture /** 🗣	**Weidner**
ST 2026	**6020244**	Procedures of Remote Sensing, Excercise	**1 SWS**	**Practice /** 🗣	**Weidner**
Exams					
ST 2026	**8284101636**	Remote Sensing, exam			**Weidner, Hinz**

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-BGU-101637 - Systems of Remote Sensing, Prerequisite must have been passed.
2. The module component T-BGU-101638 - Procedures of Remote Sensing, Prerequisite must have been passed.

Recommendations
None

Workload
120 hours

T 3.210 Module component: Renewable Energy-Resources, Technologies and Economics [T-WIWI-100806]

Coordinators: Prof. Dr. Patrick Jochem
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101464 - Energy Economics

Type	Credits	Grading	Term offered	Version
Written examination	3,5 CP	graded	Each winter term	9

Courses					
WT 26/27	**2581012**	Renewable Energy – Resources, Technologies and Economics	**2 SWS**	**Lecture /** 🗣	**Jochem**
Exams					
ST 2026	**7981012**	Renewable Energy-Resources, Technologies and Economics			**Fichtner**

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment consists of a written exam (60 minutes, in English, answers are possible in German or English) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None.

Below you will find excerpts from courses related to this module component:

V Renewable Energy – Resources, Technologies and Economics

2581012, WS 26/27, 2 SWS, Language: German/English, Open in study portal

Lecture (V)
On-Site

Content
1. General introduction: Motivation, Global situation
2. Basics of renewable energies: Energy balance of the earth, potential definition
3. Hydro
4. Wind
5. Solar
6. Biomass
7. Geothermal
8. Other renewable energies
9. Promotion of renewable energies
10. Interactions in systemic context
11. Excursion to the "Energieberg" in Mühlburg

Learning Goals:
The student

- understands the motivation and the global context of renewable energy resources.
- gains detailed knowledge about the different renewable resources and technologies as well as their potentials.
- understands the systemic context and interactions resulting from the increased share of renewable power generation.
- understands the important economic aspects of renewable energies, including electricity generation costs, political promotion and marketing of renewable electricity.
- is able to characterize and where required calculate these technologies.

The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h
• Preparation and follow-up of course content: 40 h
• Exam preparation and participation in the assessment: 35 h
Total workload: 105 h (corresponds to 3.5 ECTS credits)

Organizational issues
Blockveranstaltung, freitags 14:00-17:00 Uhr, 13.11.26, 27.11.26, 11.12.26, 08.01.27, 22.01.27, 05.02.27, 19.02.27

Literature
Weiterführende Literatur:

- Quaschning, V. (2019), Regenerative Energiesysteme, Technologie - Berechnung – Klimaschutz, Carl Hanser Verlag München
- Quaschning, V. (2016), Understanding Renewable Energy Systems, Earthscan/Routledge London.
- Infield, D. & Freris, L. (2020), Renewable Energy in Power Systems
- Jenkins, N. & Ekanayake, J. (2024), Renewable Energy Engineering
- Stutzmann, M. & Csoklich, C. (2024), The Physics of Renewable Energy
- Löschel et al. (2020), Energiewirtschaft – Einführung in Theorie und Politik
- Batic, M., Stanojevic, M. & Vranes, S. (2025), Renewable Energy Technologies
- Victoria, M. (2025), *Fundamentals of Solar Cells and Photovoltaic Systems Engineering*. Academic Press

T 3.211 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-111439]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Examination of another type	2 CP	graded	2

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.212 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-111438]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Examination of another type	1 CP	graded	2

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.213 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-111440]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Examination of another type	3 CP	graded	2

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.214 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-113353]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Examination of another type	2 CP	graded	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.215 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-113352]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Examination of another type	1 CP	graded	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.216 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-113294]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Examination of another type	1 CP	graded	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.217 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Graded [T-WIWI-113354]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Examination of another type	3 CP	graded	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.218 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-111443]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Coursework	3 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.219 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-111442]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Coursework	2 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.220 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-111441]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Coursework	1 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.221 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-113356]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Coursework	2 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.222 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-113357]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Coursework	3 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.223 Module component: Self-Booking-HOC-SPZ-FORUM-STK-Ungraded [T-WIWI-113355]

Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Coursework	1 CP	pass/fail	1

Self Service Assignment of Supplementary Studies
This module component can be used for self service assignment of grades acquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM) (ehem. ZAK)
- Studienkolleg

Additional Information
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

T 3.224 Module component: Seminar Application of Artificial Intelligence in Production [T-MACH-112121]

Coordinators: Prof. Dr.-Ing. Jürgen Fleischer
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each summer term	5

Courses					
ST 2026	**2150910**	Seminar Application of Artificial Intelligence in Production	**2 SWS**	**Seminar / 🗣**	**Fleischer**
Exams					
ST 2026	**76-T-MACH-112121**	Seminar Application of Artificial Intelligence in Production			**Fleischer**

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative test achievement (graded):

- Presentation of the results (approx. 20 min) followed by a colloquium (approx. 15 min) with weighting 25%
- Written processing of the results with weighting 75%
- The overall impression is rated.

Prerequisites
none

Recommendations
Previous participation in the lecture 2149921 "Artificial Intelligence in Production" or advanced knowledge of Python.

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Seminar Application of Artificial Intelligence in Production

2150910, SS 2026, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
The module AI in Production is designed to teach students the practical, holistic integration of machine learning methods and the application of artificial intelligence in production. The course is based on the phases of the CRISP-DM process with the aim of developing a deep understanding of the necessary steps and content aspects (methods) within the individual phases. In addition to teaching the practice-relevant aspects for integrating the most important methods of machine learning, the focus here is primarily on the necessary steps for data generation and data preparation, as well as the implementation and safeguarding of the methods in an industrial environment.

The lecture “Seminar on the Application of Artificial Intelligence in Production” aims at the practical integration of current methods of machine learning using realistic industrial use cases. The content of the course is based on the holistic, practical implementation of an AI project in production. In doing so, students solve a problem from a production context using methods of data analysis, processing and machine learning.

Learning Outcomes:

The students

- are able to independently analyze a practical problem in production with regard to the application of machine learning methods.
- will be able to independently apply common deep learning algorithms to practical data sets, validate them, and analyze the results.
- understand the challenges of using deep learning methods in production.
- will know the main action areas and open research questions for the successful implementation of AI in production and for the implementation of autonomous machines.
- are able to evaluate the results of current deep learning methods and, based on these, to develop and practically apply proposed solutions (from the field of machine learning).

Workload:

regular attendance: 21 hours
self-study: 99 hours

Organizational issues
Auftaktveranstaltung am 24.04.2026, 8:00 - 9:30 Uhr im Vorlesungsbereich der Karlsruher Forschungsfabrik (Geb. 70.41).

Alle nachfolgenden Termine werden über Ilias (https://ilias.studium.kit.edu/) bekanntgegeben.

Literature
Materialien zur Lehrveranstaltung werden über Ilias (https://ilias.studium.kit.edu/) bereitgestellt.

Course materials will be provided onIlias (https://ilias.studium.kit.edu/).

T 3.225 Module component: Seminar in Business Administration (Bachelor) [T-WIWI-103486]

Coordinators: Professorenschaft des Fachbereichs Betriebswirtschaftslehre
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each term	2

Courses					
ST 2026	**2500020**	Digital Democracy - Challenges and opportunities of the digital society	**2 SWS**	**Seminar /**	**Fegert**
ST 2026	**2500038**	AI in Human Domains: Decision-Making, Oversight, and Accountability	**2 SWS**	**Seminar /**	**Pfeiffer, Hüholt, Bennardo**
ST 2026	**2500047**	Seminar Sustainable Information Systems and Digital Energy Markets	**2 SWS**	**Seminar**	**Staudt**
ST 2026	**2500048**	Seminar Covert Influences on the Social Media Discourse	**2 SWS**	**Seminar**	**Staudt**
ST 2026	**2500061**	Special Topics in Transportation Strategy	**2 SWS**	**Seminar /**	**Müller**
ST 2026	**2500125**	Human-Centered Systems Seminar: Engineering	**3 SWS**	**Seminar /**	**Mädche**
ST 2026	**2530293**	Seminar in Finance (Bachelor, Prof. Ruckes)	**2 SWS**	**Seminar /**	**Ruckes, Luedecke, Benz, Kohl, Sarac, Fkyerat**
ST 2026	**2530610**	Seminar Financial Economics	**2 SWS**	**Seminar /**	**Thimme**
ST 2026	**2540468**	Bachelor Seminar: Intelligent & Responsible Information Systems	**2 SWS**	**Seminar /**	**Pfeiffer, Schlaich**
ST 2026	**2540473**	Applied Responsible AI	**2 SWS**	**Seminar**	**Schulz, Weinhardt**
ST 2026	**2540475**	Positive Information Systems	**2 SWS**	**Seminar**	**Knierim**
ST 2026	**2540478**	Smart Grid Economics & Energy Markets	**2 SWS**	**Seminar**	**Weinhardt**
ST 2026	**2540524**	Bachelor Seminar in Data Science and Machine Learning	**2 SWS**	**Seminar**	**Geyer-Schulz**
ST 2026	**2540553**	Biosignal-Adaptive Systems Seminar	**2 SWS**	**Seminar /**	**Mädche, Beigl**
ST 2026	**2540557**	Human-Centered Systems Seminar: Research	**3 SWS**	**Seminar /**	**Mädche**
ST 2026	**2571187**	Seminar Digital Marketing (Bachelor)	**2 SWS**	**Seminar /**	**Kupfer**
ST 2026	**2573010**	Seminar Human Resources and Organizations (Bachelor)	**2 SWS**	**Seminar /**	**Nieken, Mitarbeiter**
ST 2026	**2573011**	Seminar Human Resource Management (Bachelor)	**2 SWS**	**Seminar /**	**Nieken, Mitarbeiter, Gorny**
ST 2026	**2581030**	Seminar Energiewirtschaft IV: Gerechtigkeitsaspekte in der Transformation des Energiesystems	**2 SWS**	**Seminar /**	**Fichtner, Sloot**
ST 2026	**2581031**	Seminar Energiewirtschaft V	**2 SWS**	**Seminar /**	**Plötz**
ST 2026	**2581032**	Seminar Energiewirtschaft VI	**2 SWS**	**Seminar /**	**Slednev, Fichtner**
ST 2026	**2581978**	Seminar in Production and Operations Management	**2 SWS**	**Seminar /**	**Schultmann, Rosenberg**
ST 2026	**2581979**	Seminar Energiewirtschaft I	**2 SWS**	**Seminar /**	**Fichtner, Kleinebrahm**

ST 2026	**2581980**	Seminar Energiewirtschaft II: Sustainable Transformation of Energy Infrastructures	**2 SWS**	**Seminar / 🗣**	**Fichtner, Sandmeier**
ST 2026	**2581981**	Seminar Energiewirtschaft III	**2 SWS**	**Seminar / 🗣**	**Ardone, Fichtner**
WT 26/27	**2500045**	Digital Democracy - Challenges and Opportunities of the Digital Society	**2 SWS**	**Seminar / 🏵**	**Fegert, Labbouz, Borukhson, Ni, Pfannschmidt**
WT 26/27	**2500061**	Special Topics in Transportation Strategy	**2 SWS**	**Seminar / 🗣**	**Müller**
WT 26/27	**2500077**	Seminar: Human-AI Collaboration	**2 SWS**	**Seminar / 🏵**	**Förster**
WT 26/27	**2500125**	Human-Centered Systems Seminar: Engineering	**2 SWS**	**Seminar / 🏵**	**Mädche**
WT 26/27	**2530580**	Seminar in Finance (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Uhrig-Homburg**
WT 26/27	**2530586**		**2 SWS**	**Seminar / 🗣**	**Uhrig-Homburg, Molnar**
WT 26/27	**2530610**	Seminar in Financial Economics (Bachelor)	**2 SWS**	**Seminar / 🏵**	**Thimme**
WT 26/27	**2540471**	Bachelor Seminar: Intelligent & Responsible Information Systems	**2 SWS**	**Seminar / 🗣**	**Heßler, Schlaich**
WT 26/27	**2540473**	Seminar Applied Responsible AI	**2 SWS**	**Seminar / 🗣**	**Schulz, Motz**
WT 26/27	**2540475**	Positive Information Systems	**2 SWS**	**Seminar / 🗣**	**Knierim, del Puppo**
WT 26/27	**2540478**	Smart Grids and Energy Markets	**2 SWS**	**Seminar / 🗣**	**Weinhardt, Semmelmann, Miskiw, Speck, Thederan**
WT 26/27	**2540557**	Human-Centered Systems Seminar: Research	**2 SWS**	**Seminar / 🏵**	**Mädche**
WT 26/27	**2571180**	Seminar in Marketing and Sales (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Klarmann**
WT 26/27	**2573010**	Seminar: Human Resources and Organizations (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Nieken, Mitarbeiter**
WT 26/27	**2573011**	Seminar: Human Resource Management (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Nieken, Mitarbeiter**
WT 26/27	**2581030**	Seminar in Energy Economics	**2 SWS**	**Seminar / 🗣**	**Fichtner, Sloot**
WT 26/27	**2581032**	Seminar Energy Economics VI	**2 SWS**	**Seminar / 🗣**	**Fichtner, Slednev**
WT 26/27	**2581033**	Seminar in Energy Economics VII	**2 SWS**	**Seminar / 🗣**	**Fichtner**
WT 26/27	**2581976**	Seminar in Production and Operations Management	**2 SWS**	**Seminar / 🗣**	**Schultmann, Rudi**
WT 26/27	**2581977**	Seminar in Production and Operations Management	**2 SWS**	**Seminar / 🗣**	**Schultmann, Rudi**
WT 26/27	**2581978**	Seminar in Production and Operations Management	**2 SWS**	**Seminar / 🗣**	**Schultmann, Rosenberg**
WT 26/27	**2581979**	Seminar in Energy Economics	**2 SWS**	**Seminar / 🗣**	**Fichtner, Kleinebrahm**
WT 26/27	**2581980**	Seminar in Energy Economics	**2 SWS**	**Seminar / 🗣**	**Fichtner, Sandmeier**
WT 26/27	**2581981**	Seminar in Energy Economics	**2 SWS**	**Seminar / 🗣**	**Ardone, Fichtner**
WT 26/27	**2581990**	Seminar in Production and Operations Management	**2 SWS**	**Seminar / 🗣**	**Schultmann**
WT 26/27	**2581991**	Seminar in Production and Operations Management	**2 SWS**	**Seminar / 🗣**	**Schultmann**
Exams					
ST 2026	**7900003**	Seminar in Finance (Bachelor, Prof. Ruckes)			**Ruckes**
ST 2026	**7900013**	Bachelor Seminar in Data Science and Machine Learning			**Geyer-Schulz**
ST 2026	**7900093**	Seminar Smart Grid and Energy Markets			**Weinhardt**
ST 2026	**7900100**	Seminar Human Resource Management (Bachelor)			**Nieken**
ST 2026	**7900190**	Human-Centered Systems Seminar: Engineering			**Mädche**
ST 2026	**7900214**	Seminar Applied Responsible AI			**Weinhardt**
ST 2026	**7900230**	Seminar Human Resources and Organizations (Bachelor)			**Nieken**

