

Module Handbook Industrial Engineering and Management B.Sc.

SPO 2015

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KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT



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1 Welcome to the new module handbook of your study programme

We are delighted that you have decided to study at the KIT Department of Economics and Management and wish you a good start into the new semester!

The following contact persons are at your disposal for questions and problems at any time.



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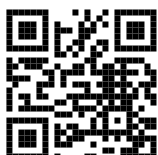
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Write to us!



2 About this handbook

2.1 Notes and rules

The program exists of several **subjects** (e.g. business administration, economics, operations research). Every subject is split into **modules** and every module itself consists of one or more interrelated **module component exams**. The extent of every module is indicated by credit points (CP), which will be credited after the successful completion of the module. Some of the modules are **obligatory**. According to the interdisciplinary character of the program, a great variety of **individual specialization and deepening possibilities** exists for a large number of modules. This enables the student to customize content and time schedule of the program according to personal needs, interest and job perspective. The **module handbook** describes the modules belonging to the program. It describes particularly:

- the structure of the modules
- the extent (in CP),
- the dependencies of the modules,
- the learning outcomes,
- the assessment and examinations.

The module handbook serves as a necessary orientation and as a helpful guide throughout the studies. The module handbook does not replace the **course catalog**, which provides important information concerning each semester and variable course details (e.g. time and location of the course).

2.1.1 Begin and completion of a module

Each module and each examination can only be selected once. The decision on the assignment of an examination to a module (if, for example, an examination in several modules is selectable) is made by the student at the moment when he / she is registered for the appropriate examination. A module is completed or passed when the module examination is passed (grade 4.0 or better). For modules in which the module examination is carried out over several partial examinations, the following applies: The module is completed when all necessary module partial examinations have been passed. In the case of modules which offer alternative partial examinations, the module examination is concluded with the examination with which the required total credit points are reached or exceeded. The module grade, however, is combined with the weight of the predefined credit points for the module in the overall grade calculation.

2.1.2 Module versions

It is not uncommon for modules to be revised due to, for example, new courses or cancelled examinations. As a rule, a new module version is created, which applies to all students who are new to the module. On the other hand, students who have already started the module enjoy confidence and remain in the old module version. These students can complete the module on the same conditions as at the beginning of the module (exceptions are regulated by the examination committee). The date of the student's "binding declaration" on the choice of the module in the sense of §5(2) of the Study and Examination Regulation is decisive. This binding declaration is made by registering for the first examination in this module.

In the module handbook, all modules are presented in their current version. The version number is given in the module description. Older module versions can be accessed via the previous module handbooks in the archive at http://www.wiwi.kit.edu/Archiv_MHB.php.

2.1.3 General and partial examinations

Module examinations can be either taken in a general examination or in partial examinations. If the module examination is offered as a general examination, the entire learning content of the module will be examined in a single examination. If the module examination is subdivided into partial examinations, the content of each course will be examined in corresponding partial examinations. Registration for examinations can be done online at the campus management portal. The following functions can be accessed on <https://campus.studium.kit.edu/>:

- Register/unregister for examinations
- Check for examination results
- Create transcript of records

For further and more detailed information, <https://studium.kit.edu/Seiten/FAQ.aspx>.

2.1.4 Types of exams

Exams are split into written exams, oral exams and alternative exam assessments. Exams are always graded. Non exam assessments can be repeated several times and are not graded.

2.1.5 Repeating exams

Principally, a failed written exam, oral exam or alternative exam assessment can be repeated only once. If the repeat examination (including an eventually provided verbal repeat examination) will be failed as well, the examination claim is lost. A request for a second repetition has to be made in written form to the examination committee two months after losing the examination claim. A counseling interview is mandatory.

For further information see <http://www.wiwi.kit.edu/hinweiseZweitwdh.php>.

2.1.6 Additional accomplishments

Additional accomplishments are voluntarily taken exams, which have no impact on the overall grade of the student and can take place on the level of single courses or on entire modules. It is also mandatory to declare an additional accomplishment as such at the time of registration for an exam. Additional accomplishments with at most 30 CP may appear additionally in the certificate.

2.1.7 Further information

More detailed information about the legal and general conditions of the program can be found in the examination regulation of the program (<http://www.sle.kit.edu/amtlicheBekanntmachungen.php>).

2.2 Contact

If you have any questions about modules or exams, please contact the examination office of the KIT Department of Economics and Management:

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3 Why Industrial Engineering and Management?

The Industrial Engineering and Management study programme is attractive for you if you want to pursue economic and technical interests during your studies. There are three main reasons why graduates have huge job opportunities:

That speaks (among other things) for the course of studies:

- Germany is a high-tech country that depends on innovation. Anyone who wants to take on responsibility in a company here benefits from an interdisciplinary course of study in economics and technology.
- In the digital society, the distinction between technical and business issues is becoming blurred. Industrial engineers understand both and can therefore assume important interface functions.
- Data and data-based decisions are becoming increasingly important in companies and research. The Industrial Engineering and Management study programme has a strong quantitative-methodological orientation and thus prepares students perfectly for these tasks.

You can find more information about the program here:

<https://ranking.zeit.de/che/de/fachinfo/13>

<http://www.tu9.de/studium/2982.php>

Why Industrial Engineering and Management at KIT? There are some universities in Germany where you can study Industrial Engineering and Management very well. In comparison, studying with us has three important advantages:

- **Flexibility** If you are study Industrial Engineering and Management at KIT, you can tailor your course content to suit your individual needs. At the beginning of your studies, you do not yet decide on a technical subject. First of all, our compulsory courses in the basic programme offer you a broad overview. In the subsequent specialisation programme, you can choose the course content in the technical subjects and economics according to your own interests and goals. Link to the module manual
- **High Informatics share** Digitisation permeates all sectors of the economy and technology. For this reason, Informatics content is particularly anchored in both our basic and advanced programs. As a graduate, you can play an active role in the digital transformation of business and society.
- **Our own faculty** The Industrial Engineering and Management study programme is the core course of studies at the KIT department of Economics. The courses in economics and Informatics are designed for your course of studies and aligned to your interests.

What else speaks for an Industrial Engineering and Management study programme at KIT? These three advantages make the Industrial Engineering and Management study programme at KIT unique. In addition, there are a number of other reasons for studying with us:

- **Top positions in rankings.** In surveys of students and HR managers at companies, our degree programme regularly scores very well.
- **Job opportunities.** After completing their studies with us, students usually quickly find a job that they like.
- **Found your own business.** At KIT you will find an ideal environment for starting your own business. Information on start-up activities at KIT can be found at <http://kit-gruenderschmiede.de/de/gruenderschmiede/fuer-studierende/>
- **Student activities.** At our faculty and at the KIT, students are committed to themselves and others in a variety of ways. You can find an overview under Student Life at the Department, for example.
- **Sports Offer.** At KIT you will find a wide range of sports activities. Examples are the KIT SC (kitsc.de/ External Link) and the University Sports Programme (www.sport.kit.edu/hochschulsport/ External Link). Campus University. The KIT has a large campus directly in the city centre of Karlsruhe.

4 The Bachelor's degree program in Industrial Engineering and Management

4.1 Qualification objectives of the Bachelor's degree in Industrial Engineering and Management

Graduates of the Bachelor's degree in Industrial Engineering and Management are equipped with strategically oriented knowledge in economics, engineering sciences, mathematics and information technology acquired during the three-semester core program.

The economics section includes business-related topics from the financial industry, company management, information industry, production management, marketing and accounting as well as economic correlations of microeconomics and macroeconomics.

The math section is divided into mathematics, statistics and operations research. It includes analysis and linear algebra, descriptive and inductive statistics, elementary probability theory and optimization methods.

In the engineering field, the focus is on material and energy balances, material characterization and development, engineering mechanics and electrical engineering.

The technological area is covered by the Applied and Theoretical Computer Science. Through the comprehensive methodological basis, the graduates are in a position to acknowledge and apply specialized basic concepts, methods, models and approaches. They are also able to analyze and review economic and technological structures and processes.

Graduates can independently solve basic engineering calculations and are able to apply important mathematical concepts and methods to solve concrete tasks.

The graduates have deeper knowledge in business administration, economics, computer science, operations research and engineering. Specialization is either done in the field of business administration or engineering depending on one's wishes. Additional knowledge in statistics, law or sociology is also offered depending on one's interests. They are able to react based on this knowledge from the different subjects and disciplines. They thereby largely operate independently in economic, technical and technological topics and survey, analyze, interpret and evaluate the situations systematically.

They are able to classify specialized problems as well as model and choose appropriate methods and procedures for solving the given tasks as well as derive improvement potentials. They know how to validate, illustrate and interpret the achieved results.

This practical use of their know-how also takes into account the social, scientific and ethical aspects.

Graduates of the Bachelor's degree in Industrial Engineering and Management master the basics of project management and are able to assume responsibility in interdisciplinary teams. They are in a position to argue and defend their position both before expert representatives and laypersons.

They have the ability to apply the acquired information on career-related activities in the industry, service sector or in the public management as well as take up a Master's degree program in Industrial Engineering and Management or any other related course.

4.2 Structure of the Bachelor's degree program in Industrial Engineering and Management SPO 2015

The Bachelor's degree program in Industrial Engineering and Management entails a six-semester standard study period. The basic program in the first three semesters is systematically structured. In the fourth to fifth semesters, a more advanced, specialization program that can be structured depending on one's personal interests and goals is offered.

Figure 2 shows the course and module structure with the respective credit points as well as an example of a possible distribution of modules and courses in the basic program over the semesters, which has proven to be useful.

	Term	Credits	Business Administration	Economics	Informatics	Operations Research	Engineering	Statistics	Mathematics	Electives	Internship Bachelor Thesis
Basic Program	1 (WT)	27	BUS FA 4 CP BUS SMIEM 3 CP	ECON 1 5 CP	PROG 1 5 CP		Mat. Science (MS) 1 3 CP		MATH 1 7 CP		
	2 (ST)	33	BUS PEM 4 CP	ECON 2 5 CP	INFO 1 5 CP	OR 1 4,5 CP	Eng. Mech. (EM) 1 3 CP	STAT 1 5 CP	MATH 2 7 CP		
	3 (WT)	32	ACC 4 CP		INFO 2 5 CP	OR 2 4,5 CP	Electr. Eng. 1 3 CP AFoE 3 CP	STAT 2 5 CP	MATH 3 7 CP		
Specialization Program	4 (ST)	31		ECON	INFO	OR				Seminar 3 CP	Internship 10 CP
	5 (WT)	27	BUS 9 CP	9 CP	9 CP	9 CP	ENG 9 CP			2 Elective Modules (one from BUS/ENG) 9 CP + 9 CP	
	6 (ST)	30									Bachelor Thesis 12 CP
		180									

Figure 2: Structure of the Bachelor's degree program in Industrial Engineering and Management SPO 2015 (recommended)

In the **basic program** (blue), the business administration, economics, informatics, operations research, engineering sciences, statistics and mathematics modules are compulsory. In the 3rd semester, one can choose between Material Transformation and Balances, Engineering Mechanics and Material Science in the engineering basic module.