ST 2026	**7900243**	Seminar Digital Marketing (Bachelor)	**Kupfer**
ST 2026	**7900256**	Seminar Positive Information Systems	**Weinhardt**
ST 2026	**7900261**	Human-Centered Systems Seminar: Research	**Mädche**
ST 2026	**7900265**	Biosignal-Adaptive Systems Seminar	**Mädche**
ST 2026	**7900312**	Seminar Sustainable Information Systems and Digital Energy Markets	**Staudt**
ST 2026	**7900314**	Seminar Financial Economics "Momentum Strategies Replication" (Bachelor)	**Thimme**
ST 2026	**7900318**	Seminar Covert Influences on the Social Media Discourse	**Staudt**
ST 2026	**7900326**	Seminar Energy Economics VI	**Fichtner**
ST 2026	**7900327**	Special Topics in Transportation Strategy	**Lindstädt**
ST 2026	**792581030**	Seminar Energy Economics IV	**Fichtner**
ST 2026	**792581031**	Seminar Energy Economics V	**Plötz**
ST 2026	**7940468**	Bachelor Seminar: Intelligent & Responsible Information Systems / AI in Human Domains	**Pfeiffer**
ST 2026	**7981978**	Seminar in Production and Operations Management III	**Schultmann**
ST 2026	**7981979**	Seminar Energy Economics I: A Real-Time Day-Ahead Energy Time Series Forecasting Challenge	**Fichtner**
ST 2026	**7981980**	Seminar Energy Economics II: Sustainable Transformation of Energy Infrastructures	**Fichtner**
ST 2026	**7981981**	Seminar Energy Economics III	**Fichtner**
WT 26/27	**7900069**	Human-Centered Systems Seminar: Engineering	**Mädche**
WT 26/27	**7900129**	Special Topics in Transportation Strategy	**Lindstädt**
WT 26/27	**7900138**	Seminar in Marketing and Sales (Bachelor)	**Klarmann**
WT 26/27	**7900157**	Seminar Human Resources and Organizations (Bachelor)	**Nieken**
WT 26/27	**7900159**	Seminar: Human-AI Collaboration	**Förster**
WT 26/27	**7900161**	Seminar Human Resource Management (Bachelor)	**Nieken**
WT 26/27	**7900175**	Seminar in Finance: Exchange Traded Funds (ETFs)	**Uhrig-Homburg**
WT 26/27	**7900203**	Seminar "Finance in a nutshell"	**Uhrig-Homburg**
WT 26/27	**7900233**	Human-Centered Systems Seminar: Research	**Mädche**
WT 26/27	**7940468**	Bachelor Seminar: Intelligent & Responsible Information Systems	**Pfeiffer**
WT 26/27	**7981976**	Seminar in Production and Operations Management	**Schultmann**
WT 26/27	**7981977**	Seminar in Production and Operations Management	**Schultmann**
WT 26/27	**7981978**	Seminar in Production and Operations Management	**Schultmann**
WT 26/27	**7981990**	Seminar in Production and Operations Management	**Schultmann**
WT 26/27	**7981991**	Seminar in Production and Operations Management V	**Schultmann**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

The total **workload** for this course is approx. 120 hours (corresponds to 4 ECTS credits) and is structured as follows:

- **Attendance at lectures/seminar sessions (presence time)** (2 SWS × 15 weeks): 30 h
- **Preparation and follow-up of seminar sessions including literature research:** 30 h
- **Preparation of the written seminar paper:** 40 h
- **Exam preparation and design of the presentation:** 20 h
- **Total workload:** 120 h (corresponds to 4 ECTS credits)

The specified breakdown of the workload serves as a guideline for a seminar worth 4 ECTS credits (120 hours). The actual distribution of time (e.g., a higher proportion of self-study for extensive research and writing, or a higher proportion of presence time in block seminars) may vary depending on the specific seminar topic and pedagogical concept. Detailed requirements and schedules will be announced at the beginning of the course.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Special Topics in Transportation Strategy** **Seminar (S)**
2500061, SS 2026, 2 SWS, Language: English, Open in study portal **On-Site**

Content
Course Content:

This course covers a range of important strategic questions across different transportation industries. Using suitable models from the areas of strategy and management, the participants will learn to evaluate structures, market forces and dynamics across different transportation industries and their impact on corporate strategy. On the basis of this, they will derive precise and well-founded recommendations for action.

This course offers students the opportunity to engage with current strategic issues and sharpen their skills in strategic analysis and evaluation. Through intensive collaboration and the practical application of the knowledge they have learned, students are optimally preparing for the requirements and challenges of modern corporate management.

The seminar is offered by the Chair of Management (Prof. Dr. Hagen Lindstädt) and will be held by Dr. Jürgen Müller. Dr. Müller worked at McKinsey & Company for 20 years, where he worked in different transportation and infrastructure industries (rail, road, sea, air) on an international level. Since 2015, he is Executive Vice President for Strategy and Rolling stock at the Danish State Railways.

Topics:

1. **Deregulation**: Deregulation in the European passenger air and rail markets has resulted in very different market outcomes. Describe, compare and evaluate the underlying structures, the process of deregulation and its outcomes in the two industries and develop recommendations for the future.
2. **Concentration:** Why is the combined global market share of the top 5 players in container shipping vs. logistics so different? Describe and evaluate the causes and most important implications from the past. How will the topic develop in the future?
3. **Modal share:** Why ist there such a big difference in modal share between rail freight in the US vs. rail freight in Europe? Describe and evaluate the causes and most important implications from the past. What development do you foresee for the European market?
4. **Cyclicaty:** Why is there such a high cyclicaty in the global container shipping market? Describe and evaluate the causes and most important implications from the past. How will the topic develop in the future?
5. V**ertical integration:** Large logistics companies have chosen different strategies with regards to vertical integration between container shipping and land-based logistics (e.g. Maersk /K&N vs. DB Schenker / DSV). Describe and evaluate the resprective rationales and most important implications so far. How will the topic develop in the future?
6. **Profitability (I):** Why is average industry profitability of freight carriers so different across transport modes (road, rail, air and sea)? Assess the differences. Describe and evaluate the causes and most important implications from the past. How will the topic develop in the future?
7. **Pfrofitability (II):** "The quickest way to become a millionaire in the airline business is to start out as a billionaire" (Richard Branson). Analyze and discuss the truth of this statement and identify the underlying reasons. On this basis, derive recommendations for new entrants into the airline business.

Structure:

The course begins with an overarching introduction. Topics can be evaluated after the kickoff-meeting until 26.04.2026. Based on this, topics are assigned to groups of two. The main part of the course consists of writing and presenting a seminar paper - including a discussion of the results.

Target group: Bachelor students

Dates:

1. Kickoff: 24.04.2026,13:00 - 16:00 (remote via MS Teams)
2. Presentation Day 1: 22.06.2026, 14:00 - 18:00 (in person at IBU, building 05.20, room 2A-12.1)
3. Presentation Day 2: 23.06.2026, 09:00 - 12:00 (in person at IBU, building 05.20, room 2A-12.1)

Attendance is mandatory on all dates.

After completion of the course, the students are able to

- ... analyze complex industry structures and company situations, think strategically and derive well-founded recommendations.
- ... produce well-structured and convincing written papers that present the analysis and recommendations.
- ... present and discuss the results in an engaging and convincing manner and actively participate in discussions.

V Human-Centered Systems Seminar: Engineering

2500125, SS 2026, 3 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Formerly known as "Current Topics in Digital Transformation"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

V

Biosignal-Adaptive Systems Seminar

2540553, SS 2026, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content

Biosignal-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a biosignal-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (h-lab, Prof. Mädche). It is offered as part of the DFG-funded graduate school “KD2School: Designing Adaptive Systems for Economic Decisions“ (https://kd2school.info/)

Learning objectives of the seminar

- Explain what a biosignal-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a biosignal-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the biosignal-adaptive system prototype

Prerequisites

Strong analytical abilities and profound software development skills are required.

Organizational issues

Termine werden bekannt gegeben

Literature

Required literature will be made available in the seminar.

V

Human-Centered Systems Seminar: Research

2540557, SS 2026, 3 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Formerly known as "Information Systems and Service Design Seminar"

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group IS I (Prof. Mädche). The research group “Information Systems I” (IS I) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites

No specific prerequisites are required for the seminar.

Literature

Further literature will be made available in the seminar.

Organizational issues
Termine werden bekannt gegeben

V **Seminar Human Resources and Organizations (Bachelor)** **Seminar (S) On-Site**
2573010, SS 2026, 2 SWS, Language: German, Open in study portal

Content
The topics are redefined each semester on basis of current research topics.The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

V Seminar Human Resource Management (Bachelor)

2573011, SS 2026, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

V Seminar: Human-AI Collaboration

2500077, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
(Generative) Artificial intelligence (AI) is dramatically changing how knowledge work is done. Across tasks and domains, AI is moving from a passive tool to an active collaborator that participates in the work itself: it proposes ideas, drafts and revises artifacts, analyzes information, and takes on tasks that used to be fully human. For instance, AI supports software development as a coding assistant, writing and content creation, data analysis and decision-making, design, research, and the delivery of digital services. Wherever it is applied, the central question is: how can humans and AI work together to create value?

Realizing these opportunities requires more than access to the technology. Human-AI collaboration fundamentally shifts people's roles, tasks, and required skills. On the one hand, users must learn to exploit the advantages of AI: delegating suitable tasks, leveraging its ability to generate results remarkably fast, and orchestrating its contributions throughout a workflow. On the other hand, because AI works so quickly and fluently produces output, critical thinking becomes more important than ever: AI is inherently uncertain, so users and developers must question and validate what it produces, explain the decisions behind their work, and take ownership of the result.

Shaping human-AI collaboration therefore becomes one of the defining challenges of our time. Effective human-AI collaboration rests on several key concepts: understanding the complementarity of human and AI strengths, delegating tasks accordingly, designing where to keep a human in the loop, recognizing and handling the uncertainty inherent in human-AI collaboration, and navigating the shift in the skills that people need.

This seminar follows a **research-oriented approach**: students engage scientifically with human-AI collaboration. Building on the current body of research, each student investigates a focused research question, for example by systematically reviewing the literature, developing a conceptual argument, or working on an empirical study. Students learn to situate their work in the academic literature, apply appropriate research methods, critically analyze evidence, and communicate their findings in a written seminar paper and a presentation.

Since we try to keep the content up to date, the concrete topics of this practical seminar are subject to change. Further information about the content and registration on https://wi4.win.kit.edu/63.php.

Literature

Amershi, S., Weld, D., Vorvoreanu, M., Fourney, A., Nushi, B., Collisson, P., Suh, J., Iqbal, S., Bennett, P. N., Inkpen, K., Teevan, J., Kikin-Gil, R., & Horvitz, E. (2019). Guidelines for Human-AI Interaction. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*, 1–13. https://doi.org/10.1145/3290605.3300233

Bartelheimer, C., Heinz, D., Hönigsberg, S., Siemon, D., Li, M., Strohmann, T., Poeppelbuss, J., & Peters, C. (2025). Conceptualizing hybrid intelligent service ecosystems. *Electronic Markets, 35*, Article 44. https://doi.org/10.1007/s12525-025-00798-4

Dellermann, D., Ebel, P., Söllner, M., & Leimeister, J. M. (2019). Hybrid Intelligence. *Business & Information Systems Engineering, 61*(5), 637–643. https://doi.org/10.1007/s12599-019-00595-2

Fügener, A., Grahl, J., Gupta, A., & Ketter, W. (2021). Will Humans-in-the-Loop Become Borgs? Merits and Pitfalls of Working with AI. *MIS Quarterly, 45*(3), 1527–1556. https://misq.umn.edu/misq/article/45/3/1527/1891/

Hemmer, P., Schemmer, M., Kühl, N., Vössing, M., & Satzger, G. (2025). Complementarity in human-AI collaboration: concept, sources, and evidence. *European Journal of Information Systems*. https://doi.org/10.1080/0960085X.2025.2475962

Seeber, I., Bittner, E., Briggs, R. O., de Vreede, T., de Vreede, G.-J., Elkins, A., Maier, R., Merz, A. B., Oeste-Reiß, S., Randrup, N., Schwabe, G., & Söllner, M. (2020). Machines as teammates: A research agenda on AI in team collaboration. *Information & Management, 57*(2), 103174. https://doi.org/10.1016/j.im.2019.103174

Vaccaro, M., Almaatouq, A., & Malone, T. (2024). When combinations of humans and AI are useful: A systematic review and meta-analysis. *Nature Human Behaviour, 8*(12), 2293–2303. https://doi.org/10.1038/s41562-024-02024-1

V Human-Centered Systems Seminar: Engineering

2500125, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester; topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI)
- carry out research activities for the given topic, including design, implementation, data collection, experimental design, etc.
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites

See wiwi-portal for specific requirements for each topic.

Language of instruction

English

V

2530586, WS 26/27, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content

Within this seminar eLearning videos are produced to different topics out of the contents of our lectures. The student gets in touch with scientific work. Through profound working on a specific scientific topic the student is meant to learn the foundations of scientific research and reasoning in particular in finance.Through conduction of the video the student becomes familiar with the fundamental techniques for presentations and foundations of scientific reasoning. In addition, the student earns rhetorical skills.

The success is monitored by the development of an eLearning video and by the writing of a project report (according to §4(2), 3 SPO).

The overall grade is made up of these partial performances.

Recommendations:

Knowledge of the content of the modules *Essentials of Finance* [WW3BWLFBV1] (for bachelor students) and *F1 (Finance)* [WW4BWLFBV1] (for master students) is assumed.

The total workload for this course is approximately 90 hours. For further information see German version.

Organizational issues

Kickoff am 26.10.26 um 16 Uhr, Zwischenpräsentation am 08.12.26 um 16 Uhr und Abschlusspräsentation am 26.01.27, 17:30 Uhr am Campus B (Geb. 09.21), Raum 209

V Bachelor Seminar: Intelligent & Responsible Information Systems

2540471, WS 26/27, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
In our bachelor's seminar "Intelligent & Responsible Information Systems", which we offer every semester, we cover topics related to the design of intelligent information systems, for example, in the areas of conversational agents, recommender systems, and decision support systems, as well as the question of how to ensure the trustworthiness and long-term accountability of these systems toward society. We employ a multi-method approach (implementation of machine learning techniques, quantitative empirical methods, as well as design science and qualitative methods in some cases).

You can find out more about our research topics on our website: Our Research Topics

Application: To participate in the seminar, you must apply via the Wiwi Portal.

Not all scheduled events are mandatory. Most are optional Q&A sessions. Please check the WiWi portal to see which sessions require attendance.

V Seminar Applied Responsible AI

2540473, WS 26/27, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
wird auf deutsch und englisch gehalten

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 60 h

• Exam preparation and participation in the assessment: 45 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Blockveranstaltung, siehe WWW

V Human-Centered Systems Seminar: Research

2540557, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the human-centered systems lab (Prof. Mädche). n the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically designing human-centered systems for better work and life. The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research topics. Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically human-centered systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites

No specific prerequisites are required for the seminar.

Literature

Further literature will be made available in the seminar.

Language of instruction

English

Organizational issues
Termine werden bekannt gegeben

V Seminar: Human Resources and Organizations (Bachelor)

2573010, WS 26/27, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
The topics are redefined each semester on basis of current research topics.The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

V Seminar: Human Resource Management (Bachelor)

2573011, WS 26/27, 2 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

T 3.226 Module component: Seminar in Economics (Bachelor) [T-WIWI-103487]

Coordinators: Professorenschaft des Fachbereichs Volkswirtschaftslehre
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each term	2

Courses					
ST 2026	**2500009**	Seminar in Economic Theory IV	**2 SWS**	**Seminar / 🗣**	**Ammann, Kretz, Okulicz**
ST 2026	**2500012**	Making and Evaluating Predictions	**2 SWS**	**Seminar**	**Schienle, Allen, Zhang**
ST 2026	**2500035**	Efficiency analyses in network sectors	**2 SWS**	**Seminar / 🗣**	**Mitusch, Latsch**
ST 2026	**2520367**	Strategische Entscheidungen	**2 SWS**	**Seminar / 🏵**	**Ehrhart**
ST 2026	**2520535**	Seminar in Economic Theory I	**2 SWS**	**Seminar / 🗣**	**Ammann, Kretz, Okulicz**
ST 2026	**2560130**	Seminar Public Finance	**2 SWS**	**Block / 🏵**	**Wigger, Schmelzer**
ST 2026	**2560259**	Organisation and Management of Development Projects	**2 SWS**	**Seminar / 🏵**	**Sieber**
ST 2026	**2560400**	Seminar in Macroeconomics I	**2 SWS**	**Seminar / 🏵**	**Brumm, Frank**
ST 2026	**2560555**	Seminar Lying and Cheating in Economic Decision Situations (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Rau**
WT 26/27	**2520561**	Wirtschaftstheoretisches Seminar I (Bachelor)	**2 SWS**	**Seminar / 🏵**	**Puppe, Ammann, Kretz, Okulicz**
WT 26/27	**2520562**	Wirtschaftstheoretisches Seminar II (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Ammann, Kretz**
WT 26/27	**2521310**	Topics in Econometrics	**2 SWS**	**Seminar**	**Schienle, Krüger, Bracher, Buse, Koster, Rüter, Leimenstoll, Renner**
WT 26/27	**2560130**	Seminar Public Finance	**2 SWS**	**Seminar / 🏵**	**Wigger, Setio, Schmelzer**
WT 26/27	**2560140**	Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Rosar**
WT 26/27	**2560141**	Behavioral Biases in Decision Making (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Rau**
WT 26/27	**2561208**	Selected aspects of European transport planning and -modelling	**2 SWS**	**Seminar**	**Szimba**
Exams					
ST 2026	**00019**	Seminar: How Wise is the Crowd? Group Decisions in Theory and Practice (Bachelor)			**Puppe**
ST 2026	**7900051**	Seminar in Economic Policy			**Ott**
ST 2026	**7900130**	Lying and Cheating in Economic Decision Situations (Bachelor)			**Rau**
ST 2026	**7900164**	Seminar in Economics (Bachelor)			**Mitusch**
ST 2026	**7900226**	Effizienzanalysen in Netzwerksektoren			**Mitusch**
ST 2026	**7900356**	Seminar in Economics (Bachelor)			**Brumm**
ST 2026	**7900381**	Making and Evaluating Predictions			**Schienle**
ST 2026	**7900383**	Seminar in Economics (Bachelor)			**Ehrhart**
ST 2026	**79sefi1**	Seminar Public Finance (Bachelor)			**Wigger**
WT 26/27	**7900124**	Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Bachelor)			**Rosar**

WT 26/27	**7900212**	Seminar in Economic Policy	**Ott**
WT 26/27	**7900278**	Behavioral Biases in Decision Making (Bachelor)	**Rau**
WT 26/27	**79sefi1**	Seminar Public Finance (Bachelor)	**Wigger**

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

The total **workload** for this course is approx. 120 hours (corresponds to 4 ECTS credits) and is structured as follows:

- **Attendance at lectures/seminar sessions (presence time)** (2 SWS × 15 weeks): 30 h
- **Preparation and follow-up of seminar sessions including literature research:** 30 h
- **Preparation of the written seminar paper:** 40 h
- **Exam preparation and design of the presentation:** 20 h
- **Total workload:** 120 h (corresponds to 4 ECTS credits)

The specified breakdown of the workload serves as a guideline for a seminar worth 4 ECTS credits (120 hours). The actual distribution of time (e.g., a higher proportion of self-study for extensive research and writing, or a higher proportion of presence time in block seminars) may vary depending on the specific seminar topic and pedagogical concept. Detailed requirements and schedules will be announced at the beginning of the course.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V

Making and Evaluating Predictions

2500012, SS 2026, 2 SWS, Language: German/English, Open in study portal

Seminar (S)

Content
A key goal of statistics and data science is to make predictions. Good predictions are important for decision-making, allowing us to balance risks and mitigate the impacts of potentially damaging events. In this seminar, we will study theoretical questions regarding the evaluation of predictions, such as “What does it mean for a prediction to be good?”, before introducing statistical and machine learning methods to generate both point-valued and probabilistic predictions. We will discuss applications to economics, meteorology, and energy forecasting.

Format: The course will start with a short block course at the beginning of the lecture period. Evaluation will be based on a seminar thesis, which students are required to hand in at the end of the lecture period, and a short presentation. The presentations will also take place towards the end of the lecture period.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V Seminar Public Finance
2560130, SS 2026, 2 SWS, Language: German, Open in study portal

Block (B)
Blended (On-Site/Online)

Content
See German version.

Organizational issues
Termine werden bekannt gegeben.

Literature
Literatur wird zu Beginn des jeweiligen Seminars vorgestellt.

V Seminar Lying and Cheating in Economic Decision Situations (Bachelor)
2560555, SS 2026, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
Objective of the Seminar: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 12–15 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (60%). There may be a bonus on the grade for actively participating in the discussions of the presentations.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Obligatory: Application via WiWi-Portal during the seminar registration period

Seminar Kick-off: 28.04.2026, 14.00 - 14.45 h

Seminar Presentations: 30.06.2026 9.30 - 18.00 h

Hand-in Seminar Papers: 02.08.2026

V Topics in Econometrics
2521310, WS 26/27, 2 SWS, Language: German, Open in study portal

Seminar (S)

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
Wöchentliche Veranstaltung, Donnerstags 13:00-14:30 Uhr in B17 - R320

V Seminar Co-opetition: A Practical Perspective on Game Theory in the Digital Economy (Bachelor)
2560140, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
The seminar addresses issues in the digital economy from a game-theoretic perspective. All information about the seminar will be published on the Wiwi-Portal.

Organizational issues
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 27.10.2026, 14.00 - 15.30 h, 01.85, KD2 Lab, Team Room

Presentations: 11. and 12.01.2027, 01.85, KD2 Lab, Team Room

V

Behavioral Biases in Decision Making (Bachelor)

2560141, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Digital Economics or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see https://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 12-15 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off 27.10.2026, 14.00 - 15.30 h, 05.20, 5C-01.1

Presentations 18.01.2027, KD2Lab Teamroom A+B

T 3.227 Module component: Seminar in Engineering Science Master (approval) [T-WIWI-108763]

Coordinators: Fachvertreter ingenieurwissenschaftlicher Fakultäten
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each term	4

Assessment
See German version.

Prerequisites
See module description.

Recommendations
None

Workload
120 hours

T 3.228 Module component: Seminar in Informatics (Bachelor) [T-WIWI-103485]

Coordinators: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each term	2

Courses					
ST 2026	**2513220**	Seminar Intelligente Fahrzeugsysteme der nächsten Generation: Kognition, Personalisierung und adaptive Mobilität (Bachelor)	**2 SWS**	**Seminar**	**Ullrich, Schreiber**
ST 2026	**2513308**	Seminar Knowledge Discovery and Data Mining (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Käfer, Noullet, Kinder, Li**
ST 2026	**2513310**	Seminar Data Science & Real-time Big Data Analytics (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Käfer, Thoma, Slobodyanik**
WT 26/27	**2513214**	Seminar Information security and Data protection (Bachelor)	**2 SWS**	**Seminar / 🗣**	**Volkamer, Raabe, Schiefer, Werner, Mack, Kruse**
WT 26/27	**2513312**	Seminar Linked Data and the Semantic Web (Bachelor)	**3 SWS**	**Seminar / 🗣**	**Käfer, Braun, Li, Kubelka**
WT 26/27	**2513314**	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)	**3 SWS**	**/ 🗣**	**Hoellig, Käfer, Thoma**
Exams					
ST 2026	**7900094**	Seminar Knowledge Discovery and Data Mining (Bachelor)			**Käfer**
ST 2026	**7900197**	Seminar Next-Generation Intelligent Vehicle Systems: Cognition, Personalization, and Adaptive Mobility (Bachelor's)			**Schiefer, Ullrich, Schreiber**
ST 2026	**7900265**	Biosignal-Adaptive Systems Seminar			**Mädche**

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
Placeholder for seminars offered by the Institute AIFB. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

The total **workload** for this course is approx. 120 hours (corresponds to 4 ECTS credits) and is structured as follows:

- **Attendance at lectures/seminar sessions (presence time)** (2 SWS × 15 weeks): 30 h
- **Preparation and follow-up of seminar sessions including literature research:** 30 h
- **Preparation of the written seminar paper:** 40 h
- **Exam preparation and design of the presentation:** 20 h
- **Total workload:** 120 h (corresponds to 4 ECTS credits)

The specified breakdown of the workload serves as a guideline for a seminar worth 4 ECTS credits (120 hours). The actual distribution of time (e.g., a higher proportion of self-study for extensive research and writing, or a higher proportion of presence time in block seminars) may vary depending on the specific seminar topic and pedagogical concept. Detailed requirements and schedules will be announced at the beginning of the course.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Seminar Knowledge Discovery and Data Mining (Bachelor)** **Seminar (S) On-Site**
2513308, SS 2026, 2 SWS, Language: English, Open in study portal

Content
In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market
- Scientific Publications

Further Information: https://aifb.kit.edu/web/Lehre/Praktikum_Knowledge_Discovery_and_Data_Science

The exact dates and information for registration will be announced at the event page.

Organizational issues
Die Anmeldung erfolgt über das WiWi-Portal https://portal.wiwi.kit.edu/ .

Literature
Detaillierte Referenzen werden zusammen mit den jeweiligenThemen angegeben. Allgemeine Hintergrundinformationen ergeben sich z.B.aus den folgenden Lehrbüchern:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

V **Seminar Data Science & Real-time Big Data Analytics (Bachelor)** **Seminar (S) On-Site**
2513310, SS 2026, 2 SWS, Language: English, Open in study portal

Content
In this seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the seminar is given under the following Link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

Organizational issues
Die Anmeldung erfolgt über das WiWi-Portal https://portal.wiwi.kit.edu/ .

V Seminar Linked Data and the Semantic Web (Bachelor)

2513312, WS 26/27, 3 SWS, Language: German/English, Open in study portal

Seminar (S)
On-Site

Content
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

V Seminar Real-World Challenges in Data Science and Analytics (Bachelor)

2513314, WS 26/27, 3 SWS, Language: German/English, Open in study portal

On-Site

Content
In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

T 3.229 Module component: Seminar in Mathematics (Bachelor) [T-MATH-102265]

Coordinators: Prof. Dr. Daniel Hug
Dr. Franz Nestmann
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Version
Examination of another type	4 CP	graded	2

Workload
120 hours

T 3.230 Module component: Seminar in Operations Research (Bachelor) [T-WIWI-103488]

Coordinators: Prof. Dr. Stefan Nickel
Prof. Dr. Steffen Rebennack
Prof. Dr. Oliver Stein

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each term	2

Courses					
ST 2026	**2500028**	Seminar: Modern OR and Innovative Logistics	**2 SWS**	**Seminar /**	**Nickel, Mitarbeiter, Pomes**
ST 2026	**2550131**	Seminar on Methodical Foundations of Operations Research (BA)	**2 SWS**	**Seminar /**	**Stein, Schwarze, Neussel, Huber**
ST 2026	**2550132**	Seminar on Mathematical Optimization (MA)	**2 SWS**	**Seminar /**	**Stein, Schwarze, Neussel, Huber**
ST 2026	**2550461**	Seminar: Trending Topics in Machine Learning and Optimization (Bachelor)	**2 SWS**	**Seminar /**	**Rebennack, Kandora**
ST 2026	**2550472**	Seminar: Energy and Power Systems Optimization (Bachelor)	**2 SWS**	**Seminar /**	**Rebennack, Kandora**
WT 26/27	**2500056**	Seminar: Modern OR and Innovative Logistics	**2 SWS**	**Seminar /**	**Nickel, Linner, Pomes, Hoffmann**
WT 26/27	**2550131**	Seminar on Methodical Foundations of Operations Research (B)	**2 SWS**	**Seminar /**	**Stein, Huber, Neussel, Schwarze**
WT 26/27	**2550461**	Seminar on Trending Topics in Optimization and Machine Learning (Bachelor)	**2 SWS**	**Seminar /**	**Rebennack, Kandora**
WT 26/27	**2550472**	Seminar on Energy and Power Systems Optimization (Bachelor)	**2 SWS**	**Seminar /**	**Rebennack, Kandora**
Exams					
ST 2026	**7900026**	Seminar Modern OR and Innovative Logistics			**Nickel**
ST 2026	**7900200_SS2025**	Seminar in Operations Research A (Master)			**Stein**
ST 2026	**7900201_SS2025**	Seminar in Operations Research (Bachelor)			**Stein**
ST 2026	**7900307**	Digitalization in the Steel Industry			**Nickel**
ST 2026	**7900347**	Seminar on Power Systems Optimization (Bachelor)			**Rebennack**
WT 26/27	**7900011_WS2627**	Seminar in Operations Research B (Bachelor)			**Stein**
WT 26/27	**7900012_WS2627**	Seminar in Operations Research A (Master)			**Stein**
WT 26/27	**7900113**	Seminar Trending Topics in Optimization and Machine Learning (Bachelor)			**Rebennack**
WT 26/27	**7900313**	Seminar on Power Systems Optimization (Bachelor)			**Rebennack**
WT 26/27	**7900342**	Seminar Modern OR and Innovative Logistics			**Nickel**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

The total **workload** for this course is approx. 120 hours (corresponds to 4 ECTS credits) and is structured as follows:

- **Attendance at lectures/seminar sessions (presence time)** (2 SWS × 15 weeks): 30 h
- **Preparation and follow-up of seminar sessions including literature research:** 30 h
- **Preparation of the written seminar paper:** 40 h
- **Exam preparation and design of the presentation:** 20 h
- **Total workload:** 120 h (corresponds to 4 ECTS credits)

The specified breakdown of the workload serves as a guideline for a seminar worth 4 ECTS credits (120 hours). The actual distribution of time (e.g., a higher proportion of self-study for extensive research and writing, or a higher proportion of presence time in block seminars) may vary depending on the specific seminar topic and pedagogical concept. Detailed requirements and schedules will be announced at the beginning of the course.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Seminar: Modern OR and Innovative Logistics** — **Seminar (S)**, **Blended (On-Site/Online)**
2500028, SS 2026, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
Anmeldung erfolgt über das Wiwi-Portal. Nähere Informationen hierzu finden Sie hier zu einem späteren Zeitpunkt.

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V **Seminar on Methodical Foundations of Operations Research (BA)** — **Seminar (S)**, **On-Site**
2550131, SS 2026, 2 SWS, Language: German, Open in study portal

Content
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Literature
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V Seminar on Mathematical Optimization (MA)

2550132, SS 2026, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

V Seminar: Trending Topics in Machine Learning and Optimization (Bachelor)

2550461, SS 2026, 2 SWS, Language: English, Open in study portal

Seminar (S)
Online

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
Blockseminar in der ersten Semesterhälfte, siehe Aushang

V Seminar: Modern OR and Innovative Logistics

2500056, WS 26/27, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
This seminar presents current issues in the field of Operations Research and Logistics, critically evaluates them, and discusses them using examples. The focus of the seminar lies on optimization models and algorithms, with particular attention to their practical applicability (especially in supply chain and health care management). All participants are required to write a seminar paper and give a presentation. Depending on the topic, an implementation of the models or heuristics using standard software (e.g., IBM CPLEX or Java) is expected. Further details can be found in the information sheet on Prof. Nickel's website. All topics have the potential to be developed into a thesis.

The seminar topics will be assigned during a preliminary meeting at the beginning of the semester. Attendance is mandatory for the preliminary meeting as well as for all seminar presentations.

In addition, students will receive an introduction to academic writing, literature research, and scientific presenting in three sessions.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
Die Anmeldung erfolgt über das Wiwi-Portal. Nähere Informationen erhalten Sie auf der Homepage dol.ior.kit.edu bzw. im WiWi-Portal sowie bei der Vorbesprechung.