In the **specialization program** (green), a module must be selected from each of the following areas: business administration, economics, informatics, operations research and engineering. As part of the mandatory courses, one seminar module (independent of the course) and two modules must be completed. One module can be selected from business administration or engineering subjects and the other from business administration, economics, informatics, operations research, engineering, statistics, law or sociology.

The **internship** can be completed before or during the Bachelor's program. The performance record of the completed internship is required for registration for the final module examination in the course.

One is free to structure his/her individual course plan as he/she wishes (taking into account the respective provisions of the study and examination regulations as well as applicable module regulations) and choose the semester he/she wishes to start and/or complete the selected modules. It is however strongly recommended to adhere to the proposal for the first three semesters. The content of the courses is interdisciplinary and coordinated accordingly; the intersection freedom of lectures and examination dates is guaranteed for the recommended study semester.

All modules of the basic and advanced program, including the various alternatives within the module, can be found in this module handbook. Seminars that can be taken up as part of the seminar module are published at the WiWi portal at <https://portal.wiwi.kit.edu/Seminare>.

4.3 Key Skills

The Bachelor's degree course in Industrial Engineering and Management at the Department of Economics and Management distinguishes itself by an exceptionally high level of interdisciplinarity. With the combination of business science, economics, informatics, operations research, mathematics as well as engineering and natural science, the integration of knowledge of different disciplines is an inherent element of the programme. As a result, interdisciplinary and connected thinking is encouraged in a natural way. The integrative taught key skills, which are acquired throughout the entire programme, can be classified into the following fields:

Soft skills

- Team work, social communication and creativity techniques
- Presentations and presentation techniques
- Logical and systematic arguing and writing
- Structured problem solving and communication

Enabling skills

- Decision making in business context
- Project management competences

Fundamentals of business science
English as a foreign language

Orientational knowledge

Acquisition of interdisciplinary knowledge
Institutional knowledge about economic and legal systems
Knowledge about international organisations
Media, technology and innovation

The integrative acquisition of key skills especially takes place in several compulsory courses during the bachelor programme, namely

- Basic programme in economics and business science
- Seminar module
- Mentoring of the bachelor thesis
- Internship
- Business science, economics and informatics modules

5 Field of study structure

Mandatory	
Bachelor Thesis	12 CR
Internship	10 CR
Business Administration	24 CR
Economics	19 CR
Informatics	24 CR
Operations Research	18 CR
Engineering Sciences	21 CR
Mathematics	21 CR
Statistics	10 CR
Compulsory Elective Modules	21 CR

5.1 Bachelor Thesis

Credits

12

Mandatory	
M-WIWI-101601	Module Bachelor Thesis
	12 CR

5.2 Internship

Credits

10

Mandatory	
M-WIWI-101419	Internship
	10 CR

5.3 Business Administration

Credits

24

Election notes

The modules in the specialization programme can only be started if the corresponding basic modules have been completed beforehand. On application, the examination office may grant permission to take part in examinations for specialization modules, even if the subject-related fundamentals, i.e. the subject-related modules of the basic programme, have not yet been successfully proven. Information on the procedure can be found at https://www.wiwi.kit.edu/ps_ankuendigung.php?aktid=278.

Mandatory		
M-WIWI-101494	Fundamentals of Business Administration 1	7 CR
M-WIWI-101578	Fundamentals of Business Administration 2	8 CR
Election block: Vertiefungsprogramm Betriebswirtschaftslehre (at least 9 credits)		
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101460	CRM and Service Management	9 CR
M-WIWI-101434	eBusiness and Service Management	9 CR
M-WIWI-101402	eFinance	9 CR
M-WIWI-101464	Energy Economics	9 CR
M-WIWI-101435	Essentials of Finance	9 CR
M-WIWI-102752	Fundamentals of Digital Service Systems	9 CR
M-WIWI-101424	Foundations of Marketing	9 CR
M-WIWI-101437	Industrial Production I	9 CR
M-WIWI-104911	Information Systems & Digital Business: Interaction <i>First usage possible from 4/1/2019.</i>	9 CR
M-WIWI-104912	Information Systems & Digital Business: Platforms <i>First usage possible from 4/1/2019.</i>	9 CR
M-WIWI-104913	Information Systems & Digital Business: Servitization <i>First usage possible from 4/1/2019.</i>	9 CR
M-WIWI-101513	Human Resources and Organizations	9 CR
M-WIWI-101466	Real Estate Management	9 CR
M-WIWI-101436	Risk and Insurance Management	9 CR
M-WIWI-101425	Strategy and Organization	9 CR
M-WIWI-101465	Topics in Finance I	9 CR
M-WIWI-101423	Topics in Finance II	9 CR
M-WIWI-101422	Specialization in Customer Relationship Management	9 CR

5.4 Economics

Credits
19

Election notes

The modules in the specialization programme can only be started if the corresponding basic modules have been completed beforehand. On application, the examination office may grant permission to take part in examinations for specialization modules, even if the subject-related fundamentals, i.e. the subject-related modules of the basic programme, have not yet been successfully proven. Information on the procedure can be found at https://www.wiwi.kit.edu/ps_ankuendigung.php?aktid=278.

Mandatory		
M-WIWI-101398	Introduction to Economics	10 CR
Election block: Vertiefungsprogramm Volkswirtschaftslehre (at least 9 credits)		
M-WIWI-101499	Applied Microeconomics	9 CR
M-WIWI-101403	Public Finance	9 CR
M-WIWI-101668	Economic Policy I	9 CR
M-WIWI-101501	Economic Theory	9 CR

5.5 Informatics

Credits
24

Election notes

The module in the specialization programme can only be started if the corresponding basic modules have been completed beforehand. On application, the examination office may grant permission to take part in examinations for specialization modules, even if the subject-related fundamentals, i.e. the subject-related modules of the basic programme, have not yet been successfully proven. Information on the procedure can be found at https://www.wiwi.kit.edu/ps_ankuendigung.php?aktid=278.

Mandatory		
M-WIWI-101417	Foundations of Informatics	10 CR
M-WIWI-101581	Introduction to Programming	5 CR
Election block: Vertiefungsprogramm Informatik (at least 9 credits)		
M-WIWI-101399	Emphasis Informatics	9 CR

5.6 Operations Research

Credits
18

Election notes

The modules in the specialization programme can only be started if the corresponding basic modules have been completed beforehand. On application, the examination office may grant permission to take part in examinations for specialization modules, even if the subject-related fundamentals, i.e. the subject-related modules of the basic programme, have not yet been successfully proven. Information on the procedure can be found at https://www.wiwi.kit.edu/ps_ankuendigung.php?aktid=278.

Mandatory		
M-WIWI-101418	Introduction to Operations Research	9 CR
Election block: Vertiefungsprogramm Operations Research (1 item)		
M-WIWI-101413	Applications of Operations Research	9 CR
M-WIWI-101414	Methodical Foundations of OR	9 CR
M-WIWI-103278	Optimization under Uncertainty	9 CR

5.7 Engineering Sciences

Credits

21

Election notes

The modules in the specialization programme can only be started if the corresponding basic modules have been completed beforehand. On application, the examination office may grant permission to take part in examinations for specialization modules, even if the subject-related fundamentals, i.e. the subject-related modules of the basic programme, have not yet been successfully proven. Information on the procedure can be found at https://www.wiwi.kit.edu/ps_ankuendigung.php?aktid=278.

Mandatory		
M-ETIT-101155	Electrical Engineering	3 CR
M-MACH-101259	Engineering Mechanics	3 CR
M-WIWI-101839	Additional Fundamentals of Engineering	3 CR
M-MACH-101260	Materials Science	3 CR
Election block: Vertiefungsprogramm Ingenieurwissenschaften (at least 9 credits)		
M-WIWI-101404	Extracurricular Module in Engineering	9 CR
M-MACH-101274	Rail System Technology	9 CR
M-WIWI-104838	Introduction to Natural Hazards and Risk Analysis <i>First usage possible from 4/1/2019.</i>	9 CR
M-MACH-101269	Introduction to Technical Logistics	9 CR
M-ETIT-102379	Power Network	9 CR
M-MACH-101264	Handling Characteristics of Motor Vehicles	9 CR
M-MACH-101265	Vehicle Development	9 CR
M-MACH-101266	Automotive Engineering	9 CR
M-MACH-101276	Manufacturing Technology	9 CR
M-BGU-101004	Fundamentals of Construction	9 CR
M-MACH-101272	Integrated Production Planning	9 CR
M-MACH-101299	Mechanical Design	9 CR
M-MACH-101287	Microsystem Technology	9 CR
M-MACH-101267	Mobile Machines	9 CR
M-BGU-101067	Mobility and Infrastructure	9 CR
M-MACH-101270	Product Lifecycle Management	9 CR
M-ETIT-101156	Control Engineering	9 CR
M-MACH-101275	Combustion Engines I	9 CR
M-MACH-101303	Combustion Engines II	9 CR
M-MACH-101284	Specialization in Production Engineering	9 CR
M-MACH-101261	Emphasis in Fundamentals of Engineering	9 CR
M-MACH-101262	Emphasis Materials Science	9 CR
M-MACH-101286	Machine Tools and Industrial Handling	9 CR

5.8 Mathematics

Credits

21

Mandatory		
M-MATH-101676	Mathematics 1	7 CR
M-MATH-101677	Mathematics 2	7 CR
M-MATH-101679	Mathematics 3	7 CR

5.9 Statistics**Credits**
10

Mandatory		
M-WIWI-101432	Introduction to Statistics	10 CR

5.10 Compulsory Elective Modules

Credits

21

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.

Election regulations

Elections in this field must be complete.