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V Seminar on Methodical Foundations of Operations Research (B)

2550131, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Literature
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V

Seminar on Trending Topics in Optimization and Machine Learning (Bachelor)

2550461, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
siehe Aushang

V

Seminar on Energy and Power Systems Optimization (Bachelor)

2550472, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
siehe Aushang

T 3.231 Module component: Seminar in Statistics (Bachelor) [T-WIWI-103489]

Coordinators: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each term	2

Courses					
ST 2026	**2500012**	Making and Evaluating Predictions	**2 SWS**	**Seminar**	**Schienle, Allen, Zhang**
ST 2026	**2521310**	Advanced Topics in Econometrics	**2 SWS**	**Seminar**	**Schienle, Krüger, Bracher, Buse, Koster, Rüter, Leimenstoll, Renner**
ST 2026	**2550560**	Spezielle Themen zu Statistik, Datenanalyse und maschinellem Lernen	**2 SWS**	**Seminar / 🗣**	**Grothe, Liu**
WT 26/27	**2500074**	Macroeconomic Forecasting	**2 SWS**	**Seminar**	**Krüger, Siefert**
WT 26/27	**2521310**	Topics in Econometrics	**2 SWS**	**Seminar**	**Schienle, Krüger, Bracher, Buse, Koster, Rüter, Leimenstoll, Renner**
Exams					
ST 2026	**7900150**	Advanced Topics in Econometrics			**Schienle, Krüger, Bracher**
ST 2026	**7900355**	Seminar in Statistics (Bachelor)			**Grothe**
ST 2026	**7900381**	Making and Evaluating Predictions			**Schienle**

Legend: 🖥 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Additional Information
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

The total **workload** for this course is approx. 120 hours (corresponds to 4 ECTS credits) and is structured as follows:

- **Attendance at lectures/seminar sessions (presence time)** (2 SWS × 15 weeks): 30 h
- **Preparation and follow-up of seminar sessions including literature research:** 30 h
- **Preparation of the written seminar paper:** 40 h
- **Exam preparation and design of the presentation:** 20 h
- **Total workload:** 120 h (corresponds to 4 ECTS credits)

The specified breakdown of the workload serves as a guideline for a seminar worth 4 ECTS credits (120 hours). The actual distribution of time (e.g., a higher proportion of self-study for extensive research and writing, or a higher proportion of presence time in block seminars) may vary depending on the specific seminar topic and pedagogical concept. Detailed requirements and schedules will be announced at the beginning of the course.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V **Making and Evaluating Predictions** **Seminar (S)**
2500012, SS 2026, 2 SWS, Language: German/English, Open in study portal

Content
A key goal of statistics and data science is to make predictions. Good predictions are important for decision-making, allowing us to balance risks and mitigate the impacts of potentially damaging events. In this seminar, we will study theoretical questions regarding the evaluation of predictions, such as “What does it mean for a prediction to be good?”, before introducing statistical and machine learning methods to generate both point-valued and probabilistic predictions. We will discuss applications to economics, meteorology, and energy forecasting.

Format: The course will start with a short block course at the beginning of the lecture period. Evaluation will be based on a seminar thesis, which students are required to hand in at the end of the lecture period, and a short presentation. The presentations will also take place towards the end of the lecture period.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V **Advanced Topics in Econometrics** **Seminar (S)**
2521310, SS 2026, 2 SWS, Language: German/English, Open in study portal

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h

• Preparation and follow-up of course content: 35 h

• Exam preparation and participation in the assessment: 25 h

Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
wöchentlich, Donnerstags 13:00-14:30, B17, R320

V **Spezielle Themen zu Statistik, Datenanalyse und maschinellem Lernen** **Seminar (S) On-Site**
2550560, SS 2026, 2 SWS, Language: German/English, Open in study portal

Content
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h
• Preparation and follow-up of course content: 35 h
• Exam preparation and participation in the assessment: 25 h
Total workload: 90 h (corresponds to 3 ECTS credits)

V Macroeconomic Forecasting — Seminar (S)
2500074, WS 26/27, 2 SWS, Open in study portal

Content
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h
• Preparation and follow-up of course content: 35 h
• Exam preparation and participation in the assessment: 25 h
Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
This seminar is about forecasting macroeconomic variables like inflation or GDP growth. Seminar papers take a current research paper as a starting point, and then study an aspect that is particularly interesting from an econometric perspective. Registration takes place via the WiWi portal.

V Topics in Econometrics — Seminar (S)
2521310, WS 26/27, 2 SWS, Language: German, Open in study portal

Content
The total workload for this course is structured as follows:
• Attendance at lectures/exercises (presence time) (2 SWS × 15 weeks): 30 h
• Preparation and follow-up of course content: 35 h
• Exam preparation and participation in the assessment: 25 h
Total workload: 90 h (corresponds to 3 ECTS credits)

Organizational issues
Wöchentliche Veranstaltung, Donnerstags 13:00-14:30 Uhr in B17 - R320

T 3.232 Module component: Seminar Production Technology [T-MACH-109062]

Coordinators: Prof. Dr.-Ing. Jürgen Fleischer
Prof. Dr.-Ing. Gisela Lanza
Prof. Dr.-Ing. Volker Schulze

Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each term	2

Courses					
ST 2026	**2149665**	Seminar Production Technology	**1 SWS**	**Seminar / 🗣**	**Fleischer, Lanza, Schulze, Zanger**
Exams					
ST 2026	**76-T-MACH-109062**	Seminar Production Technology			**Fleischer, Lanza, Schulze, Zanger**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

Prerequisites
none

Additional Information
The course is offered in German.

The specific topics are published on the homepage of the wbk Institute of Production Science.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Seminar Production Technology

2149665, SS 2026, 1 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
In course of the seminar Production Technology current issues of the wbk main fields of research "Manufacturing and Materials Technology", "Machines, Equipment and Process Automation" as well as "Production Systems" are discussed.

The specific topics are published on the homepage of the wbk Institute of Production Science.

Learning Outcomes:

The students …

- are in a position to independently handle current, research-based tasks according to scientific criteria.
- are able to research, analyze, abstract and critically review the information.
- can draw own conclusions using their interdisciplinary knowledge from the less structured information and selectively develop current research results.
- can logically and systematically present the obtained results both orally and in written form in accordance with scientific guidelines (structuring, technical terminology, referencing). They can argue and defend the results professionally in the discussion.

Workload:

regular attendance: 10 hours
self-study: 80 hours

Organizational issues
siehe http://www.wbk.kit.edu/seminare.php

T 3.233 Module component: Seminar: Civil Law 2 [T-INFO-115354]

Coordinators: Prof. Dr. Andreas Sattler
Organisation: KIT Department of Informatics
Part of: M-INFO-107931 - Seminar: Civil Law 2
M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each term	1

Courses					
ST 2026	**2400078**	Intelligente Chatbots und Recht	**2 SWS**	**Seminar /** 🗣	**Raabe**
ST 2026	**2400225**	Rechtlicher Rahmen für Künstliche Intelligenz	**2 SWS**	**Seminar /** 🗣	**Sattler**
ST 2026	**24820**	Current Issues in Patent Law	**2 SWS**	**Seminar /** 🗣	**Melullis**
WT 26/27	**2400014**	Current Issues in Patent Law	**2 SWS**	**Seminar /** 🗣	**Melullis**
WT 26/27	**2400060**	Seminar: Software Architecture, Security and Privacy	**2 SWS**	**Seminar /** 🗣	**Reussner, Raabe, Werner, Müller-Quade**
WT 26/27	**2400165**	Seminar Commercial and Corporate Law in Information Technology	**2 SWS**	**Seminar /** 💻	**Nolte**
WT 26/27	**2424186**	Seminar Patent Law	**2 SWS**	**Seminar /** 🗣	**Dammler**
WT 26/27	**2513214**	Seminar Information security and Data protection (Bachelor)	**2 SWS**	**Seminar /** 🗣	**Volkamer, Raabe, Schiefer, Werner, Mack, Kruse**
Exams					
ST 2026	**7500268**	Seminar aus Rechtswissenschaften Bachelor und Master I (LS Zivilrecht u. LS Prof. F. Boehm)			**Boehm, Melullis, Raabe, Sattler**
ST 2026	**7500300**	Seminar aus Rechtswissenschaften Master II (LS Zivilrecht u. LS Prof. F. Boehm)			**Boehm, Melullis, Raabe, Sattler**
WT 26/27	**7500310**	Seminar: Commercial and Corporate Law in the IT Industry			**Sattler**
WT 26/27	**7500391**	Seminar aus Rechtswissenschaften Bachelor und Master I (LS Zivilrecht u. LS Prof. F. Boehm)			**Boehm, Melullis, Raabe, Sattler**
WT 26/27	**7500394**	Seminar aus Rechtswissenschaften Master II (LS Zivilrecht u. LS Prof. F. Boehm)			**Boehm, Melullis, Raabe, Sattler**

Legend: 💻 Online, 🎭 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Assessment is based on the completion of a written seminar paper and its presentation as an examination of another type in accordance with § 4 (2) No. 3 of the SPO.

Prerequisites
None.

T 3.234 Module component: Seminar: Public Law and Computer Science 2 [T-INFO-115382]

Coordinators: TT-Prof. Dr. Frederike Zufall
Organisation: KIT Department of Informatics
Part of: M-INFO-107939 - Seminar: Public Law and Computer Science2
M-WIWI-107749 - Seminar Module

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	4 CP	graded	Each term	1 semesters	1

Courses					
ST 2026	**2400171**	Regulating AI: from ethics to law	**2 SWS**	**Seminar / 🗣**	**Gil Gasiola**
ST 2026	**2400177**	Designing Data Governance of Digital Systems	**2 SWS**	**Seminar / 🗣**	**Pathak**
WT 26/27	**2400177**	Human vs. Machine: (Un-)Biased Legal Decision-Making?	**2 SWS**	**Seminar / 🗣**	**Holzhausen**
WT 26/27	**2400184**	EU Digital Regulatory Framework	**2 SWS**	**Seminar / 🗣**	**Zufall**
WT 26/27	**2400221**	Digital Platforms on Trial: EU and US Case Law Perspectives	**2 SWS**	**Seminar / 🗣**	**Abhilasha**
WT 26/27	**2424389**	Seminar "IT security law"	**2 SWS**	**Seminar / 🗣**	**Schallbruch**
Exams					
ST 2026	**7500341**	Seminar: Legal Studies Bachelor and Master I (LS Öffentliches Recht und Informatik)			**Zufall**
ST 2026	**7500365**	Seminar: Legal Studies Master II (Public Law and Computer Science)			**Zufall**
WT 26/27	**7500180**	Seminar aus Rechtswissenschaften Bachelor und Master I (LS Öffentliches Recht und Informatik)			**Zufall**

Legend: 🖳 Online, 🖳🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Assessment is based on the completion of a written seminar paper and its presentation as an examination of another type in accordance with § 4 (2) No. 3 of the SPO.

Prerequisites
None.

Below you will find excerpts from courses related to this module component:

V Regulating AI: from ethics to law

Seminar (S)
On-Site

2400171, SS 2026, 2 SWS, Language: English, Open in study portal

Content
This seminar will provide an overview of technology regulation, with a particular focus on the regulation of AI systems. Following an introduction to the different forms of regulation, students will explore the various regulatory instruments in light of the key principles of AI, such as

- fairness / non-discrimination,
- transparency / explainability,
- non-maleficence,
- privacy / data protection,
- sustentability
- security / safety, and
- accountability.

This will enable them to discuss how these principles and rules can be applied in real-world scenarios.

Organizational issues
Please register for the seminar ONLY via the WiWi-Portal!
Please register for the exam ONLY via CAS (Campus-Portal)!*

*ExplanationAfter attending the introductory event, which is mandatory for participation in the seminar, please register via the campus system (necessary for recording the grade of the seminar paper).

Block Seminar in Summer term 2026:

- **Wednesday, 22th April 2026, 09:00 - 13:00 h;**
- **Wednesday, 22th July 2026, 09:00 - 13:00 h.**

Room: each seminar takes place in room no. 313 (building 07.08) .

V

Designing Data Governance of Digital Systems

Seminar (S)
On-Site

2400177, SS 2026, 2 SWS, Language: English, Open in study portal

Content
The latest regulations in the digital sector at EU level represent a highly topical and important regulatory instrument with enormous practical relevance for students of computer science and business informatics. The seminar not only enables students to acquire important knowledge in this area, but also to apply it specifically to the governance of digital systems and to learn the practical design of digital systems against the background of legal framework conditions.

Organizational issues
***Please register for the exam ONLY via CAS (Campus-Portal)!**

***Explanation:after attending the introductory event,** which is mandatory for participation in the seminar**, please register via the campus system** (necessary for recording the grade of the seminar paper).

Due to the minimum number of text characters that can be used, please check ILIAS and the WiWi portal for details such as dates and location. Thank you.

V

Human vs. Machine: (Un-)Biased Legal Decision-Making?

Seminar (S)
On-Site

2400177, WS 26/27, 2 SWS, Language: English, Open in study portal

Content
This seminar provides an overview of the foundational principles of behavioral economics and their relevance to public law. Special attention is given to (biased) decision-making, both from a substantive and procedural perspective. Students will explore how regulation should be designed to account for cognitive biases and achieve intended policy outcomes. In addition, the seminar will address the role of automated decision-making systems - examining how such systems are influenced by, and may also reinforce or mitigate, behavioral biases.

The seminar will cover the following topics:

- Introduction to (behavioral) economic theory and its application to law
- Cognitive biases and their impact on (public) decision-making
- Different types of regulation in light of behavioral insights
- Implications for automated decision-making systems
- The role of human biases in the AI Act

Algorithmic decision-making is often treated as a black box—something that should not be permitted to make decisions in legal contexts. In response, Article 14 of the EU AI Act requires high-risk AI systems to be designed in such a way that they can be effectively overseen by natural persons. This human-in-the-loop requirement stems, among other things, from the perception that AI systems operate ambiguously and produce decisions that are not fully comprehensible.

However, treating humans in comparison as fundamentally transparent or fully rational decision-makers is equally naïve. Understanding how people actually behave—not just how they should behave—is essential for designing effective, fair, and legitimate legal systems. Traditional legal research often assumes rational actors, yet behavioral research shows that cognitive biases, heuristics, and emotional influences shape the decisions of both citizens and public officials.

This seminar addresses that gap by equipping students with behavioral insights to critically assess and improve legal and administrative. A particular focus is placed on how human biases are already embedded in the data underlying automated decision-making systems, potentially reproducing or amplifying unfairness. At the same time, students will explore how such systems can be intentionally designed to mitigate behavioral distortions and support better decision-making.

Organizational issues
Please register for the exam ONLY via CAS (Campus-Portal)!

Explanation: after attending the introductory event, which is mandatory for participation in the seminar, please register via the campus system (necessary for recording the grade of the seminar paper).

Due to the minimum number of text characters that can be used, please check ILIAS and the WiWi portal for details such as dates and location. Thank you.

1. Kick-Off-Meeting:Thursday, 29th October 2026, 9 – 15 h;

2. Presentations: Thursday, , 21st January 2027, 9 – 17 h.

Place: seminar room no. 313, building no. 07.08, 3. OG.

V

EU Digital Regulatory Framework

2400184, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act, the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

The class will provide an overview on the existing framework: Which regulations and directives are relevant? How do they apply and interact which each other in a broader context?

Another objective is to provide students with the ability to read these legal instruments: How to access regulatory instruments that often have more than 100 pages (without having to read every single sentence)? How to gain a comprehensive, high-level understanding of the instrument? How to identify parts relevant to a particular legal problem?

The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40 %, two-pages report: 40 %, discussion: 20 %).

Organizational issues
Hierbei handelt es sich NICHT um eine Pro-Seminar, sondern um ein Seminar (aus Rechtswissenschaften).

Anmeldungen für das Seminar bitte NUR! über das WiWi-Portal!

***Für die Prüfung bitte NUR über CAS (Campus-Portal) anmelden!**

*Erläuterung: nach der für die Teilnahme am Seminar verbindlichen Teilnahme an der Einführungsveranstaltung bitte Anmeldung über das Campus-System (notwendig für die Erfassung der Note der Seminararbeit).

V

Digital Platforms on Trial: EU and US Case Law Perspectives

2400221, WS 26/27, 2 SWS, Language: English, Open in study portal

Seminar (S)
On-Site

Content
This Seminar will cover relevant case laws concerning digital platforms such as Google, Meta, YouTube, Amazon etc. from the EU and the US courts. Through an in-depth analysis of court decisions and the associated legal frameworks/instruments governing digital public space and digital platforms, students would explore how judicial scrutiny translates into practical platform design choices such as content moderation, recommender systems, explainability, and user appeal mechanisms. Furthermore, students will learn about the distinct approaches of the EU and US courts in regulating platforms and protecting public law values such as human dignity, data protection and privacy, accountability and proportionality.

Organizational issues
***Please register for the exam ONLY via CAS (Campus-Portal)!**

***Explanation: after attending the introductory event,** which is mandatory for participation in the seminar**, please register via the campus system** (necessary for recording the grade of the seminar paper).

For the general registration **(course attendance) please register only via WiWi-Portal**

https://portal.wiwi.kit.edu

Due to the minimum number of text characters that can be used, please check ILIAS and the WiWi portal for details such as dates and location. Thank you.

Dates:

- **Kick off meeting (first day of seminar): Monday, 02.11.2026 from 10AM-3PM.**
- **Presentations by students: Friday, 22.01.2027 from from 10 AM - 5PM.**

Place:

Seminar room number 313, Geb. 07.08, 3rd floor

https://www.kit.edu/campusplan/

T 3.235 Module component: Signals and Systems [T-ETIT-112860]

Coordinators: Dr.-Ing. Mathias Kluwe
Prof. Dr.-Ing. Sander Wahls
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-ETIT-106372 - Signals and Systems

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	7 CP	graded	Each winter term	1 semesters	1

Courses					
WT 26/27	**2302109**	Signals and Systems	**3 SWS**	**Lecture /** 🗣	**Wahls, Kluwe**
WT 26/27	**2302111**	Signals and Systems (Tutorial to 2302109)	**2 SWS**	**Practice /** 🗣	**Wahls, Gardi, Illerhaus**
Exams					
ST 2026	**7302109**	Signals and Systems			**Wahls, Kluwe**

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment of success takes place in the form of a written examination lasting 180 minutes. The module grade is the grade of the written examination.

Prerequisites
none

Recommendations
Knowledge of higher mathematics (e.g. M-MATH-101731, M-MATH-101732 and M-MATH-101738) is required. Fundamentals of electrical circuits and networks (e.g. M-ETIT-106417 - Lineare Elektrische Netze) are helpful.

T 3.236 Module component: Signals and Systems - Workshop [T-ETIT-112861]

Coordinators: Prof. Dr.-Ing. Sander Wahls
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: M-ETIT-106372 - Signals and Systems

Type	Credits	Grading	Term offered	Expansion	Version
Coursework	2 CP	pass/fail	Each summer term	1 semesters	3

Courses					
ST 2026	**2302905**	Signals and Systems - Workshop	**1 SWS**	**Practical course /**	**Wahls, Jin**
Exams					
ST 2026	**7302314**	Signals and Systems - Workshop			**Wahls**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Prerequisites
none

Workload
60 hours

T 3.237 Module component: SIL-LaunchLab [T-WIWI-114635]

Coordinators: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107451 - Entrepreneurial Thinking and Action: Fundamentals of Entrepreneurship

Type	Credits	Grading	Term offered	Version
Examination of another type	9 CP	graded	Irregular	1

Courses					
ST 2026	**2545022**	SIL - LaunchLab	**6 SWS**	**Seminar / 🗣**	**Böhrer, Terzidis**
WT 26/27	**2545022**	SIL - LaunchLab	**6 SWS**	**Seminar / 🗣**	**Böhrer, Terzidis**
Exams					
ST 2026	**7900331**	SIL-LaunchLab			**Terzidis**
WT 26/27	**7900174**	SIL-LaunchLab			**Terzidis**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment is conducted as an alternative exam assessment. The specific form of assessment depends on the course and may include, for example, the following components:

- **Project Report or Reflection Paper**
- **Mid-term and Final Presentation**
- **Group Work with Individual Contribution**
- **Active Participation and Mandatory Attendance**

The overall grade is determined by the weighted evaluation of these individual assessment components. The detailed weighting of these components for grade calculation will be communicated to students at the beginning of the course.

Prerequisites
None

Recommendations
An interest in entrepreneurial thinking and action, teamwork, and interdisciplinary project work is recommended. Basic knowledge in business administration and/or innovation methods is helpful but not required.

Additional Information
Starting in WS 2026/27, the course will be offered over two semesters, beginning in the winter semester and continuing until the end of the following summer semester.

Workload
270 hours

Below you will find excerpts from courses related to this module component:

V SIL - LaunchLab
2545022, SS 2026, 6 SWS, Open in study portal

Seminar (S)
On-Site

Content
Course content:

In the SIL LaunchLab, you will work in interdisciplinary teams on real innovation projects from the Student Innovation Lab (SIL) at KIT. As part of the seminar, you will take on the role of a project mentor and support an existing SIL team in further developing its start-up idea. This can include tasks such as market analysis, business model development, or pitch preparation, and will be defined individually at the start of the seminar. Through this, you gain direct insights into technology-based start-up projects at KIT and apply entrepreneurial methods to real start-up cases.

Learning Objectives:

After completing the course, participants will be able to:

- Analyze and support real start-up projects in a structured way
- Conduct market and user analyses
- Evaluate and further develop a business model using the Business Model Canvas tool
- Assist teams in preparing for investor and customer pitches
- Develop a basic understanding of technology-driven spin-offs

Seminar Information:

Participation is only possible during the summer semester. The seminar is aimed at bachelor students from the 4th semester onwards from all disciplines. Places are limited. Registration takes place via the WiWi portal and, after admission, via CAS for the corresponding examination.

V **SIL - LaunchLab** **Seminar (S)**
2545022, WS 26/27, 6 SWS, Open in study portal **On-Site**

Content
Course content:

In the SIL LaunchLab, you will work in interdisciplinary teams on real innovation projects from the Student Innovation Lab (SIL) at KIT. As part of the seminar, you will take on the role of a project mentor and support an existing SIL team in further developing its start-up idea. This can include tasks such as market analysis, business model development, or pitch preparation, and will be defined individually at the start of the seminar. Through this, you gain direct insights into technology-based start-up projects at KIT and apply entrepreneurial methods to real start-up cases.

Learning Objectives:

After completing the course, participants will be able to:

- Analyze and support real start-up projects in a structured way
- Conduct market and user analyses
- Evaluate and further develop a business model using the Business Model Canvas tool
- Assist teams in preparing for investor and customer pitches
- Develop a basic understanding of technology-driven spin-offs

Seminar Information:

The seminar runs over 1.5 semesters, starting in January and ending in July 2027.

During the summer semester 2027, there will be additional regular seminar sessions as well as individual feedback sessions for the teams. The dates will be announced at a later stage. Between these sessions, there will be intensive working phases and team-internal coordination meetings.

The seminar is aimed at bachelor students from the 4th semester onwards from all disciplines. Places are limited. Registration takes place via the WiWi portal and, after admission, via CAS for the corresponding examination.

- - -

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (6 SWS × 15 weeks): 90 h

• Preparation and follow-up of course content: 100 h

• Exam preparation and participation in the assessment: 80 h

Total workload: 270 h (corresponds to 9 ECTS credits)

T 3.238 Module component: Simulation with Lumped Parameters [T-MACH-113862]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101265 - Vehicle Development
M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Expansion	Version
Oral examination	3 CP	graded	Each summer term	1 semesters	4

Courses					
ST 2026	**2114071**	Simulation with Lumped Parameters	**2 SWS**	**Lecture / 🗣**	**Geimer**
Exams					
ST 2026	**76-T-MACH-113862**	Simulation with Lumped Parameters			**Geimer**
WT 26/27	**76-T-MACH-113862**	Simulation with Lumped Parameters			**Geimer**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Oral examination, duration approx. 20 minutes

Prerequisites
Knowledge of the dynamics of mechanical systems and the fundamentals of electrical engineering is required. The module component T-MACH-105172 must not have been started.

Recommendations
Knowledge of mechanics and hydraulics

Qualification goals

After completing this part of the course, students will be able to evaluate how a simulation with concentrated parameters can be used sensibly and which simulation methods are suitable for a given problem. They will be able to create a model for a given problem and explain and implement algorithms for solving a model. You will acquire in-depth knowledge of how a system can be modelled and parameterized with concentrated parameters. You will be able to carry out simulation studies, evaluate simulation results and recognize and avoid errors in the simulation.

Contents:

The basics of discrete-time modeling are taught using the example of simulation with concentrated parameters. For this purpose, modeling in the disciplines of mechanics, electrics and hydraulics is shown by way of example and analogies are drawn. Furthermore, possibilities for simulation coupling of the discipline are shown. The students solve exemplary tasks with the help of simulation and briefly summarize the solutions in a report.

Recommended are:

Basic knowledge of Matlab/Simulink and hydraulics.

Knowledge of the dynamics of mechanical systems and the fundamentals of electrical engineering is assumed.

Additional Information
The course is offered in German.

Further information can be found on our homepage:
https://www.fast.kit.edu/mobima/13438_17713.php

Workload
90 hours

Below you will find excerpts from courses related to this module component:

V Simulation with Lumped Parameters

2114071, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

Learning objectives (qualification objectives):

After completing this part of the course, students will be able to evaluate how a simulation with concentrated parameters can be used sensibly and which simulation methods are suitable for a given problem. They can create a model for a problem and can explain and implement algorithms for solving a model. You will acquire in-depth knowledge of how a system can be modelled and parameterized with concentrated parameters. You will be able to carry out simulation studies, evaluate simulation results and recognize and avoid errors in the simulation.

Contents:

The basics of discrete-time modeling are taught using the example of simulation with concentrated parameters. For this purpose, modeling in the disciplines of mechanics, electrics and hydraulics is shown by way of example and analogies are drawn. Furthermore, possibilities for simulation coupling of the disciplines are shown. The students solve exemplary tasks with the help of simulation and briefly summarize the solutions in a report.

Recommended are:

Basic knowledge of Matlab/Simulink and hydraulics.

Knowledge of the dynamics of mechanical systems and the fundamentals of electrical engineering is assumed.

T 3.239 Module component: Social Media: Analytics and Applications [T-WIWI-115323]

Coordinators: TT-Prof. Dr. Maximilian Förster
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101434 - eBusiness and Service Management
M-WIWI-102752 - Fundamentals of Digital Service Systems
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Expansion	Version
Written examination	4,5 CP	graded	Each winter term	1 semesters	1

Courses					
WT 26/27	**2500076**	Social Media: Analytics and Applications	**3 SWS**	**Lecture /** 🗣	**Förster**
Exams					
WT 26/27	**7900149**	Social Media: Analytics and Applications			**Förster**

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment of success takes place through a written exam (60 minutes) with additional aids. Further details regarding the assessment of success will be announced during the lecture. A bonus can be acquired by successful completion of a a practically-oriented assignment (written report + short in-class presentation) during the semester. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). Further details regarding the acquisition of a bonus will be announced at the beginning of the course.

Prerequisites
None

Additional Information
Starting in the 2026/2027 winter term, this course will be offered as an in-person course. Please check the announcements on the ILIAS forum.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Social Media: Analytics and Applications

2500076, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Social media platforms have become a central part of economic and social life: Billions of people connect, communicate, and create content online every day, and businesses increasingly depend on these platforms to reach customers, build brands, and co-create value. What constitutes the value of social media is the connections between their members and the resulting network structure. This network structure shapes how information, opinions, and behaviors spread – driving opportunities such as viral marketing and customer engagement, but also societal challenges such as the formation of echo chambers and the spread of fake news. Understanding social media therefore requires both an economic perspective on platform business models and a methodological perspective on how to analyze the underlying networks.

Building on a **systematic understanding of social media platforms and their business models**, we cover concepts and methods for **modeling and analyzing social media as networks**, as well as their **applications in business and society**. Topics in this course include an introduction to social media platforms and their business models, followed by the foundations of social network analysis: modeling social media as networks, characteristic properties of these networks, diffusion processes, centrality measures, and community detection. Building on these methods, we explore applications from a business perspective, such as social media marketing and the identification of influential users, as well as from a societal perspective, such as echo chambers, polarization, and the detection of fake news and disinformation. Throughout the course, students apply these methods to real-world social media data using appropriate software tools, interpret the results, and derive recommendations for action. Besides those contents, the lecture entails first-hand research insights, exercises and discussion sessions.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
· Barabási, A.-L. (2015) Network Science, available at barabasi.com/networksciencebook/

· Borgatti, S. P.; Everett, M. G.; Johnson, J. C. (2013) Analyzing Social Networks. SAGE Publications Limited, London.

· Granovetter, M. S. (1973) The Strength of Weak Ties. In: American Journal of Sociology 78 (6), S. 1360-1380.

· Milgram, S. (1967) The small world problem. In: Psychology today 2 (1), S.60-67.

· Newman, M. E. J.; Girvan, M. (2004) Finding and evaluating community structure in networks. In: Physical Review E 69 (2), S. 026113:1-026113:15.

· Newman, M. E. J. (2010) Networks – An Introduction. Oxford University Press, Oxford.

· Wasserman, S.; Faust, K. (1994) Social Network Analysis: Methods and Applications. Cambridge University Press, Cambridge.

· Watts, D. J.; Strogatz, S. H. (1998) Collective dynamics of 'small-world' networks. In: Nature 393 (6684), S. 440-442

T 3.240 Module component: Social Science A (WiWi) [T-GEISTSOZ-109048]

Coordinators: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: M-GEISTSOZ-101167 - Sociology/Empirical Social Research

Type	Credits	Grading	Term offered	Version
Examination of another type	3 CP	graded	Each winter term	1

Courses					
ST 2026	**5000048**	Socio-scientific Theories of Technology Assessment	**2 SWS**	**Proseminar / 🗣**	**Lösch**
ST 2026	**5011013**	Digital democracy: worries, opportunities, and challenges	**2 SWS**	**Seminar / 🛟**	**Mäs**
ST 2026	**5011019**	How to control algorithms?	**2 SWS**	**Seminar / 🗣**	**Mäs**
WT 26/27	**5011011**	Artificial intelligence in the research process	**2 SWS**	**Seminar / 🛟**	**Banisch**
WT 26/27	**5011014**	Theories of prospective knowledge	**2 SWS**	**Seminar / 🗣**	**Lösch**
Exams					
ST 2026	**7400379**	Social Science A			**Nollmann, Lösch**
ST 2026	**7400454**	Social Science A (WiWi)			**Nollmann, Lösch**
WT 26/27	**7400041**	Social Science A (WiWi)			**Nollmann, Lösch**

Legend: 💻 Online, 🛟 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Below you will find excerpts from courses related to this module component:

V Digital democracy: worries, opportunities, and challenges

5011013, SS 2026, 2 SWS, Language: German, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Democracy is in danger as a growing, increasingly vocal segment of the population feels unrepresented by democratic institutions. Populist movements with overtly anti-democratic goals attract strong support and are achieving electoral successes more often. We examine possible responses to these trends and the digital solutions that could help. Key questions include: Which strategies can curb the root causes of populist success? Can regulating social-media platforms mitigate the problem? How can civil society be strengthened, and which new democratic institutions can better integrate citizens into the legislative process? We discuss the potential of citizens' assemblies and other digital democracy initiatives to enhance participation. The seminar also explores how such tools can be combined with traditional mechanisms to create more inclusive decision-making. The central issue is identifying the research needed to develop, pilot, and iteratively improve new democratic models. We consider how to conduct this research effectively in a context where democratic systems are already under stress.