Mandatory		
M-WIWI-101816	Seminar Module	3 CR
Election block: Betriebswirtschaftslehre oder Ingenieurwissenschaften (9 credits)		
M-WIWI-101404	Extracurricular Module in Engineering	9 CR
M-MACH-101274	Rail System Technology	9 CR
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101460	CRM and Service Management	9 CR
M-WIWI-101434	eBusiness and Service Management	9 CR
M-MACH-101269	Introduction to Technical Logistics	9 CR
M-WIWI-101402	eFinance	9 CR
M-WIWI-104838	Introduction to Natural Hazards and Risk Analysis <i>First usage possible from 4/1/2019.</i>	9 CR
M-ETIT-102379	Power Network	9 CR
M-ETIT-101165	Energy Generation and Network Components	9 CR
M-WIWI-101464	Energy Economics	9 CR
M-WIWI-101435	Essentials of Finance	9 CR
M-MACH-101264	Handling Characteristics of Motor Vehicles	9 CR
M-MACH-101265	Vehicle Development	9 CR
M-MACH-101266	Automotive Engineering	9 CR
M-MACH-101276	Manufacturing Technology	9 CR
M-WIWI-102752	Fundamentals of Digital Service Systems	9 CR
M-BGU-101004	Fundamentals of Construction	9 CR
M-WIWI-101424	Foundations of Marketing	9 CR
M-WIWI-101437	Industrial Production I	9 CR
M-WIWI-104911	Information Systems & Digital Business: Interaction <i>First usage possible from 4/1/2019.</i>	9 CR
M-WIWI-104912	Information Systems & Digital Business: Platforms <i>First usage possible from 4/1/2019.</i>	9 CR
M-WIWI-104913	Information Systems & Digital Business: Servitization <i>First usage possible from 4/1/2019.</i>	9 CR
M-MACH-101272	Integrated Production Planning	9 CR
M-MACH-101299	Mechanical Design	9 CR
M-MACH-101287	Microsystem Technology	9 CR
M-MACH-101267	Mobile Machines	9 CR
M-BGU-101067	Mobility and Infrastructure	9 CR
M-WIWI-101513	Human Resources and Organizations	9 CR
M-MACH-101270	Product Lifecycle Management	9 CR
M-WIWI-101466	Real Estate Management	9 CR
M-ETIT-101156	Control Engineering	9 CR
M-WIWI-101436	Risk and Insurance Management	9 CR

M-WIWI-101425	Strategy and Organization	9 CR
M-WIWI-101421	Supply Chain Management	9 CR
M-WIWI-101465	Topics in Finance I	9 CR
M-WIWI-101423	Topics in Finance II	9 CR
M-WIWI-101422	Specialization in Customer Relationship Management	9 CR
M-MACH-101261	Emphasis in Fundamentals of Engineering	9 CR
M-MACH-101275	Combustion Engines I	9 CR
M-MACH-101303	Combustion Engines II	9 CR
M-MACH-101284	Specialization in Production Engineering	9 CR
M-MACH-101262	Emphasis Materials Science	9 CR
M-MACH-101286	Machine Tools and Industrial Handling	9 CR
Election block: Betriebswirtschaftslehre (at most 9 credits)		
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101460	CRM and Service Management	9 CR
M-WIWI-101434	eBusiness and Service Management	9 CR
M-WIWI-101402	eFinance	9 CR
M-WIWI-101464	Energy Economics	9 CR
M-WIWI-101435	Essentials of Finance	9 CR
M-WIWI-102752	Fundamentals of Digital Service Systems	9 CR
M-WIWI-101424	Foundations of Marketing	9 CR
M-WIWI-101437	Industrial Production I	9 CR
M-WIWI-104911	Information Systems & Digital Business: Interaction <i>First usage possible from 4/1/2019.</i>	9 CR
M-WIWI-104912	Information Systems & Digital Business: Platforms <i>First usage possible from 4/1/2019.</i>	9 CR
M-WIWI-104913	Information Systems & Digital Business: Servitization <i>First usage possible from 4/1/2019.</i>	9 CR
M-WIWI-101513	Human Resources and Organizations	9 CR
M-WIWI-101466	Real Estate Management	9 CR
M-WIWI-101436	Risk and Insurance Management	9 CR
M-WIWI-101425	Strategy and Organization	9 CR
M-WIWI-101421	Supply Chain Management	9 CR
M-WIWI-101465	Topics in Finance I	9 CR
M-WIWI-101423	Topics in Finance II	9 CR
M-WIWI-101422	Specialization in Customer Relationship Management	9 CR
Election block: Volkswirtschaftslehre (at most 9 credits)		
M-WIWI-101499	Applied Microeconomics	9 CR
M-WIWI-101403	Public Finance	9 CR
M-WIWI-101668	Economic Policy I	9 CR
M-WIWI-101501	Economic Theory	9 CR
Election block: Informatik (at most 9 credits)		
M-WIWI-101426	Electives in Informatics	9 CR
Election block: Operations Research (at most 9 credits)		
M-WIWI-101413	Applications of Operations Research	9 CR
M-WIWI-101414	Methodical Foundations of OR	9 CR
M-WIWI-103278	Optimization under Uncertainty	9 CR
Election block: Ingenieurwissenschaften (at most 9 credits)		
M-WIWI-101404	Extracurricular Module in Engineering	9 CR
M-MACH-101274	Rail System Technology	9 CR
M-WIWI-104838	Introduction to Natural Hazards and Risk Analysis <i>First usage possible from 4/1/2019.</i>	9 CR

M-MACH-101269	Introduction to Technical Logistics	9 CR
M-ETIT-102379	Power Network	9 CR
M-MACH-101264	Handling Characteristics of Motor Vehicles	9 CR
M-MACH-101265	Vehicle Development	9 CR
M-MACH-101266	Automotive Engineering	9 CR
M-MACH-101276	Manufacturing Technology	9 CR
M-BGU-101004	Fundamentals of Construction	9 CR
M-MACH-101272	Integrated Production Planning	9 CR
M-MACH-101299	Mechanical Design	9 CR
M-MACH-101287	Microsystem Technology	9 CR
M-MACH-101267	Mobile Machines	9 CR
M-BGU-101067	Mobility and Infrastructure	9 CR
M-MACH-101270	Product Lifecycle Management	9 CR
M-ETIT-101156	Control Engineering	9 CR
M-MACH-101275	Combustion Engines I	9 CR
M-MACH-101303	Combustion Engines II	9 CR
M-MACH-101284	Specialization in Production Engineering	9 CR
M-MACH-101261	Emphasis in Fundamentals of Engineering	9 CR
M-MACH-101262	Emphasis Materials Science	9 CR
M-MACH-101286	Machine Tools and Industrial Handling	9 CR
Election block: Statistik (at most 9 credits)		
M-WIWI-101599	Statistics and Econometrics	9 CR
Election block: Recht oder Soziologie (at most 9 credits)		
M-INFO-101187	Elective Module Law	9 CR
M-GEISTSOZ-101167	Sociology/Empirical Social Research	9 CR

6 Modules

M

6.1 Module: Additional Fundamentals of Engineering [M-WIWI-101839]

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

Organisation: KIT Department of Economics and Management

Part of: [Engineering Sciences \(mandatory\)](#)

Credits	Language	Level	Version
3	Deutsch	3	4

Election block: Wahlpflichtangebot (between 3 and 5 credits)			
T-MACH-102079	Material Science II for Business Engineers	5 CR	Hoffmann
T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics	5 CR	Fidlin
T-CIWVT-106058	Process fundamentals by the example of food production	3 CR	Gaukel
T-ETIT-100534	Electrical Engineering for Business Engineers, Part II	5 CR	Menesklou

Competence Certificate

See course description.

Competence Goal

See German version.

Prerequisites

None

Content

The module focuses on basic engineering topics related to materials science, engineering mechanics and food processing.

Annotation

The course T-ETIT-100534 "Electrical Engineering for Business Engineers, Part II" is only offered temporarily in the module. It should be pointed out that "Material Science II for Business Engineers" and "Electrical Engineering for Business Engineers, Part II" are not offered in winter term, but only in summer term.

Workload

The total workload for this module is approximately 90 hours.

M

6.2 Module: Applications of Operations Research [M-WIWI-101413]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [Operations Research \(Vertiefungsprogramm Operations Research\)](#)
[Compulsory Elective Modules \(Operations Research\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	8

Election block: Wahlpflichtangebot (between 1 and 2 items)			
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 CR	Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management	4,5 CR	Nickel
Election block: Ergänzungsangebot (at most 1 item)			
T-WIWI-102726	Global Optimization I	4,5 CR	Stein
T-WIWI-106199	Modeling and OR-Software: Introduction	4,5 CR	Nickel
T-WIWI-106545	Optimization under Uncertainty	5 CR	Rebennack

Competence Certificate

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 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 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.

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.

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101418 - Introduction to Operations Research](#) must have been passed.

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 Supply 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.

Recommendation

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

Annotation

The planned lectures and courses for the next three years are announced online.

Workload

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

M

6.3 Module: Applied Microeconomics [M-WIWI-101499]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: [Economics \(Vertiefungsprogramm Volkswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Volkswirtschaftslehre\)](#)

Credits
9

Recurrence
Each term

Language
Deutsch

Level
3

Version
2

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-102850	Introduction to Game Theory	4,5 CR	Puppe, Reiß
T-WIWI-102844	Industrial Organization	4,5 CR	Reiß
T-WIWI-100005	Competition in Networks	4,5 CR	Mitusch
T-WIWI-102739	Public Revenues	4,5 CR	Wigger
T-WIWI-102876	Auction & Mechanism Design	4,5 CR	Szech
T-WIWI-102892	Economics and Behavior	4,5 CR	Szech
T-WIWI-102792	Decision Theory	4,5 CR	Ehrhart
T-WIWI-102736	Economics III: Introduction in Econometrics	5 CR	Schientle

Competence Certificate

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

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").

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101398 - Introduction to Economics](#) must have been passed.

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.

Recommendation

Completion of the module Economics is assumed.

Workload

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

M

6.4 Module: Automotive Engineering [M-MACH-101266]

Responsible: Prof. Dr. Frank Gauterin
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	Deutsch/Englisch	4	2

Election block: Fahrzeugtechnik (at least 9 credits)			
T-MACH-100092	Automotive Engineering I	6 CR	Gauterin, Unrau
T-MACH-102117	Automotive Engineering II	3 CR	Gauterin, Unrau
T-MACH-102156	Project Workshop: Automotive Engineering	4,5 CR	Frey, Gauterin, Gießler
T-MACH-102116	Fundamentals for Design of Motor-Vehicle Bodies I	1,5 CR	Bardehle
T-MACH-102119	Fundamentals for Design of Motor-Vehicle Bodies II	1,5 CR	Bardehle
T-MACH-102093	Fluid Power Systems	5 CR	Geimer, Pult
T-MACH-102150	BUS-Controls	3 CR	Becker, Geimer
T-MACH-108889	BUS-Controls - Advance	0 CR	Daiß, Geimer

Competence Certificate

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 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 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.
2. The module [M-MACH-101260 - Materials Science](#) must have been passed.
3. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
4. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.

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.

Recommendation

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

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.

Learning type

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

M

6.5 Module: Combustion Engines I [M-MACH-101275]

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

Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each winter term	1 semester	4	2

Mandatory			
T-MACH-102194	Combustion Engines I	5 CR	Koch, Kubach
T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines	4 CR	Koch, Kubach

Competence Certificate

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

Competence Goal

The student can name and explain the working principle 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

Working Principle of ICE
Characteristic Parameters
Characteristic parameters
Engine parts
Crank drive
Fuels
Gasoline engine operation modes
Diesel engine operation modes
Emissions
Fundamentals of ICE combustion
Thermodynamics of ICE
Flow field
Wall heat losses
Combustion in Gasoline and Diesel engines
Heat release calculation
Waste heat recovery

Workload

regular attendance: 62 hours
self-study: 208 hours

M

6.6 Module: Combustion Engines II [M-MACH-101303]

Responsible: Dr.-Ing. Heiko Kubach
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Level	Version
9	Each term	4	1

Mandatory			
T-MACH-104609	Combustion Engines II	5 CR	Koch, Kubach
Election block: Verbrennungsmotoren II (at least 4 credits)			
T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment	4 CR	Deutschmann, Grunwaldt, Kubach, Lox
T-MACH-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines	4 CR	Gohl
T-MACH-105184	Fuels and Lubricants for Combustion Engines	4 CR	Kehrwald, Kubach
T-MACH-105167	Analysis Tools for Combustion Diagnostics	4 CR	Pfeil
T-MACH-102197	Gas Engines	4 CR	Golloch
T-MACH-102199	Model Based Application Methods	4 CR	Kirschbaum
T-MACH-105169	Engine Measurement Techniques	4 CR	Bernhardt

Competence Certificate

The assessment consists of an oral exam (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.

Competence Goal

See courses.

Prerequisites

It is only possible to choose this module in combination with the module *Combustion Engines I*. The module is passed only after the final partial exam of *Combustion Engines I* is additionally passed.

The course *Combustion Engines II* [2134131] has to be attended.

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101275 - Combustion Engines I](#) must have been started.
2. The module [M-MACH-101260 - Materials Science](#) must have been passed.
3. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
4. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
5. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

Compulsory:

Supercharging and air management

Engine maps Emissions and Exhaust gas aftertreatment

Transient engine operation ECU 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

M

6.7 Module: Control Engineering [M-ETIT-101156]

- Responsible:** Prof. Dr.-Ing. Sören Hohmann
Dr.-Ing. Mathias Kluge
- Organisation:** KIT Department of Electrical Engineering and Information Technology
- Part of:** [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	4	1

Mandatory			
T-ETIT-100699	Modelling and Identification	4 CR	Hohmann
T-ETIT-101921	System Dynamics and Control Engineering	6 CR	Hohmann

Competence Goal

The students

- get familiar with the basic concepts of control theory,
- learn and understand the elements, the structure and the behavior of dynamic systems,
- have insight in the problems of control and intuition about methods available to solve those problems as well in frequency domain as in time domain,
- get familiar with the basic principles and methods for the theoretical and experimental modelling of dynamic systems.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

This module familiarizes students with the basic elements, structures and the behavior of dynamic systems. Both time continuous and time discrete models are regarded. The students gain insight into the problems of control design and methods available to solve such problems in frequency and time domain. Above that, the students learn the basic principles and methods for the theoretical and experimental modelling of dynamic systems.

M

6.8 Module: CRM and Service Management [M-WIWI-101460]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	1

Election block: Wahlpflichtangebot (2 items)			
T-WIWI-102596	Analytical CRM	4,5 CR	Geyer-Schulz
T-WIWI-102597	Operative CRM	4,5 CR	Geyer-Schulz
T-WIWI-102595	Customer Relationship Management	4,5 CR	Geyer-Schulz

Competence Certificate

The assessment is carried out as partial exams (according to § 4 (1) S. 2 2nd clause 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.

Competence Goal

The student

- understands service management as the managerial foundation of customer relationship management and the resulting implications for strategic management, the organisational structure, and the functional areas of the company,
- develops and designs service concepts and service systems on a conceptual level,
- works in teams on case studies and respects project dates, integrates international literature of the discipline,
- knows the current developments in CRM in science as well as in industry,
- knows the scientific methods (from business administration, statistics, informatics) which are most relevant for analytic CRM and he autonomously applies these methods to standard cases,
- designs, implements, and analyzes operative CRM processes in concrete application domains (e.g. campaign management, call center management, ...).

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

In the module CRM and Service Management we teach the principles of modern customer-oriented management and its support by system architectures and CRM software packages. Choosing customer relationship management as a company's strategy requires service management and a strict implementation of service management in all parts of the company.

For operative CRM we present the design of customer-oriented, IT-supported business processes based on business process modelling and we explain these processes in concrete application scenarios (e.g. marketing campaign management, call center management, sales force management, field services, ...).

Analytic CRM is dedicated to improve the use of knowledge about customers in the broadest sense for decision-making (e.g. product-mix decisions, bonus programs based on customer loyalty, ...) and for the improvement of services. A requirement for this is the tight integration of operative systems with a data warehouse, the development of customer-oriented and flexible reporting systems, and – last but not least – the application of statistical methods (clustering, regression, stochastic models, ...).

Annotation

The lecture *Customer Relationship Management* [2540508] is given in English.

Workload

The total amount of work for this module is approximately 270 hours (9 credits). The subdivision is based on the credits of the courses of the module.

The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam periods and the time that is required to achieve the objectives of the module as an average student with an average performance.

M

6.9 Module: Design, Construction and Sustainability Assessment of Buildings [M-WIWI-101467]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf

Organisation: KIT Department of Economics and Management

Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	2

Mandatory			
T-WIWI-102742	Design, Construction and Sustainability Assessment of Buildings I	4,5 CR	Lützkendorf
T-WIWI-102743	Design, Construction and Sustainability Assessment of Buildings II	4,5 CR	Lützkendorf

Competence Certificate

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.

Competence Goal

The student

- knows the basics of sustainable design, construction and operation of buildings with an emphasis on building ecology
- has knowledge of building ecology assessment procedures and tools for design and assessment
- is capable of applying this knowledge to assessing the ecological advantageousness of buildings as well as their contribution to a sustainable development.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

Sustainable design, construction and operation of buildings currently are predominant topics of the real estate sector, as well as "green buildings". Not only designers and civil engineers, but also other actors who are concerned with project development, financing and insurance of buildings or portfolio management are interested in these topics.

On the one hand the courses included in this module cover the basics of energy-efficient, resource-saving and health-supporting design and construction of buildings. On the other hand fundamental assessment procedures for analysing and communicating the ecological advantageousness of technical solutions are discussed. With the basics of green building certification systems the lectures provide presently strongly demanded knowledge.

Additionally, videos and simulation tools are used for providing a better understanding of the content of teaching.

Recommendation

The combination with the module *Real Estate Management* is recommended.

Furthermore a combination with courses in the area of

- Industrial production (energy flow in the economy, energy politics, emissions)
- Civil engineering and architecture (building physics, building construction)

is recommended.

Workload

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

M

6.10 Module: eBusiness and Service Management [M-WIWI-101434]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Language	Level	Version
9	Deutsch	3	7

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-109938	Digital Services	4,5 CR	
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-109936	Platform Economy	4,5 CR	Weinhardt
T-WIWI-109940	Special Topics in Information Systems	4,5 CR	Weinhardt
T-WIWI-109808	Wildcard eBusiness and Service Management	4,5 CR	

Competence Certificate

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.

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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

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 services.

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.

Annotation

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

6.11 Module: Economic Policy I [M-WIWI-101668]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [Economics \(Vertiefungsprogramm Volkswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Volkswirtschaftslehre\)](#)

Credits	Recurrence	Language	Level	Version
9	Each term	Deutsch	3	7

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-103213	Basic Principles of Economic Policy	4,5 CR	Ott
T-WIWI-109121	Macroeconomic Theory	4,5 CR	Brumm
T-WIWI-102739	Public Revenues	4,5 CR	Wigger
T-WIWI-102908	Personnel Policies and Labor Market Institutions	4,5 CR	Nieken
T-WIWI-100005	Competition in Networks	4,5 CR	Mitsch

Competence Certificate

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

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

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

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101398 - Introduction to Economics](#) must have been passed.

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

Recommendation

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

Workload

Total expenditure of time for 9 credits: 270 hours.

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

The exact distribution is subject to the credits of the courses of the module.

M

6.12 Module: Economic Theory [M-WIWI-101501]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: [Economics \(Vertiefungsprogramm Volkswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Volkswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	2

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 CR	Mitusch
T-WIWI-102876	Auction & Mechanism Design	4,5 CR	Szech
T-WIWI-102892	Economics and Behavior	4,5 CR	Szech
T-WIWI-102850	Introduction to Game Theory	4,5 CR	Puppe, Reiß
T-WIWI-102844	Industrial Organization	4,5 CR	Reiß
T-WIWI-109121	Macroeconomic Theory	4,5 CR	Brumm
T-WIWI-102610	Welfare Economics	4,5 CR	Puppe

Competence Certificate

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 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

See German version.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101398 - Introduction to Economics](#) must have been passed.

Content

The lecture Introduction to Game Theory focuses on the basics of non-cooperative game theory. Model assumptions, solution concepts and applications are discussed in detail both for simultaneous games (normal form games) and for sequential games (extensive form games). Classical equilibrium concepts like the Nash equilibrium or the subgame perfect equilibrium, but also advanced concepts will be discussed in detail. If necessary, a brief insight into cooperative game theory will also be given.