V How to control algorithms?

5011019, SS 2026, 2 SWS, Language: German, Open in study portal

Seminar (S)
On-Site

Content
It is warned that algorithms increasingly harm societies: they can amplify opinion polarization, facilitate the spread of fake news, and even make democratic elections vulnerable. In this seminar we examine these warnings and the scientific research behind them. We ask how unintended societal consequences of algorithms can be tackled: What can users do? How might governments respond? What responsibilities do companies such as Facebook and Google bear? To answer these questions, we develop agent-based models using the NetLogo software. Programming skills are helpful but not required, because NetLogo can be learned quickly.

Organizational issues
Teilnehmende halten einen Kurzvortrag und erstellen einen Seminararbeit.

T 3.241 Module component: Social Science B (WiWi) [T-GEISTSOZ-109049]

Coordinators: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: M-GEISTSOZ-101167 - Sociology/Empirical Social Research

Type	Credits	Grading	Term offered	Version
Examination of another type	3 CP	graded	Each winter term	1

Courses					
ST 2026	**5000048**	Socio-scientific Theories of Technology Assessment	**2 SWS**	**Proseminar / 🗣**	**Lösch**
WT 26/27	**5011011**	Artificial intelligence in the research process	**2 SWS**	**Seminar / 🎲**	**Banisch**
WT 26/27	**5011014**	Theories of prospective knowledge	**2 SWS**	**Seminar / 🗣**	**Lösch**
Exams					
ST 2026	**7400455**	Social Science B (WiWi)			**Nollmann, Lösch**
WT 26/27	**7400046**	Social Science B (WiWi)			**Nollmann, Lösch**

Legend: 🖥 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

T 3.242 Module component: Special Topics in Information Systems [T-WIWI-109940]

Coordinators: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101434 - eBusiness and Service Management

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each term	2

Assessment
The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.
Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

Prerequisites
see below

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-102706 - Special Topics in Information Engineering & Management must not have been started.

Recommendations
None

Additional Information
All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: www.iism.kit.edu/im/lehre.

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in “Information Systems” so far. With this course students majoring in “Industrial Engineering and Management“ and “Economics Engineering” also have the chance of getting practical experience and enhance their scientific capabilities.

The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.

T 3.243 Module component: Statistical Modeling of Generalized Regression Models [T-WIWI-103065]

Coordinators: apl. Prof. Dr. Wolf-Dieter Heller
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2521350**	Statistical Modeling of Generalized Regression Models	**2 SWS**	**Lecture**	**Heller**
Exams					
WT 26/27	**7900146 (WS23/24)**	Statistical Modeling of generalized regression models			**Heller**

Assessment
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Prerequisites
None

Recommendations
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016] is recommended.

Below you will find excerpts from courses related to this module component:

V Statistical Modeling of Generalized Regression Models

2521350, WS 26/27, 2 SWS, Open in study portal — **Lecture (V)**

Content
Learning objectives:

The student has profound knowledge of generalized regression models.

Requirements:

Knowledge of the contents covered by the course *Economics III: Introduction in Econometrics" [2520016].*

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

T 3.244 Module component: Statistics I [T-WIWI-102737]

Coordinators: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101432 - Introduction to Statistics
M-WIWI-107753 - Preliminary Exam

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each summer term	1

Courses					
ST 2026	**2600008**	Statistics I	**4 SWS**	**Lecture /** 🗣	**Grothe**
ST 2026	**2600009**	Tutorien zu Statistik I	**2 SWS**	**Tutorial**	**Grothe, Becker**
Exams					
ST 2026	**7900104**	Statistics I			**Grothe**
WT 26/27	**7900022**	Statistics I			**Grothe**

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination (120 minutes). The examination is offered towards the end of the lecture period or at the beginning of the lecture-free period. The repeat examination is offered in the following semester.

Bonus: It is planned that, from the summer semester 2025, a grade bonus for the Statistics I exam can be earned through successful participation in the tutorials. If the grade of the written exam is between 4.0 and 1.3, the bonus will generally improve the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the lecture.

Prerequisites
None

Below you will find excerpts from courses related to this module component:

V Statistics I

2600008, SS 2026, 4 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

Learning objectives:

Students understand and apply

- basic concepts of statistical data exploration as well as
- basic definitions and theorems of probability theory.

Content:

A. Descriptive Statistics: univariate und bivariate analysis

B. Probability Theory: probability space, conditional and product probabilities

C. Random variables: location and shape parameters, dependency measures, concrete distribution models

Workload:

Total workload for 5 CP: approx. 150 hours

Attendance: 60 hours

Preparation and follow-up: 90 hours

Literature
Skript: Kurzfassung Statistik I. Dieses enthält ausführliche Angaben zu weiterführender Literatur.

T 3.245 Module component: Statistics II [T-WIWI-102738]

Coordinators: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101432 - Introduction to Statistics

Type	Credits	Grading	Term offered	Version
Written examination	5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2610020**	Statistics II	**4 SWS**	**Lecture /** 🗣	**Grothe**
Exams					
ST 2026	**7900082**	Statistics II			**Krüger**
WT 26/27	**7900001**	Statistics II			**Grothe**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination (120 minutes). The examination is offered towards the end of the lecture period or at the beginning of the lecture-free period. The repeat examination is offered in the following semester.
Bonus: It is planned that from the winter semester 2025/2026, a grade bonus for the Statistics II exam can be earned through successful participation in the tutorials. If the grade of the written examination is between 4.0 and 1.3, the bonus will generally improve the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the lecture.

Prerequisites
None

Recommendations
It ist recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2610020].

Below you will find excerpts from courses related to this module component:

V Statistics II

2610020, WS 26/27, 4 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Learning objectives:

The student

- understands and applies the basic definitions and theorems of probability theory,
- transfers these theoretical foundations to problems in parametric mathematical statistics.

Content:

D. Sampling and estimation theory: Sampling distributions, estimators, point and interval estimation
E. Test theory: General principles of hypothesis testing, specific 1- and 2-sample tests
F. Regression analysis: Simple and multiple linear regression, statistical inference

Requirements:

It is recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2600020].

Workload:

Total workload: 150 hours (5.0 Credits).

Attendance: 60 hours

Preparation and follow-up: 90 hours

Literature
Skript: Kurzfassung Statistik II. Dieses enthält ausführliche Angaben zu weiterführender Literatur.

T 3.246 Module component: Strategic Decision-Making in Global Production Networks through Optimization and Simulation [T-MACH-114969]

Coordinators: Prof. Dr.-Ing. Gisela Lanza
Michael Martin

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-106590 - Production Engineering

Type	Credits	Grading	Term offered	Version
Examination of another type	4 CP	graded	Each summer term	4

Courses					
ST 2026	**2150659**	Strategic Decision-Making in Global Production Networks through Optimization and Simulation	**2 SWS**	**Lecture /** 🗣	**Lanza, Martin**
Exams					
ST 2026	**76-T-MACH-114969**	Strategic Decision-Making in Global Production Networks through Optimization and Simulation			**Lanza**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment of success takes the form of an examination with a different type of assessment in accordance with Section 4 (2) No. 3 of the SPO. The project work, two milestone-based presentations of the results in presentation form (each lasting approx. 20 minutes) and a final presentation (lasting approx. 30 minutes) are included in the assessment. The project work and the presentations are carried out in small groups.

Prerequisites
Depending on the degree program, one of the following partial achievements must be passed in order to register for an examination:
T-MACH-110991 - Global ProductionPartial achievement
T-MACH-105158 - Global Production and Logistics - Part 1: Global ProductionPartial
T-MACH-108848 - Global Production and Logistics - Part 1: Global Production
T-MACH-110337 - Global Production and LogisticsPartial
T-MACH-108849 - Integrated Production Planning in the Age of Industry 4.0
T-MACH-109054 - Integrated Production Planning in the Age of Industry 4.0
T-MACH-114031 - Global ProductionPartial service
T-MACH-113832 - Global ProductionPartial service
T-MACH-114800 - Global ProductionPartial service

The partial achievement T-MACH-113372 - Strategic Decision-Making in Global Production Network Design: A Seminar on Optimization and Simulation must not have been started for exam registration.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. You have to fulfill one of 7 conditions:
    1. The module component T-MACH-108849 - Integrated Production Planning in the Age of Industry 4.0 must have been passed.
    2. The module component T-MACH-109054 - Integrated Production Planning in the Age of Industry 4.0 must have been passed.
    3. The module component T-MACH-114031 - Global Production must have been passed.
    4. The module component T-MACH-114800 - Global Production must have been passed.
    5. The module component T-MACH-115031 - Global Production and Logistics must have been passed.
    6. The module component T-MACH-113565 - Global Logistics must have been passed.
    7. The module component T-MACH-115017 - Global Logistics must have been passed.
2. The following conditions have to be fulfilled:

Recommendations
Participation in the following lectures:
Introduction to Operations Research I [2550040] + II [2530043]

Additional Information
The course is offered in English.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V

Strategic Decision-Making in Global Production Networks through Optimization and Simulation

Lecture (V)
On-Site

2150659, SS 2026, 2 SWS, Language: English, Open in study portal

Content
The lecture "Strategic Decision-Making in Global Production Networks through Optimization and Simulation" offers students a comprehensive insight into the application of quantitative models from operations research in global production networks. The course places special emphasis on practical applications and allows students to deepen their skills through a real-world use case during the semester.

The classroom sessions serve to convey important basics and to introduce and present the practice-relevant cases. In the self-study phase, the topics covered are worked on in greater depth. The curriculum covers various phases. Optimization techniques for network design are covered first, followed by simulation methods for network management. Subsequently, open questions are dealt with, e.g. from the consideration of uncertainty, sustainability aspects or the search for the overall optimum in the production network.

The students are divided into small groups to work together on the questions. The methods taught in the course are implemented in python. In order to strengthen the students' presentation skills, regular presentations of interim results are planned. The progress made is supported by feedback and interaction with an internationally operating consulting firm.

The practical orientation of the course, combined with the application of quantitative models and the use of Python, enables students to prepare holistically for complex challenges in global production.

Learning Outcomes:

The students are able to

1. **put concepts of global production into practice:**
   • Understand how global production networks can be implemented in real business scenarios.
   • Develop and implement strategies for adapting global production networks to specific business requirements.
2. **in-depth knowledge and use of optimization in global production:**
   • Develop an in-depth understanding of various optimization techniques in global production processes.
   • Apply optimization models to complex production networks and continuously improve them.
3. **approach to improving network configuration, site selection and transportation routes:**
   • Understand methods to evaluate and optimize production networks.
   • Effectively plan and improve site selection decisions and transportation routes.
4. **deepen knowledge and use of simulations in global production:**
   • Understand how simulations can be used as a tool to analyze and optimize global production processes.
   • Gain experience in the application of simulation techniques for modeling and analyzing production processes.
5. **approach to improving delivery reliability:**
   • Develop and implement strategies to improve delivery reliability.
   • Optimize processes that can affect delivery reliability.
6. **consider uncertainties, aspects of sustainability and multidimensionality:**
   • Recognize and manage uncertainties in global production environments.
   • Consider sustainability aspects and multidimensional challenges when making decisions in global production.
7. **linking results and models:**
   • Link models and analytical results to create holistic solutions to complex problems in global production.
   • Strengthen the ability to iteratively improve models based on real-world results.
8. **presentations to management:**
   • Present complex global manufacturing concepts to management in an understandable and persuasive manner.
   • Build confidence in the use of visual aids and effective communication techniques in front of management levels.

Workload:

regular attendance: ~ 30 hours
self-study: ~ 99 hours

Media:

E-learning plattform Ilias, Powerpoint, photo protocol.
The Media are provided through Ilias (https://ilias.studium.kit.edu/).

Organizational issues
Aus organisatorischen Gründen ist die Teilnehmerzahl für die Lehrveranstaltung auf 20 Studierende begrenzt. Termine und Fristen zur Veranstaltung werden über die Homepage des wbk (https://www.wbk.kit.edu/studium-und-lehre.php) bekannt gegeben.

For organizational reasons the number of students is limited to 20. Dates and deadlines for the seminar will be announced via the homepage of wbk (https://www.wbk.kit.edu/studium-und-lehre.php).

Literature
Vorlesungsskript der Lehrveranstaltungen / Lecture notes of the courses:
Abele et al. (2008): Global Production [978-3-540-71652-5]
Domschke et al. (2015): Einführung in das Operations Research [Einführung in Operations Research]
Friedli et al. (2021): Global Manufacturing Management: From Excellent Plants Toward Network Optimization [978-3-030-72739-0]

T 3.247 Module component: Strategic Management [T-WIWI-113090]

Coordinators: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101425 - Strategy and Organization

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	2

Exams			
ST 2026	**7900067**	Strategic Management	**Lindstädt**
WT 26/27	**7900199**	Strategic Management	**Lindstädt**

Assessment
The assessment consists of a written exam (60 min) taking place at the beginn of the recess period (according to §4 (2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Workload
135 hours

T 3.248 Module component: Structural and Phase Analysis [T-MACH-102170]

Coordinators: Dr.-Ing. Susanne Wagner
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Assessment
Oral examination

Prerequisites
none

T 3.249 Module component: Student2Startup [T-WIWI-114636]

Coordinators: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-107451 - Entrepreneurial Thinking and Action: Fundamentals of Entrepreneurship

Type	Credits	Grading	Term offered	Version
Examination of another type	4,5 CP	graded	Each winter term	1

Courses					
ST 2026	**2500165**	Student2Startup (Edition HAFIS)	**3 SWS**	**Seminar /**	**Terzidis, Böhrer**
WT 26/27	**2500165**	Student2Startup	**3 SWS**	**Seminar /**	**Böhrer, Terzidis**
Exams					
ST 2026	**7900058**	Student2Startup			**Terzidis**
WT 26/27	**7900309**	Student2Startup			**Terzidis**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment is conducted as an alternative exam assessment. The specific form of assessment depends on the course and may include, for example, the following components:

- **Project Report or Reflection Paper**
- **Mid-term and Final Presentation**
- **Group Work with Individual Contribution**
- **Active Participation and Mandatory Attendance**

The overall grade is determined by the weighted evaluation of these individual assessment components. The detailed weighting of these components for grade calculation will be communicated to students at the beginning of the course.

Prerequisites
None

Recommendations
An interest in entrepreneurial thinking and action, teamwork, and interdisciplinary project work is recommended. Basic knowledge in business administration and/or innovation methods is helpful but not required.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Student2Startup (Edition HAFIS)

2500165, SS 2026, 3 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Content:

This seminar is a perfect complement to the *Entrepreneurship Basics* seminar. While you develop your own ideas in *Entrepreneurship Basics* within a protected environment, you will work on real entrepreneurial projects in this seminar. HAFIS teams at KIT consist of researchers who aim to maximize the impact of their research on society and the economy. This seminar offers a unique opportunity to engage with them by solving entrepreneurial and economic challenges within real KIT projects and by recommending suitable entrepreneurial activities:

The HAFIS teams define specific challenges, and student teams will develop solutions and recommendations in response. At the kick-off event, students will select a team challenge to work on. We will discuss and refine the necessary methods and activities (some of which are already covered in *Entrepreneurship Basics*), after which you will work independently in teams, collaborating directly with the HAFIS contact. However, you will not be on your own: each team will be supported by the lecturer through regular seminar sessions that provide feedback and guidance. At the end of the seminar, each team will present its results in a final pitch. To prepare for this, you will train your presentation skills through pitch training, a midterm pitch, and a dry run.