The course Auction & Mechanism Design starts with the basic theory of equilibrium behavior and yield management in single object standard auctions. After introducing the yield equivalence theorem for standard auctions, the focus shifts to mechanism design and its applications for single-object auctions and bilateral exchanges.

The course Economics and Behavior introduces fundamental topics of behavioural economics in terms of content and methodology. Students will also gain insight into the design of economic experimental studies. Students will also be introduced to the reading of and critical examination of current research in behavioural economics.

Recommendation

None

Annotation

The course T-WIWI-102609 - Advanced Topics in Economic Theory is currently not available.

M

6.13 Module: eFinance [M-WIWI-101402]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	5

Mandatory			
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
Election block: Ergänzungsangebot (4,5 credits)			
T-WIWI-102625	Exchanges	1,5 CR	Franke
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg

Competence Certificate

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.

Competence Goal

The students

- are able to understand and analyse the value creation chain in stock broking,
- are able to adequately 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

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

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

The module "eFinance: Information engineering and management in finance" 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 addition 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 supplementary understanding for capital markets.

Information management topics are in the focus of the lecture "eFinance: information engineering and management 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.

Annotation

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

6.14 Module: Elective Module Law [M-INFO-101187]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [Compulsory Elective Modules \(Recht oder Soziologie\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	1

Mandatory			
T-INFO-101963	Public Law I - Basic Principles	3 CR	Marsch
T-INFO-102042	Public Law II	3 CR	Marsch
T-INFO-103339	Civil Law for Beginners	4 CR	Dreier

Competence Certificate

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 take place in every semester. Re-examinations are offered at every ordinary examination date. 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

Workload

See German version.

M

6.15 Module: Electives in Informatics [M-WIWI-101426]

Responsible: Prof. Dr. Andreas Oberweis
 Prof. Dr. Ali Sunyaev
 Prof. Dr. York Sure-Vetter
 Prof. Dr. Melanie Volkamer

Organisation: KIT Department of Economics and Management

Part of: [Compulsory Elective Modules \(Informatik\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	9

Election block: Wahlpflichtangebot (between 9 and 10 credits)			
T-WIWI-109263	Applications of Artificial Intelligence	5 CR	Sure-Vetter
T-WIWI-102652	Applied Informatics I - Modelling	5 CR	Oberweis, Sure-Vetter
T-WIWI-109445	Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	5 CR	Sunyaev
T-WIWI-102660	Database Systems	5 CR	Oberweis
T-WIWI-108716	Interdisciplinary Approach to Verifiable e-Voting	4 CR	Volkamer
T-WIWI-104679	Foundations of Mobile Business	5 CR	Oberweis, Schiefer
T-WIWI-108387	Information Security	5 CR	Volkamer
T-WIWI-100809	Software Engineering	4 CR	Oberweis
T-WIWI-102910	Special Topics of Applied Informatics	5 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner
T-WIWI-110108	Visual Computing	5 CR	Landesberger von Antburg

Competence Certificate

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.

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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.
2. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.

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

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

M

6.16 Module: Electrical Engineering [M-ETIT-101155]

Responsible: Dr. Wolfgang Menesklou
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: [Engineering Sciences \(mandatory\)](#)

Credits	Recurrence	Duration	Level	Version
3	Each winter term	1 semester	3	1

Mandatory			
T-ETIT-100533	Electrical Engineering for Business Engineers, Part I	3 CR	Menesklou

Competence Certificate

The assessment of the module is carried out by a written examination about the lecture *Electrical Engineering I* [23223] (according to Section 4(2), 1 of the examination regulation).

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

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.

Workload

See German version.

M

6.17 Module: Emphasis in Fundamentals of Engineering [M-MACH-101261]

Responsible: Prof. Dr. Michael Hoffmann
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each summer term	1 semester	4	1

Election block: Vertiefung ingenieurwissenschaftlicher Grundlagen (at least 9 credits)			
T-ETIT-100534	Electrical Engineering for Business Engineers, Part II	5 CR	Menesklou
T-MACH-102079	Material Science II for Business Engineers	5 CR	Hoffmann
T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics	5 CR	Fidlin

Competence Certificate

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 separately. 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

The module content depends on the elected courses.

Annotation

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

6.18 Module: Emphasis Informatics [M-WIWI-101399]

Responsible: Prof. Dr. Andreas Oberweis
 Prof. Dr. Ali Sunyaev
 Prof. Dr. York Sure-Vetter
 Prof. Dr. Melanie Volkamer

Organisation: KIT Department of Economics and Management

Part of: **Informatics (Vertiefungsprogramm Informatik)**

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	9

Election block: Wahlpflichtangebot (5 credits)			
T-WIWI-102747	Advanced Programming - Java Network Programming	5 CR	Ratz
T-WIWI-102748	Advanced Programming - Application of Business Software	5 CR	Klink, Oberweis
Election block: Ergänzungsangebot (between 4 and 5 credits)			
T-WIWI-102652	Applied Informatics I - Modelling	5 CR	Oberweis, Sure-Vetter
T-WIWI-109445	Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	5 CR	Sunyaev
T-WIWI-109263	Applications of Artificial Intelligence	5 CR	Sure-Vetter
T-WIWI-102660	Database Systems	5 CR	Oberweis
T-WIWI-108716	Interdisciplinary Approach to Verifiable e-Voting	4 CR	Volkamer
T-WIWI-104679	Foundations of Mobile Business	5 CR	Oberweis, Schiefer
T-WIWI-108387	Information Security	5 CR	Volkamer
T-WIWI-100809	Software Engineering	4 CR	Oberweis
T-WIWI-102910	Special Topics of Applied Informatics	5 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner
T-WIWI-110108	Visual Computing	5 CR	Landesberger von Antburg

Competence Certificate

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 alternatively *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,
- is familiar with methods and systems of a core topic or core application area 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.

Prerequisites

Successful passing of the corresponding modules of the basic program (except *Advanced Programming - Java Network Programming* and *Advanced Programming - Application of Business Software*).

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

6.19 Module: Emphasis Materials Science [M-MACH-101262]

Responsible: Prof. Dr. Michael Hoffmann
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	4	1

Election block: Vertiefung Werkstoffkunde (at least 9 credits)			
T-MACH-102079	Material Science II for Business Engineers	5 CR	Hoffmann
T-MACH-102141	Constitution and Properties of Wearresistant Materials	4 CR	Ulrich
T-MACH-100287	Introduction to Ceramics	6 CR	Hoffmann
T-MACH-102102	Physical Basics of Laser Technology	5 CR	Schneider
T-MACH-102137	Polymer Engineering I	4 CR	Elsner
T-MACH-102138	Polymer Engineering II	4 CR	Elsner
T-MACH-102139	Failure of Structural Materials: Fatigue and Creep	4 CR	Gruber, Gumbsch
T-MACH-102140	Failure of Structural Materials: Deformation and Fracture	4 CR	Gumbsch, Weygand
T-MACH-102157	High Performance Powder Metallurgy Materials	4 CR	Oberacker
T-MACH-102179	Structural Ceramics	4 CR	Hoffmann
T-MACH-102170	Structural and Phase Analysis	4 CR	Wagner
T-MACH-100531	Systematic Materials Selection	4 CR	Dietrich

Competence Certificate

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 separately.

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 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

The module content depends on the elected courses.

Workload

The module requires an average workload of 270 hours.

M

6.20 Module: Energy Economics [M-WIWI-101464]**Responsible:** Prof. Dr. Wolf Fichtner**Organisation:** KIT Department of Economics and Management**Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	2

Mandatory			
T-WIWI-102746	Introduction to Energy Economics	5,5 CR	Fichtner
Election block: Ergänzungsangebot (3,5 credits)			
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics	3,5 CR	Jochem, McKenna
T-WIWI-102607	Energy Policy	3,5 CR	Wietschel

Competence Certificate

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 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 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

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

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

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.)

Recommendation

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.

Annotation

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 approximately 270 hours. For further information see German version.

M

6.21 Module: Energy Generation and Network Components [M-ETIT-101165]

Responsible: Dr.-Ing. Bernd Hoferer
Prof. Dr.-Ing. Thomas Leibfried

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: **Compulsory Elective Modules (Betriebswirtschaftslehre oder Ingenieurwissenschaften)**

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	1

Mandatory			
T-ETIT-101924	Power Generation	3 CR	Hoferer
T-ETIT-101925	Design and Operation of Power Transformers	3 CR	Mitarbeiter, N.

Competence Certificate

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 separately.

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

Competence Goal

The student

- has basic and advanced knowledge of electrical power engineering,
- is capable to analyse, calculate and develop electrical power engineering systems.

Prerequisites

It is only possible to choose this module in combination with the module *Power Networks* [WW3INGETIT3]. The module is passed only after the final partial exam of *Power Networks* is additionally passed.

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module **M-ETIT-102379 - Power Network** must have been started.
2. The module **M-MACH-101260 - Materials Science** must have been passed.
3. The module **M-ETIT-101155 - Electrical Engineering** must have been passed.
4. The module **M-WIWI-101839 - Additional Fundamentals of Engineering** must have been passed.
5. The module **M-MACH-101259 - Engineering Mechanics** must have been passed.

Content

The module deals with basic knowledge about the structure and operation of electrical power networks and their needed facilities. Further lectures give an insight into specific topics, such as Automation in electric power engineering or the procedures for generating electrical energy.

Workload

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

M

6.22 Module: Engineering Mechanics [M-MACH-101259]

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

Part of: **Engineering Sciences (mandatory)**

Credits	Recurrence	Duration	Language	Level	Version
3	Each winter term	1 semester	Deutsch	3	1

Mandatory			
T-MACH-102208	Introduction to Engineering Mechanics I: Statics and Strength of Materials	3 CR	Fidlin

Competence Certificate

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 every ordinary examination date.

Permitted utilities: non-programmable calculator, literature

Competence Goal

The student

- knows and understands the basic elements of statics,
- is able to solve basic problems in statics independently.

Prerequisites

None

Content

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

Annotation

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

Learning type

Lecture and exercises

M

6.23 Module: Essentials of Finance [M-WIWI-101435]

- Responsible:** Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg
- Organisation:** KIT Department of Economics and Management
- Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each summer term	1 semester	3	1

Mandatory			
T-WIWI-102604	Investments	4,5 CR	Uhrig-Homburg
T-WIWI-102605	Financial Management	4,5 CR	Ruckes

Competence Certificate

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 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 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

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

6.24 Module: Extracurricular Module in Engineering [M-WIWI-101404]

Responsible: Prüfungsausschuss der KIT-Fakultät für Wirtschaftswissenschaften
Organisation: KIT Department of Economics and Management
Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Level	Version
9	Once	3	3

Election block: Wahlpflichtangebot (between 9 and 12 credits)			
T-WIWI-106291	PH APL-ING-TL01	3 CR	
T-WIWI-106292	PH APL-ING-TL02	3 CR	
T-WIWI-106293	PH APL-ING-TL03	3 CR	
T-WIWI-106294	PH APL-ING-TL04 ub	0 CR	
T-WIWI-106295	PH APL-ING-TL05 ub	0 CR	
T-WIWI-106296	PH APL-ING-TL06 ub	0 CR	
T-WIWI-108384	PH APL-ING-TL07	3 CR	

Competence Certificate

The assessment of the module is determined by the respective module coordinator. 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.

Competence Goal

See German version.

Prerequisites

See German version.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

M

6.25 Module: Foundations of Informatics [M-WIWI-101417]

Responsible: Dr. rer. nat. Pradyumn Kumar Shukla
Prof. Dr. York Sure-Vetter

Organisation: KIT Department of Economics and Management

Part of: **Informatics (mandatory)**

Credits	Recurrence	Duration	Level	Version
10	Each term	2 semester	3	1

Mandatory			
T-WIWI-102749	Foundations of Informatics I	5 CR	Sure-Vetter
T-WIWI-102707	Foundations of Informatics II	5 CR	Rettinger

Competence Certificate

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.

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.

Prerequisites

None

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.

Recommendation

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*

Workload

The total workload for this module is approximately 300 hours.

M

6.26 Module: Foundations of Marketing [M-WIWI-101424]**Responsible:** Prof. Dr. Martin Klarmann**Organisation:** KIT Department of Economics and Management**Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	4

Mandatory			
T-WIWI-102805	Managing the Marketing Mix	4,5 CR	Klarmann
Election block: Ergänzungsangebot (at least 4,5 credits)			
T-WIWI-102806	Services Marketing and B2B Marketing	3 CR	Klarmann
T-WIWI-102807	International Marketing	1,5 CR	Feurer

Competence Certificate

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

Successful passing of the corresponding modules of the basic program.

The course *Marketing Mix* is compulsory and must be examined.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

The core course of the module is "Marketing Mix". This course is compulsory and must be examined. "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).

To deepen the marketing knowledge students can complete the courses "Services- and B2B-Marketing" and "International Marketing".

Annotation

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Workload

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

M

6.27 Module: Fundamentals of Business Administration 1 [M-WIWI-101494]

Responsible: Prof. Dr. Martin Ruckes
 Prof. Dr. Marliese Uhrig-Homburg
 Prof. Dr. Marcus Wouters

Organisation: KIT Department of Economics and Management

Part of: **Business Administration (mandatory)**

Credits	Recurrence	Duration	Level	Version
7	Each term	3 semester	3	1

Mandatory			
T-WIWI-102817	Business Administration: Strategic Management and Information Engineering and Management	3 CR	Nieken, Ruckes
T-WIWI-102819	Business Administration: Finance and Accounting	4 CR	Ruckes, Uhrig-Homburg, Wouters

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the individual courses 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 procedure of each course of this module is defined for each course 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 student

- has core skills in business administration in particular with respect to decision making and the model based view of business corporations
- masters the fundamentals of business and information management as well as the fundamentals business finance and the principles of business accounting
- is able to analyze and assess central tasks, functions and decisions in modern corporations

The knowledge of the two fundamentals modules in business administration forms the basis for the successful completion of advanced courses in the field of business administration and management.

Prerequisites

None

Content

This module provides the fundamentals of business administration and management. Further, the module focuses on the fields of management and organization, information engineering and management, investment and financing as well as of the principles of management and financial accounting.

Recommendation

It is strongly recommended to take the courses in the first semester of study.

Workload

The total workload of the module is about 210 hours. The workload is proportional to the credit points of the individual courses.

M

6.28 Module: Fundamentals of Business Administration 2 [M-WIWI-101578]

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

Organisation: KIT Department of Economics and Management

Part of: **Business Administration (mandatory)**

Credits	Language	Level	Version
8	Deutsch	3	1

Mandatory			
T-WIWI-102818	Business Administration: Production Economics and Marketing	4 CR	Fichtner, Klarmann, Lützkendorf, Ruckes, Schultmann
T-WIWI-102816	Financial Accounting and Cost Accounting	4 CR	Strych

Competence Certificate

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 examinations take place at the beginning of the recess period. Re-examinations are offered at every ordinary examination date. The assessment procedures of each course of this module is defined for each course 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 student

- has core skills in business administration in particular with respect to decision making and the model based view of business corporations
- masters the fundamentals of production and operations management and marketing as well as the fundamentals of management and financial accounting
- is able to analyze and assess central tasks, functions and decisions in modern corporations

The knowledge of the two fundamentals modules in business administration forms the basis for the successful completion of advanced courses in the field of business administration and management.

Prerequisites

None

Content

The basics of internal and external accounting and general business administration are taught as the theory of business in the company. Building on this, the focus will be on marketing and production management.

Recommendation

It is strongly recommended to take the courses in the second semester (Betriebswirtschaftslehre: Produktionswirtschaft und Marketing) and third semester (Rechnungswesen) of study.

Workload

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

M

6.29 Module: Fundamentals of Construction [M-BGU-101004]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	Deutsch	3	1

Mandatory			
T-BGU-101691	Construction Technology	6 CR	Haghsheno
T-BGU-101675	Project Management	3 CR	Haghsheno

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 fundamentals of project management in civil engineering
- can apply his / her knowledge in a goal-oriented manner to accomplish a construction project efficiently

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Recommendation

None

Annotation

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.

M

6.30 Module: Fundamentals of Digital Service Systems [M-WIWI-102752]

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

Organisation: KIT Department of Economics and Management

Part of: **Business Administration (Vertiefungsprogramm Betriebswirtschaftslehre)**
Compulsory Elective Modules (Betriebswirtschaftslehre oder Ingenieurwissenschaften)
Compulsory Elective Modules (Betriebswirtschaftslehre)

Credits	Language	Level	Version
9	Deutsch	3	4

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-109938	Digital Services	4,5 CR	
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-105711	Practical Seminar Digital Services	4,5 CR	Fichtner, Mädche, Nickel, Satzger, Sure-Vetter, Weinhardt

Competence Certificate

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.

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

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module **M-WIWI-101494 - Fundamentals of Business Administration 1** must have been passed.
2. The module **M-WIWI-101578 - Fundamentals of Business Administration 2** must have been passed.

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 pushsthe 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.

Recommendation

None

Annotation

This module is part of the KSRI teaching profile “Digital Service Systems”. Further information on a service-specific profiling is available under www.ksri.kit.edu/teaching.

Workload

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

M

6.31 Module: Handling Characteristics of Motor Vehicles [M-MACH-101264]

Responsible: Prof. Dr. Frank Gauterin
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Once	1 semester	Deutsch/Englisch	4	3

Election block: Fahrzeugeigenschaften (at least 9 credits)			
T-MACH-105152	Handling Characteristics of Motor Vehicles I	3 CR	Unrau
T-MACH-105153	Handling Characteristics of Motor Vehicles II	3 CR	Unrau
T-MACH-105154	Vehicle Comfort and Acoustics I	3 CR	Gauterin
T-MACH-105155	Vehicle Comfort and Acoustics II	3 CR	Gauterin
T-MACH-105156	Vehicle Mechatronics I	3 CR	Ammon
T-MACH-102156	Project Workshop: Automotive Engineering	4,5 CR	Frey, Gauterin, Gießler

Competence Certificate

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 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 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.
2. The module [M-MACH-101260 - Materials Science](#) must have been passed.
3. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
4. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.

Content

See courses.

Recommendation

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.

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.

M

6.32 Module: Human Resources and Organizations [M-WIWI-101513]**Responsible:** Prof. Dr. Petra Nieken**Organisation:** KIT Department of Economics and Management**Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Level	Version
9	Each term	3	3

Mandatory			
T-WIWI-102909	Human Resource Management	4,5 CR	Nieken
Election block: Ergänzungsangebot (between 4,5 and 5,5 credits)			
T-WIWI-102908	Personnel Policies and Labor Market Institutions	4,5 CR	Nieken
T-WIWI-102630	Managing Organizations	3,5 CR	Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership	2 CR	Lindstädt

Competence Certificate

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 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 student

- knows and analyzes basic concepts, instruments, and challenges of present human resource and organizational management.
- uses the techniques he / she has learned to evaluate strategic situations which occur in human resource and organizational management.
- evaluates the strengths and weaknesses of existing structures and rules based on systematic criterions.
- Discusses and evaluates the practical use of models and methods by using case studies.
- has basic knowledge of fit and challenges of different scientific methods in the context of personnel and organizational economics.

Prerequisites

Successful passing of the corresponding modules of the basic program.

The course Personalmanagement (Human Resource Management) is compulsory and must be examined.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

Students acquire basic knowledge in the field of human resource and organizational management. Strategic as well as operative aspects of human resource management practices are analyzed. The module offers an up-to-date overview over basic concepts and models. It also shows the strengths and weaknesses of rational concepts in human resources and organizational management.

The students learn to apply methods and instruments to plan, select, and manage staff. Current issues of organizational management or selected aspects of personnel politics are examined and evaluated.

The focus lies on the strategic analysis of decisions and the use microeconomic or behavioral approaches. Empirical results of field or lab studies are discussed critically.

Recommendation

Completion of module Business Administration is recommended.
Basic knowledge of microeconomics, game theory and statistics is recommended.

Workload

The total workload for this module is approximately 270 hours.

M

6.33 Module: Industrial Production I [M-WIWI-101437]**Responsible:** Prof. Dr. Frank Schultmann**Organisation:** KIT Department of Economics and Management**Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	2

Mandatory			
T-WIWI-102606	Fundamentals of Production Management	5,5 CR	Schultmann
Election block: Ergänzungsangebot (3,5 credits)			
T-WIWI-102820	Production Economics and Sustainability	3,5 CR	Rimbon
T-WIWI-102870	Logistics and Supply Chain Management	3,5 CR	Wiens

Competence Certificate

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.