Learning Objectives:

After completing this course, the course participants will be able to

- Apply fundamental concepts of entrepreneurship, such as business modelling, lean start-up methodologies, and market analysis.
- Work effectively in a team, organize the division of labor into distinct tasks, and coordinate efforts to achieve a common goal, gaining practical experience in project management.
- Recognize the specific challenges faced by start-up projects and acquire hands-on start-up experience.
- Collaborate with real KIT projects and potential users to develop solutions to a defined challenge.
- Present solutions and recommendations.

Target group:

Bachelor students

In the seminar, you will work individually on your challenge in teams of up to five people. The groups will be formed at the seminar kick-off.

Teaching language: expected to be English.

Exam:

The team Pitch & Q&A session will be your main examination performance. Additionally, in written, you will document your Pitch and make a short team and personal reflection (till 25.07.2026).
Attendance at Kick-off and at the pitches is mandatory; one other seminar session may be missed for important reasons.

Dates and Topics:

Wednesday, 29.04.2026, 10:00 – 13:00 (K26) - Kick-off: Team Forming, All participants

Tuesday, 05.05.2026, 09:00 – 13:00: PM+Knowledge, All

Tuesday, 12.05.2026, 09:00 – 13:00: Feedback Session, 90 min, individual

Tuesday, 19.05.2026, 09:00 – 13:00: Pitch Training, All

Wednesday, 10.06.2026, 10:00 – 13:00 (K26): Midterm Pitch, All

Tuesday, 16.06.2026, 09:00 – 13:00: Feedback Session, 90 min, individual

Tuesday, 23.06.2026, 09:00 – 13:00: Feedback Session, 90 min, individual

Tuesday, 30.06.2026, 09:00 – 13:00: Feedback Session, 90 min, individual

Tuesday, 07.07.2026, 09:00 – 13:00: Dry Run, 90 min, individual

Wednesday, 15.07.2026, 9:00 – 13:00 (K26): Pitch & Q&A, All

Location (unless otherwise specified):

Bld. 06.35 Westhochschule - Bau 35 R 219, Hertzstraße 16

Module:

For wiwi students, the course is credited within the module *'**Entrepreneurial Thinking and Action: Fundamentals of Entrepreneurship'** (M-WIWI-107451)* with 4,5 ECTS.

You can complete the module by participating in our seminar Entrepreneurship Basics (4,5 ECTS, LV 2545010).

Organizational issues
Registration is via the Wiwi-Portal.

In the seminar, you will work on a project in teams of max five people. The groups are formed in the seminar.

Attention:

The dates are the following:

- Wed, 29.04.26 Kick-Off (10:00-13:00, K26) Team Forming (all)
- Tue, 05.05.26 Session 1 (09:30-13:00) PM+Knowledge (all)
- Tue, 12.05.26 Session 2 (09:30-13:00) Feedback Session (90 minutes, individual)
- Tue, 19.05.26 Session 3 (09:30-13:00) Pitch Training (all)
- Wed, 10.06.26 Session 4 (10:00-13:00, K26) Midterm Pitch (all)
- Tue, 16.06.26 Session 5 (09:30-13:00) Feedback Session (90 minutes, individual)
- Tue, 23.06.26 Session 6 (09:30-13:00) Feedback Session (90 minutes, individual)
- Tue, 30.06.26 Session 7 (09:30-13:00) Feedback Session (90 minutes, individual)
- Tue, 07.07.26 Session 8 (09:30-13:00) Dry Run (90 minutes, individual)
- Wed, 15.07.26 Final Pitch (09:00-13:00) Pitch & Q&A (all)

V

Student2Startup

2500165, WS 26/27, 3 SWS, Language: English, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
Content:

This seminar offers a unique opportunity to engage in entrepreneurial tasks within real pre-seed start-up projects at KIT. The start-ups define specific challenges, and student teams develop solutions and recommendations in response.

At the kick-off event, students select a challenge and form teams to work on it. We will introduce a toolbox of methods and resources, after which you will work independently in your teams and collaborate directly with the respective start-up. The seminar also includes a dedicated AI session in which you will learn how to set up AI-supported workflows for start-ups that may be useful in addressing your challenge.

You will not be on your own: each team will be supported by a mentor, and we will hold regular seminar sessions to provide feedback and guidance. At the end of the seminar, each team will present its results in a final pitch.

Learning Objectives:

After completing this course, the course participants will be able to

- Understand and apply fundamental concepts of entrepreneurship, including business modelling, lean start-up methodologies, market analysis, and the effective use of AI and AI-supported workflows.
- Work effectively in teams, divide responsibilities into clearly defined tasks, and coordinate activities toward a common goal, thereby gaining practical experience in project management.
- Identify and understand the specific challenges faced by early-stage start-ups and gain hands-on experience working in a start-up environment.
- Collaborate with real start-up teams, industry experts, and potential users to develop solutions to a defined challenge.
- Present and communicate their solutions and results effectively to start-ups and industry experts.

In the seminar, you will work on a project in teams of up to five students. The teams will be formed during the kick-off session. In the first seminar sessions, you will be introduced to the key tools and methods required for your project and will begin working on your challenge right away.

Exam:

Team presentation at the final event, detailed presentation appendix with background information, and active participation in all sessions

Target group:

Bachelor students

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (3 SWS × 15 weeks): 45 h

• Preparation and follow-up of course content: 50 h

• Exam preparation and participation in the assessment: 40 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Organizational issues
Registration is via the Wiwi-Portal.

In the seminar, you will work on a project in teams of max five people. The groups are formed in the seminar.

Scheduling note: The final Pitch event is tentatively scheduled for Tuesday, January 26, 2027, 15.00-18.00. (not January 29).

T 3.250 Module component: Supplement Applied Informatics [T-WIWI-110711]

Coordinators: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101426 - Electives in Informatics

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each term	1

Assessment
The assessment of this course is a written or (if necessary) oral examination.

Depending on the particular course associated with this placeholder a bonus on the examination grade is possible.

Prerequisites
None

Additional Information
This course can be used in particular for the acceptance of external courses whose content is in the broader area of applied informatics, but is not equivalent to another course of this topic.

Workload
135 hours

T 3.251 Module component: Sustainability in E-Business [T-WIWI-114596]

Coordinators: Pascal Heßler
Prof. Dr. Jella Pfeiffer

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-101434 - eBusiness and Service Management
M-WIWI-105981 - Information Systems & Digital Business

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	2

Courses					
WT 26/27	**2540470**	Sustainability in E-Business	**3 SWS**	**Lecture / Practice /**	**Pfeiffer, Heßler, Schlaich**
Exams					
ST 2026	**7900024**	Sustainability in E-Business (Nachklausur)			**Pfeiffer**
WT 26/27	**7900062**	Sustainability in E-Business			**Pfeiffer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None.

Additional Information
This lecture is in English.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Sustainability in E-Business

2540470, WS 26/27, 3 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)
On-Site

Content
This module explores the intersection of e-business and sustainability, emphasizing sustainable practices, circular economy, revenue models, marketing strategies, and emerging trends. The modul also includes the Value-Based Engineering (VBE), a well-being-driven approach to IT. VBE integrates ethical considerations into system design from the earliest stages of business mission definition. Students will gain a comprehensive understanding of how e-business adapts to and influences the drive for sustainable development.

The lecture is accompanied by a bi-weekly tutorial.

T 3.252 Module component: Sustainable Manufacturing Technologies and Production Systems [T-MACH-115180]

Coordinators: Prof. Dr.-Ing. Gisela Lanza
Organisation: KIT Department of Mechanical Engineering

Part of: M-WIWI-107750 - Additional Fundamentals of Engineering

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each winter term	1

Courses					
WT 26/27	**2149610**	Sustainable Manufacturing Technologies and Production Systems	**2 SWS**	**Lecture /** 🗣	**Lanza**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Written Exam (60 min)

Prerequisites
none

Recommendations
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Sustainable Manufacturing Technologies and Production Systems

2149610, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V) On-Site

Content
The lecture provides a comprehensive understanding of sustainable manufacturing processes and production systems. It begins by introducing the fundamentals of sustainability, life cycle assessment, and the concept of absolute sustainability. Subsequently, product development and material selection are addressed, which are closely linked to the manufacturing processes presented thereafter. After covering production planning and control as well as supply chain management, the lecture concludes with a discussion of the circular economy.
Across all chapters, a strong emphasis is placed on sustainability, highlighting and discussing potential improvements and opportunities. The entire lecture is structured around application-oriented case studies, emphasizing the practical relevance of the methods presented.

Learning Outcomes:

After successfully completing the course, students are able to work independently and in teams to ...

- discuss and explain concepts, relationships, and models of sustainable manufacturing technologies and production systems
- understand typical challenges faced by manufacturing companies in the context of life cycle assessments, product development, manufacturing technologies and production systems, as well as circular economy and sustainability
- identify, evaluate, and classify sustainability potentials along the product life cycle
- apply methods to address relevant problems in these areas and interpret the results
- critically reflect on the methods learned and independently acquire additional methods beyond the course content.

Workload:

regular attendance: 21 hours
self-study: 99 hours

Literature
Medien:
Skript zur Veranstaltung wird über (https://ilias.studium.kit.edu/) bereitgestellt:

Media:
Lecture notes will be provided in Ilias (https://ilias.studium.kit.edu/).

T 3.253 Module component: Systematic Materials Selection [T-MACH-100531]

Coordinators: Dr.-Ing. Stefan Dietrich
Prof. Dr.-Ing. Volker Schulze

Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101262 - Emphasis Materials Science

Type	Credits	Grading	Term offered	Version
Written examination	4 CP	graded	Each summer term	6

Courses					
ST 2026	**2174576**	Systematic Materials Selection	**3 SWS**	**Lecture /** 🗣	**Dietrich**
ST 2026	**2174577**	Excercises in Systematic Materials Selection	**1 SWS**	**Practice /** 🗣	**Dietrich**
Exams					
ST 2026	**76-T-MACH-100531**	Systematic Materials Selection			**Dietrich**
WT 26/27	**76-T-MACH-100531**	Systematic Materials Selection			**Dietrich**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
The assessment is carried out as a written exam of 2 h.

Prerequisites
none

Recommendations
Basic knowledge in materials science, mechanics and mechanical design due to the lecture Materials Science I/II.

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Systematic Materials Selection

2174576, SS 2026, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
Important aspects and criteria of materials selection are examined and guidelines for a systematic approach to materials selection are deeloped. The following topics are covered:

- Information and introduction
- Necessary basics of materials
- Selected methods / approaches of the material selection
- Examples for material indices and materials property charts
- Trade-off and shape factors
- Sandwich materials and composite materials
- High temperature alloys
- Regard of process influences
- Material selection for production lines
- Incorrect material selection and the resulting consequences
- Abstract and possibility to ask questions

learning objectives:
The students are able to select the best material for a given application. They are proficient in selecting materials on base of performance indices and materials selection charts. They can identify conflicting objectives and find sound compromises. They are aware of the potential and the limits of hybrid material concepts (composites, bimaterials, foams) and can determine whether following such a concept yields a useful benefit.
requirements:

WiIng SPO 2007 (B.Sc.)

The course Material Science I [21760] has to be completed beforehand.

WiIng (M.Sc.)

The course Material Science I [21760] has to be completed beforehand.

workload:

The workload for the lecture is 120 h per semester and consists of the presence during the lecture (30 h) as well as preparation and rework time at home (30 h) and preparation time for the oral exam (60 h).

Literature
Vorlesungsskriptum; Übungsblätter; Lehrbuch: M.F. Ashby, A. Wanner (Hrsg.), C. Fleck (Hrsg.);
Materials Selection in Mechanical Design: Das Original mit Übersetzungshilfen
Easy-Reading-Ausgabe, 3. Aufl., Spektrum Akademischer Verlag, 2006
ISBN: 3-8274-1762-7

Lecture notes; Problem sheets; Textbook: M.F. Ashby, A. Wanner (Hrsg.), C. Fleck (Hrsg.);
Materials Selection in Mechanical Design: Das Original mit Übersetzungshilfen
Easy-Reading-Ausgabe, 3. Aufl., Spektrum Akademischer Verlag, 2006
ISBN: 3-8274-1762-7

T 3.254 Module component: Systems of Remote Sensing, Prerequisite [T-BGU-101637]

Coordinators: Prof. Dr. Jan Cermak
Prof. Dr.-Ing. Stefan Hinz
Dr.-Ing. Uwe Weidner

Organisation: KIT Department of Civil Engineering, Geo and Environmental Sciences

Part of: M-WIWI-104838 - Introduction to Natural Hazards and Risk Analysis

Type	Credits	Grading	Term offered	Version
Coursework	1 CP	pass/fail	Each summer term	1

Courses					
ST 2026	**6020242**	Remote Sensing Systems, Excercise	**1 SWS**	**Practice / 🗣**	**Pauli**
Exams					
ST 2026	**8284101637**	Systems of Remote Sensing, Prerequisite			**Pauli, Hinz, Cermak**

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Prerequisites
None

Recommendations
None

Additional Information
None

Workload
30 hours

T 3.255 Module component: Tactical and Operational Supply Chain Management [T-WIWI-102714]

Coordinators: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-101421 - Supply Chain Management
M-WIWI-103278 - Optimization under Uncertainty

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each summer term	3

Courses					
ST 2026	**2550486**	Tactical and operational SCM	**3 SWS**	**Lecture / 🗣**	**Nickel**
ST 2026	**2550487**	Übungen zu Taktisches und operatives SCM	**1.5 SWS**	**Practice / 🗣**	**Pomes, Hoffmann**
Exams					
ST 2026	**7900239**	Tactical and Operational Supply Chain Management			**Nickel**
WT 26/27	**00079**	Tactical and Operational Supply Chain Management			**Nickel**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Success is assessed in the form of a written examination (60 minutes). The examination is offered every semester and can be repeated at any regular examination date.

Successful participation in the online exercises is a prerequisite for admission to the written exam.

Prerequisites
Prerequisite for admission to examination is the succesful completion of the online assessments.

Recommendations
None

Additional Information
The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online at https://dol.ior.kit.edu/Lehrveranstaltungen.php.

Workload
135 hours

Below you will find excerpts from courses related to this module component:

V Tactical and operational SCM

2550486, SS 2026, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
The planning of material transport is an essential element of Supply Chain Management. By linking transport connections across different facilities, the material source (production plant) is connected with the material sink (customer). The general supply task can be formulated as follows (cf. Gudehus): For given material flows or shipments, choose the optimal (in terms of minimal costs) distribution and transportation chain from the set of possible logistics chains, which asserts the compliance of delivery times and further constraints. The main goal of the inventory management is the optimal determination of order quantities in terms of minimization of fixed and variable costs subject to resource constraints, supply availability and service level requirements. Similarly, the problem of lot sizing in production considers the determination of the optimal amount of products to be produced in a time slot. The course includes an introduction to basic terms and definitions of Supply Chain Management and a presentation of fundamental quantitative planning models for distribution, vehicle routing, inventory management and lot sizing. Furthermore, case
studies from practice will be discussed in detail.

Passing the online exercise is a prerequisite for admission to the exam.