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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

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

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

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

6.34 Module: Information Systems & Digital Business: Interaction [M-WIWI-104911]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#) (Usage from 4/1/2019)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#) (Usage from 4/1/2019)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#) (Usage from 4/1/2019)

Credits	Language	Level	Version
9	Deutsch	3	2

Election block: Wahlpflichtangebot ()			
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-109936	Platform Economy	4,5 CR	Weinhardt
T-WIWI-109935	Practical Seminar Interaction	4,5 CR	Mädche, Weinhardt

Competence Certificate

The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

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

6.35 Module: Information Systems & Digital Business: Platforms [M-WIWI-104912]

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

Organisation: KIT Department of Economics and Management

Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#) (Usage from 4/1/2019)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#) (Usage from 4/1/2019)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#) (Usage from 4/1/2019)

Credits	Language	Level	Version
9	Deutsch	3	2

Election block: Wahlpflichtangebot ()			
T-WIWI-109938	Digital Services	4,5 CR	
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-109936	Platform Economy	4,5 CR	Weinhardt
T-WIWI-109937	Practical Seminar Platforms	4,5 CR	Satzger, Weinhardt

Competence Certificate

The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

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

6.36 Module: Information Systems & Digital Business: Servitization [M-WIWI-104913]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger

Organisation: KIT Department of Economics and Management

Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#) (Usage from 4/1/2019)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#) (Usage from 4/1/2019)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#) (Usage from 4/1/2019)

Credits	Language	Level	Version
9	Deutsch	3	1

Election block: Wahlpflichtangebot ()			
T-WIWI-109938	Digital Services	4,5 CR	
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-109939	Practical Seminar Servitization	4,5 CR	Mädche, Satzger

Competence Certificate

The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

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

6.37 Module: Integrated Production Planning [M-MACH-101272]

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

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each summer term	1 semester	Deutsch	3	2

Mandatory			
T-MACH-109054	Integrated Production Planning in the Age of Industry 4.0	9 CR	Lanza

Competence Certificate

Written Exam (120 min)

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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

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

Learning type

Lecture, exercise, excursion

M

6.38 Module: Internship [M-WIWI-101419]

Responsible: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften
Organisation: KIT Department of Economics and Management
Part of: [Internship](#)

Credits	Recurrence	Level	Version
10	Once	3	1

Mandatory			
T-WIWI-102611	Internship	10 CR	Ruckes

Competence Certificate

The assessment is carried out by the evidence of completed full-time internships of at least 12 weeks with at least 20 working hours per week and a presentation of the internship in the form of a written report on the activities. The internship is not graded.

1. Information on evidence of completed full-time internships:

The internship is proofed by the certificate of the intern's office. The certificate has to be formally correct with official corporate letterhead and handwritten countersigned by a responsible employee of the company.

The certificate must at least contain the following information:

- * Company / Location
- * Duration: from ... to ...
- * Hours of work (weekly)
- * Working interruption, indicating the vacation and sick days
- * Department
- * Headwords to the activities

2. Information on to the presentation:

The internship report should be at least one page (typewritten, not handwritten) for each Location. It must be countersigned by a representative of the intern's office.

Competence Goal

- has general insight into the essential processes in a company,
- is in a position to identify operation correlations and has the knowledge and skills to facilitate a fast understanding of the processes in the company,
- in addition to practical professional experience and competences, also has key competences such as own initiative, ability to work in a team and communication skills as well as ability to integrate into corporate hierarchies and procedures,
- has the experience to accomplish complex IT and business tasks under realistic conditions within the framework of the relevant legal aspects and while applying the total acquired knowledge (interlaced thinking),
- has an idea of the professional development potential in the economy through pursuit of study-related activities,
- knows the technical and professional requirements in the individually targeted future occupation and can take this knowledge into account for the future planning of his/her studies and career,
- can assess and estimate own technical and professional strengths and weaknesses through his/her evaluation of the company.

Prerequisites

None

Content

The internship may be done in economic, business and/or technical companies. At best, it is done on activities which are located at the intersection of the two fields - getting to know the specific requirements of Industrial Engineering and Management.

A commercial internship provides an insight into business or administrative processes of business transactions. Therefore departments such as controlling, organizing, marketing and planning appear particularly suitable.

Work experiences in the departments of engineering, work preparation and provision of material or IT cover more technical aspects of the internship. But work experiences in an engineering firm go with a technical internship.

It remains the companies and interns left, which stations and areas the intern will eventually go through. But the focus should always be in accordance with operational realities of the company.

Annotation

Internships, that were completed even before studying may be recognized, if the criteria for recognition are met. After recognition of the compulsory internship, there can be taken a semester off for a voluntary, student-related internship.

Regarding to the election of the company, in which the internship is completed, there are no specific rules. With a view to the future professional career, it is recommended to absolve the internship in a larger, possibly international company.

Vacation days are not figured into the internship.

Only three sick leave days may incurred at all. Any additional sick days are not figured into the internship.

A relevant vocational education of at least two years is accepted as a performance equivalent to the internship.

Workload

The total workload for this module is approximately 300 hours.

M

6.39 Module: Introduction to Economics [M-WIWI-101398]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: **Economics (mandatory)**

Credits	Recurrence	Duration	Level	Version
10	Each term	2 semester	3	1

Mandatory			
T-WIWI-102708	Economics I: Microeconomics	5 CR	Puppe, Reiß
T-WIWI-102709	Economics II: Macroeconomics	5 CR	Wigger

Competence Certificate

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.

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.

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 dealt with.

Annotation

Notice: The lecture *Economics I: Microeconomics [2600012]* is part of the preliminary examination concerning § 8(1) of the examination regulation. 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

6.40 Module: Introduction to Natural Hazards and Risk Analysis [M-WIWI-104838]**Responsible:** Prof. Dr. Michael Kunz**Organisation:** KIT Department of Economics and Management**Part of:** [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#) (Usage from 4/1/2019)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#) (Usage from 4/1/2019)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#) (Usage from 4/1/2019)**Credits**
9**Recurrence**
Each term**Language**
Deutsch**Level**
3**Version**
1

Election block: Wahlpflichtangebot (between 9 and 12 credits)			
T-BGU-101500	Introduction to Engineering Geology	5 CR	Blum
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences	3 CR	Rösch, Wursthorn
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences	3 CR	Rösch, Wursthorn
T-BGU-101637	Systems of Remote Sensing, Prerequisite	1 CR	Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite	1 CR	Weidner
T-BGU-101636	Remote Sensing, Exam	4 CR	Hinz
T-BGU-103542	Procedures of Remote Sensing	3 CR	Weidner
T-PHYS-103117	Geological Hazards and Risks for external students	4 CR	Gottschämmer
T-BGU-101693	Hydrology	4 CR	Zehe
T-PHYS-101092	Climatology	5 CR	Ginete Werner Pinto
T-BGU-101814	Project in Applied Remote Sensing	1 CR	Hinz
T-PHYS-105594	Exam on Climatology	1 CR	Ginete Werner Pinto
T-BGU-101667	Hydraulic Engineering and Water Management	4 CR	Nestmann

Competence Certificate

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.

Competence Goal

See German version

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".

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

See German version

Recommendation

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].

Annotation

Students, who successfully completed both modules “Understanding and Prediction of Disasters” I and II (alternatively: one of the modules in Bachelor and Master) can get a certificate of the module coordinator (CEDIM). This certificate lists the successful completed courses within the two modules.

Workload

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

M

6.41 Module: Introduction to Operations Research [M-WIWI-101418]

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

Organisation: KIT Department of Economics and Management

Part of: [Operations Research \(mandatory\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each summer term	2 semester	3	1

Mandatory			
T-WIWI-102758	Introduction to Operations Research I and II	9 CR	Nickel, Rebennack, Stein

Competence Certificate

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 July), one examination is held for both courses.

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.

Module grade calculation

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

Prerequisites

None

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.

Workload

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

M

6.42 Module: Introduction to Programming [M-WIWI-101581]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [Informatics \(mandatory\)](#)

Credits	Recurrence	Language	Level	Version
5	Each winter term	Deutsch	3	1

Mandatory			
T-WIWI-102735	Introduction to Programming with Java	5 CR	Zöllner

Competence Certificate

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 prerequisites for admission to the written resp. computer-based exam.

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

Competence Goal

see german version

Prerequisites

None

Content

see german version

Workload

The total workload for this course is approximately 150 hours. For further information see German version.

M

6.43 Module: Introduction to Statistics [M-WIWI-101432]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [Statistics](#)

Credits	Recurrence	Duration	Level	Version
10	Each term	2 semester	3	2

Mandatory			
T-WIWI-102737	Statistics I	5 CR	Grothe, Schienle
T-WIWI-102738	Statistics II	5 CR	Grothe, Schienle

Competence Certificate

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.

Competence Goal

See German version.

Module grade calculation

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

Prerequisites

Notice: The lecture *Statistics I* [25008/25009] is part of the preliminary examination concerning Section 8(1) of the examination regulation. 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.

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 important discrete and continuous distributions, covariance and correlation, limit distributions

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

Workload

The total workload for this module is approximately 300 hours. For further information see German version.

M

6.44 Module: Introduction to Technical Logistics [M-MACH-101269]

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

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	3

Election block: Einführung in die Technische Logistik (Kernbereich) (between 1 and 2 items as well as 6 credits)			
T-MACH-102151	Material Flow in Logistic Systems	6 CR	Furmans
T-MACH-102163	Basics of Technical Logistics	6 CR	Mittwollen, Oellerich
Election block: Einführung in die Technische Logistik (Ergänzungsbereich) (1 item as well as at least 3 credits)			
T-MACH-102128	Information Systems and Supply Chain Management	3 CR	Kilger
T-MACH-102160	Selected Applications of Technical Logistics	4 CR	Milushev, Mittwollen
T-MACH-105174	Warehousing and Distribution Systems	3 CR	Furmans
T-MACH-105151	Energy Efficient Intralogistic Systems	4 CR	Braun, Schönung
T-MACH-105165	Automotive Logistics	4 CR	Furmans
T-MACH-105175	Airport Logistics	3 CR	Richter
T-WIWI-103091	Production and Logistics Controlling	3 CR	Rausch
T-MACH-102159	Elements and Systems of Technical Logistics	4 CR	Fischer, Mittwollen
T-MACH-108946	Elements and Systems of Technical Logistics - Project	2 CR	Fischer, Mittwollen
T-MACH-108945	Selected Applications of Technical Logistics - Project	2 CR	Milushev, Mittwollen

Competence Certificate

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.