The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (4 SWS × 15 weeks): 60 h

• Preparation and follow-up of course content: 45 h

• Exam preparation and participation in the assessment: 30 h

Total workload: 135 h (corresponds to 4.5 ECTS credits)

Literature
Weiterführende Literatur

- Domschke: Logistik: Transporte, 5. Auflage, Oldenbourg, 2005
- Domschke: Logistik: Rundreisen und Touren, 4. Auflage, Oldenbourg, 1997
- Ghiani, Laporte, Musmanno: Introduction to Logistics Systems Planning and Control, Wiley, 2004
- Gudehus: Logistik, 3. Auflage, Springer, 2005
- Simchi-Levi, Kaminsky, Simchi-Levi: Designing and Managing the Supply Chain, 3rd edition, McGraw-Hill, 2008
- Silver, Pyke, Peterson: Inventory management and production planning and scheduling, 3rd edition, Wiley, 1998

T 3.256 Module component: Team Project Management and Technology [T-WIWI-110968]

Coordinators: Prof. Dr. Martin Klarmann
Prof. Dr. Alexander Mädche

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-105440 - Team Project Management and Technology

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	9 CP	graded	Each term	1 semesters	1

Courses					
ST 2026	**2571176**	Teamprojekt Wirtschaft und Technologie		**Project /**	**Klarmann, Mädche**
WT 26/27	**2571176**	Team Project Management and Technology	**6 SWS**	**Project /**	**Klarmann, Mädche**
Exams					
ST 2026	**7900048**	Team Project Management and Technology			**Klarmann, Mädche**
WT 26/27	**7900207**	Team Project Management and Technology			**Mädche, Klarmann**

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

Assessment
Alternative exam assessment. The basis for grading is the documents produced, the presentations during the course of the project, the artifact to be produced (e.g. algorithm, method, model, software, component) and the final presentation.

Workload
270 hours

Below you will find excerpts from courses related to this module component:

V Team Project Management and Technology

2571176, WS 26/27, 6 SWS, Language: German, Open in study portal

Project (PRO)
Blended (On-Site/Online)

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (6 SWS × 15 weeks): 90 h

• Preparation and follow-up of course content: 100 h

• Exam preparation and participation in the assessment: 80 h

Total workload: 270 h (corresponds to 9 ECTS credits)

T 3.257 Module component: Team Project Management and Technology (BUS/ENG) [T-WIWI-110977]

Coordinators: Prof. Dr. Martin Klarmann
Prof. Dr. Alexander Mädche

Organisation: KIT Department of Business and Economics

Part of: M-WIWI-105447 - Team Project Management and Technology (BUS/ENG)

Type	Credits	Grading	Term offered	Expansion	Version
Examination of another type	9 CP	graded	Each term	1 semesters	1

Courses					
ST 2026	**2571176**	Teamprojekt Wirtschaft und Technologie		**Project /**	**Klarmann, Mädche**
WT 26/27	**2571176**	Team Project Management and Technology	**6 SWS**	**Project /**	**Klarmann, Mädche**
Exams					
ST 2026	**7900048**	Team Project Management and Technology			**Klarmann, Mädche**
WT 26/27	**7900207**	Team Project Management and Technology			**Mädche, Klarmann**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Alternative exam assessment. The basis for grading is the documents produced, the presentations during the course of the project, the artifact to be produced (e.g. algorithm, method, model, software, component) and the final presentation.

Workload
270 hours

Below you will find excerpts from courses related to this module component:

V Team Project Management and Technology

2571176, WS 26/27, 6 SWS, Language: German, Open in study portal

Project (PRO)
Blended (On-Site/Online)

Content
The total workload for this course is structured as follows:

• Attendance at lectures/exercises (presence time) (6 SWS × 15 weeks): 90 h

• Preparation and follow-up of course content: 100 h

• Exam preparation and participation in the assessment: 80 h

Total workload: 270 h (corresponds to 9 ECTS credits)

T 3.258 Module component: Time Series Analysis [T-WIWI-114325]

Coordinators: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	Each winter term	1

Courses					
WT 26/27	**2520022**	Time Series Analysis	**2 SWS**	**Lecture /** 🗣	**Schienle**
WT 26/27	**2520023**	Exercises Time Series Analysis	**2 SWS**	**Practice /** 🗣	**Buse**
Exams					
WT 26/27	**7900126**	Time Series Analysis			**Schienle**

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

Assessment
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendations
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Additional Information
The next lecture will take place in the winter semester 2022/23.

Below you will find excerpts from courses related to this module component:

V Time Series Analysis

2520022, WS 26/27, 2 SWS, Language: English, Open in study portal

Lecture (V)
On-Site

Content
Learning objectives:

The student

- shows a broad knowledge of fincancial econometric estimation and testing techniques
- is able to apply his/her technical knowledge using software in order to critically assess empirical problems

Content:

ARMA, ARIMA, ARFIMA, (non)stationarity, causality, cointegration, ARCH/GARCH, stochastic volatility models, computer based exercises

Requirements:

It is recommended to attend the course *Economics III: Introduction to Econometrics* [2520016] prior to this course.

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Literature

Taylor, S. J. (2005): "Asset Price Dynamics, Volatility, and Prediction", Princeton University Press.

Tsay, R. S. (2005): "Analysis of Financial Time Series: Financial Econometrics", Wiley, 2nd edition.

Cochrane, J. H. (2005): "Asset Pricing", revised edition, Princeton University Press.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay (1997): "The Econometrics of Financial Markets", Princeton University Press.

Hamilton, J. D. (1994): "Time Series Analysis", Princeton University Press.

Additional literature will be discussed in the lecture.

T 3.259 Module component: Tires and Wheel Development for Passenger Cars [T-MACH-102207]

Coordinators: Prof. Dr.-Ing. Günter Leister
Organisation: KIT Department of Mechanical Engineering

Part of: M-MACH-101265 - Vehicle Development

Type	Credits	Grading	Term offered	Version
Oral examination	4 CP	graded	Each summer term	1

Courses					
ST 2026	**2114845**	Tires and Wheel Development for Passenger Cars	**2 SWS**	**Lecture /** 🗣	**Leister**
Exams					
ST 2026	**76-T-MACH-102207**	Tires and Wheel Development for Passenger Cars			**Leister**
WT 26/27	**76-T-MACH-102207**	Tires and Wheel Development for Passenger Cars			**Leister**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites
none

Additional Information
The course is offered in German.

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Tires and Wheel Development for Passenger Cars

2114845, SS 2026, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

1. The role of the tires and wheels in a vehicle
2. Geometrie of Wheel and tire, Package, load capacity and endurance, Book of requirement
3. Mobility strategy, Minispare, runflat systems and repair kit.
4. Project management: Costs, weight, planning, documentation
5. Tire testing and tire properties
6. Wheel technology incuding Design and manifacturing methods, Wheeltesting
7. Tire presssure: Indirect and direct measuring systems
8. Tire testing subjective and objective

Learning Objectives:

The students are informed about the interactions of tires, wheels and chassis. They have an overview of the processes regarding the tire and wheel development. They have knowledge of the physical relationships.

Organizational issues
Vorlesung findet am Campus Ost, Geb.70.04 statt. Voraussichtliche Termine, nähere Informationen und eventuelle Terminänderungen:

siehe Institutshomepage.

Literature
Manuskript zur Vorlesung

Manuscript to the lecture

T 3.260 Module component: Topics in Human Resource Management [T-WIWI-111858]

Coordinators: Prof. Dr. Petra Nieken
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-105928 - HR Management & Digital Workplace
M-WIWI-106860 - Leadership & Sustainable HR-Management

Type	Credits	Grading	Term offered	Version
Examination of another type	3 CP	graded	Each term	1

Courses					
ST 2026	**2573015**	Topics in Human Resource Management	**2 SWS**	**Colloquium / 🗣**	**Nieken, Mitarbeiter**
WT 26/27	**2573015**	Topics in Human Resource Management	**2 SWS**	**Colloquium / 🗣**	**Nieken**

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Alternative exam assessment.

The grade is made up of the presentation of a given research topic and active participation in the discussions in the course. The weighting depends on the course and will be announced at the beginning of the course.

Prerequisites
This course cannot be combined with T-WIWI-102871 "Problem Solving, Communication and Leadership".

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-102871 - Problem Solving, Communication and Leadership must not have been started.

Recommendations
We recommend visiting the course "Human Resource Management" before taking this course.
The course is strongly recommended for students interested in empirical research in the areas HRM, personnel economics, and leadership.

Workload
90 hours

Below you will find excerpts from courses related to this module component:

V Topics in Human Resource Management

2573015, SS 2026, 2 SWS, Language: German, Open in study portal

Colloquium (KOL)
On-Site

Content
The students will discuss and analyze selected research papers in the areas HRM, personnel economics, and leadership. The students will present research papers and discuss research methods and designs as well as content.

Aim

The student

- Looks into current research topics in the areas HRM, personnel economics, and leadership.
- Analyzes research papers in detail and evaluates the research outcomes.
- Trains their presentation skills.
- Learns to critically evaluate research methods and trains the scientific discussion culture.
- Gains deeper knowledge in the area of HRM.
- Learns to evaluate research designs and takes into account the ethical dimension of research.
-

Notes

Due to the interactive nature of the course, the number of participants is limited. If you are interested, please contact Prof. Nieken by email.

Workload

The total workload for this course is approximately 90 hours.

Lecture: 30 hours

Preparation: 45 hours

Exam preparation: 15 hours

Literature

Selected research papers

Organizational issues
Geb. 05.20, Raum 2A-25, Termine werden bekannt gegeben

V

Topics in Human Resource Management

Colloquium (KOL)
On-Site

2573015, WS 26/27, 2 SWS, Language: German/English, Open in study portal

Content
The students will discuss and analyze selected research papers in the areas HRM, personnel economics, and leadership. The students will present research papers and discuss research methods and designs as well as content.

Aim

The student

- Looks into current research topics in the areas HRM, personnel economics, and leadership.
- Analyzes research papers in detail and evaluates the research outcomes.
- Trains their presentation skills.
- Learns to critically evaluate research methods and trains the scientific discussion culture.
- Gains deeper knowledge in the area of HRM.
- Learns to evaluate research designs and takes into account the ethical dimension of research.

Notes

Due to the interactive nature of the course, the number of participants is limited. If you are interested, please contact Prof. Nieken by email.

Workload

The total workload for this course is approximately 90 hours.

Lecture: 30 hours

Preparation: 45 hours

Exam preparation: 15 hours

Literature

Selected research papers

Organizational issues
Die Veranstaltung findet als Blockveranstaltung statt. Termine werden noch bekannt gegeben.

T 3.261 Module component: Tutorial Mathematical Methods in Hydraulics [T-MACH-113913]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101266 - Automotive Engineering
M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Expansion	Version
Coursework	1 CP	pass/fail	Each winter term	1 semesters	2

Exams			
WT 26/27	76-T-MACH-113913	Tutorial Mathematical Methods in Hydraulics	Geimer

Assessment
Successful completion of a preliminary assignment. Details will be announced in the first lecture.

Prerequisites
none

Additional Information
See "Mathematical methods of hydraulics".

The course is offered in German.

Further information can be found on our homepage:
https://www.fast.kit.edu/mobima/13438_17893.php

Workload
30 hours

T 3.262 Module component: Tutorial Simulation with Lumped Parameters [T-MACH-113863]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101265 - Vehicle Development
M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Expansion	Version
Coursework	1 CP	pass/fail	Each summer term	1 semesters	1

Courses					
ST 2026	**2114072**	Simulation with Lumped Parameters (Tutorial)	**2 SWS**	**Practice / 🗣**	**Geimer**
Exams					
ST 2026	**76-T-MACH-113863**	Tutorial Simulation with Lumped Parameters			**Geimer**

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
Submission of a report at the end of the lecture period.

Prerequisites
none

Recommendations
Knowledge of mechanics and hydraulics

Additional Information
This tutorial is a prerequisite for the module components T-MACH-113862 - Simulation with concentrated parameters (examination) in the MSc Mechanical Engineering program (SPO 2025).

The course is offered in German.

Workload
30 hours

T 3.263 Module component: Vehicle Drive Technology [T-MACH-113997]

Coordinators: Prof. Dr.-Ing. Marcus Geimer
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-101267 - Mobile Machines

Type	Credits	Grading	Term offered	Expansion	Version
Oral examination	4 CP	graded	Each winter term	1 semesters	1

Courses					
WT 26/27	**2113091**	Machine Drive Technology	**2 SWS**	**Lecture /** 🗣	**Geimer**
WT 26/27	**2113095**	Exercise Machine Drive Technology	**2 SWS**	**Practice /** 🗣	**Geimer**
Exams					
ST 2026	**76-T-MACH-113997**	Vehicle Drive Technology			**Geimer**
WT 26/27	**76-T-MACH-113997**	Vehicle Drive Technology			**Geimer**

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

Assessment
Oral examination, duration approx. 20 minutes

Prerequisites
none

Additional Information
The course is offered in German

Workload
120 hours

Below you will find excerpts from courses related to this module component:

V Machine Drive Technology

2113091, WS 26/27, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content
This lecture presents and discusses the possible variations of the traction drive trains of mobile machinery. The focus of the lecture is as follows:
-Mechanical transmissions
-Hydrodynamic converters
-Hydrostatic drives
-Power-split transmissions
-Electric drives
-Hybrid drives
-axles
-Terra mechanics (wheel-ground effects)

Organizational issues
Findet am Campus Ost, Geb. 70.04, Raum 219 statt.
weitere Informationen finden Sie hier: https://www.fast.kit.edu/mobima/13438_17889.php

T 3.264 Module component: Welfare Economics [T-WIWI-102610]

Coordinators: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Business and Economics
Part of: M-WIWI-101501 - Economic Theory

Type	Credits	Grading	Term offered	Version
Written examination	4,5 CP	graded	see Annotations	3

Exams			
ST 2026	**7900257**	Welfare Economics	**Puppe**

Assessment
The assessment consists of a written exam (60 min.).

Prerequisites
The course *Economics I: Microeconomics* [2610012] has to be completed beforehand.

Modeled Prerequisites
The following conditions have to be fulfilled:

1. The module component T-WIWI-102708 - Economics I: Microeconomics must have been passed.

Recommendations
None

Additional Information
The course only takes place every second summer semester, the next course is planned for summer semester 2027. The last iteration of this course is expected to take place in the summer semester of 2029. The last exam will therefore be offered in the summer semester of 2030.

T 3.265 Module component: Workshop Mechatronical Systems and Products [T-MACH-112648]

Coordinators: Prof. Dr.-Ing. Sören Hohmann
Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering
Part of: M-MACH-106236 - Mechatronic Product Design

Type	Credits	Grading	Term offered	Version
Coursework	5 CP	pass/fail	Each winter term	3

Courses					
WT 26/27	**2145162**	Workshop Mechatronical Systems and Products	**3 SWS**	**Seminar / 🗣**	**Matthiesen, Hohmann, Teltschik**

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

Assessment
The assessment is carried out in the form of a course achievement consisting of a semester-long workshop.
The partial achievement is not graded. It is considered passed upon successful evaluation of the course achievement.

Throughout the semester, accompanying the workshop, submission tasks are required at given milestones. These tasks assess the application of knowledge developed within the module. Examples of such submissions include CAD designs, control software, and reflection reports, which are specified in a workshop assignment at the beginning of the semester. The milestones are announced in a calendar at the start of the semester and are made available to students via ILIAS.

Prerequisites
None

Knowledge of the contents of the lecture Mechatronische Systeme und Produkte [T-MACH-105574] will be assumed to be known.

Additional Information
All relevant materials (script, exercise sheets, etc.) for the course can be accessed via the eLearning platform ILIAS.

To participate in the course, please complete the survey, registration and group allocation in ILIAS before the start of the semester.

The course is offered in German.

For students not enrolled in the Mechatronics and Information Technology (MIT) program, the number of participants is limited for organizational reasons. If the number of registrations exceeds the number of available spots, selection will be based on the academic relevance of the student's program of study and their academic progress, as measured by the number of credit points (LP) earned. Prior knowledge relevant to the workshop will be the determining factor.

Workload
150 hours