Competence Goal

The student acquires

- well-founded knowledge and method knowledge in the main topics of technical logistics,
- expertise and understanding about the functionality of conveyor technology,
- ability for modeling logistic systems with adequate accuracy by using simple models,
- ability to evaluate logistic systems and to identify cause-and-effects-chains within logistic systems.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

The module *Introduction to Technical Logistics* provides first insights into main topics of technical logistics. Within the lectures, the interaction between several components of material handling systems will be clarified. The focus will be on technical characteristics of material handling technology and basics for sizing of material handling systems. To gain a deeper understanding, the course is accompanied by exercises and further improved by case studies.

Workload

270 hours

Learning type

Lecture, tutorial.

M

6.45 Module: Machine Tools and Industrial Handling [M-MACH-101286]

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

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each winter term	1 semester	Deutsch	4	2

Mandatory			
T-MACH-102158	Machine Tools and Industrial Handling	9 CR	Fleischer

Competence Certificate
 Written exam (120 minutes)

Competence Goal
 The students

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

Prerequisites
 Successful passing of the corresponding modules of the basic program.

Modeled Conditions
 The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content
 The module overviews the construction, use and application of machine tools and industrial handling equipment. A well-founded and practice-oriented knowledge is imparted about the selection, design and evaluation of machine tools. First, the main components of the machine tools are systematically explained and their design principles as well as the integral machine tool design are discussed. Subsequently, the use and application of machine tools 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.

The individual topics are:

- Frames and frame components
- Feed axes
- Spindles
- Peripheral equipment
- Control unit
- Metrological evaluation and machine testing
- Process monitoring
- Maintenance of machine tools
- Safety assessment of machine tools
- Machine examples

Workload

regular attendance: 63 hours

self-study: 207 hours

Learning type

Lecture, exercise, excursio

M

6.46 Module: Management Accounting [M-WIWI-101498]**Responsible:** Prof. Dr. Marcus Wouters**Organisation:** KIT Department of Economics and Management**Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	1

Mandatory				
T-WIWI-102800	Management Accounting 1	4,5 CR	Wouters	
T-WIWI-102801	Management Accounting 2	4,5 CR	Wouters	

Competence Certificate

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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

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

Annotation

The following courses are part of this module:

- The course Management Accounting 1, which is offered in every sommer semester
- The course Management Accounting 2, which is offered in every winter semester

Workload

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

M

6.47 Module: Manufacturing Technology [M-MACH-101276]

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

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each winter term	1 semester	Deutsch	3	3

Mandatory			
T-MACH-102105	Manufacturing Technology	9 CR	Schulze, Zanger

Competence Certificate

Written Exam (180 min)

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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

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 lecture "Manufacturing Technology".

Workload

regular attendance: 63 hours

self-study: 207 hours

Learning type

Lectures, exercise, excursion

M

6.48 Module: Materials Science [M-MACH-101260]

Responsible: Prof. Dr. Michael Hoffmann
Organisation: KIT Department of Mechanical Engineering

Part of: **Engineering Sciences (mandatory)**

Credits	Recurrence	Duration	Level	Version
3	Each winter term	1 semester	3	1

Mandatory			
T-MACH-102078	Materials Science I	3 CR	Hoffmann

Competence Certificate

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.

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.

Prerequisites

None.

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

6.49 Module: Mathematics 1 [M-MATH-101676]

Responsible: Prof. Dr. Günter Last
Organisation: KIT Department of Mathematics
Part of: Mathematics

Credits	Recurrence	Language	Level	Version
7	Each winter term	Deutsch	3	1

Mandatory			
T-MATH-102260	Mathematics I - Midterm Exam	3,5 CR	Folkers, Hug, Last, Winter
T-MATH-102261	Mathematics I - Final Exam	3,5 CR	Folkers, Hug, Last, Winter

Competence Certificate

The assessment consists of two written exams of 60 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.

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.

Module grade calculation

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

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,
- Systems of linear equations,
- Convergence of sequences and series,
- Mappings and functions,
- Continuous functions,
- Differentiable functions,
- Power series and special functions,
- Taylor's theorem.

Recommendation

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

Workload

work load: 210 hours (7 ECTS)

classes: 60 hours lectures + 30 hours exercises

M

6.50 Module: Mathematics 2 [M-MATH-101677]

Responsible: Prof. Dr. Günter Last
Organisation: KIT Department of Mathematics
Part of: [Mathematics](#)

Credits	Recurrence	Language	Level	Version
7	Each summer term	Deutsch	3	1

Mandatory			
T-MATH-102262	Mathematics II - Midterm Exam	3,5 CR	Folkers, Hug, Last, Winter
T-MATH-102263	Mathematics II - Final Exam	3,5 CR	Folkers, Hug, Last, Winter

Competence Certificate

The assessment consists of two written exams of 60 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.

Competence Goal

Students

- know basic concepts of matrix theory.
- have a basic knowledge of integral calculus in a single variable.
- have a basic knowledge of multivariate differential calculus.

Module grade calculation

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

Content

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

- Riemann integral,
- n-dimensional vector spaces,
- scalar product, length and angle,
- linear mappings and matrices,
- determinants,
- eigenvalue theory,
- multivariate calculus.

Recommendation

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

Workload

work load: 210 hours (7 ECTS)

classes: 60 hours lectures + 30 hours exercises

M

6.51 Module: Mathematics 3 [M-MATH-101679]

Responsible: Prof. Dr. Günter Last
Organisation: KIT Department of Mathematics
Part of: [Mathematics](#)

Credits	Recurrence	Language	Level	Version
7	Each winter term	Deutsch	3	1

Mandatory			
T-MATH-102264	Mathematics III - Final Exam	7 CR	Folkers, Hug, Last, Winter

Competence Certificate

The assessment consists of a written exams of 105 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.

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.

Module grade calculation

The examination mark for Mathematics 3 is the mark of the written exam.

Content

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

- Multiple integrals,
- Implicit functions,
- General linear spaces,
- Normed vector spaces,
- Banach's fixed point theorem,
- Ordinary differential equations,
- Linear differential equations,
- Fourier analysis,
- Integral transformations.

Workload

work load: 210 hours (7 ECTS)

classes: 60 hours lectures + 30 hours exercises

M

6.52 Module: Mechanical Design [M-MACH-101299]

Responsible: Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	3	2

Mandatory			
T-MACH-104739	Mechanical Design I and II - CIW	7 CR	Matthiesen
T-MACH-102132	Mechanical Design I, Tutorial	1 CR	Matthiesen
T-MACH-102133	Mechanical Design II, Tutorial	1 CR	Matthiesen

Competence Certificate

Written examination on the contents of Mechanical Design I&II

Duration: 90 min plus reading time

Preliminary examination: Successful participation in the preliminary work in the field of Mechanical Design I&II

Competence Goal

Learning object springs:

- be able to recognize spring types and explain stress
- Identify and describe the properties of a resilient LSS in machine elements presented later on
- Understanding and explaining the principle of action
- Know and list areas of application for springs
- graphically illustrate the load and the resulting stresses
- be able to describe the degree of species usefulness as a means of lightweight construction
- be able to analyse different solution variants with regard to lightweight construction (use species efficiency)
- Being able to explain several springs as a circuit and calculate total spring stiffness

Learning objects Technical Systems:

- Being able to explain what a technical system is
- "Thinking in systems."
- Using system technology as an abstraction tool for handling complexity
- Recognizing functional relationships of technical systems
- Getting to know the concept of function
- be able to use C&C²-A as a means of system technology

Learning objects Visualization:

- Ability to create and interpret schematics
- Using freehand technical drawing as a means of communication
- To be able to apply the technical basics of freehand drawing
- Derivation of 2D representations into different perspective representations of technical structures and vice versa
- Master reading of technical drawings
- Dedicated dimensioning of technical drawings
- Create sectional views of technical systems as a technical sketch

Learning objects Bearings:

- be able to recognize bearings in machine systems and explain their basic functions
- name bearings (type/type/function) and recognize them in machine systems and technical drawings
- Being able to name areas of application and selection criteria for the various bearings and bearing arrangements and explain interrelationships
- Ability to functionally explain the design of the bearing definitions in different directions radially/axially and circumferentially
- Know and describe selection as an iterative process as an example
- be able to perform dimensioning of bearing arrangements as an example of the engineer's approach to dimensioning machine elements
- Develop first ideas for probabilities in predicting the life of machine elements
- Recognise from the damage pattern whether static or dynamic overload was the cause of material failure
- Calculate equivalent static and dynamic bearing loads from the catalogue and given external forces on the bearing
- Being able to name, explain and transfer the basic equation of the dimensioning to the bearing dimensioning

Learning objectives seals:

The students...

- can discuss the basic functions of seals
- can describe the physical causes for mass transfer
- can apply the C&C-Model on seals
- can name, describe and apply the three most important classification criteria of seals
- can explain the function of a contacting seal and a non-contacting seal.
- can differentiate the seal types and organize them to the classification criteria.
- can discuss the structure and the effect of a radial shaft seal
- can evaluate radial shaft seals, compression packings, mechanical seals, gap seals and labyrinth seals
- can describe and apply the constructional principle of selffortification
- can describe the stick-slip phenomenon during the movement sequences of a reciprocating seal

Learning design:

The students...

- understand the meaning of design
- are able to recognize and implement basic rules and principles of design
- are able to design the connection of partial systems into the total system
- can name requirements of design and take them into account
- know the main groups of manufacturing methods

- are able to explain the manufacturing processes
- are able to depict a casted design in a drawing clearly, e.g. draft of the mold, no material accumulation, ...
- know how components are designed
- Know how the production of the components has an effect on their design
- Know the requirements and boundary conditions on design

Learning bolted connections:

The students...

- can list and explain various bolt applications.
- can recognize bolt types and explain their function
- can build a C&C² model of a bolted joint and discuss the influences on its function
- can explain the function of a bolted connection with the help of a spring model
- can reproduce, apply and discuss the screw equation.
- Can estimate the load-bearing capacity of low-loaded bolted joints for dimensioning purposes
- Can indicate which bolted joint is to be calculated and which only roughly dimensioned.
- Can carry out the dimensioning of bolted connections as flange connections
- Can create, explain and discuss the force deflection diagram of a bolted connection

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

MKL I:

Introduction to product development

Tools for visualization (technical drawing)

Product creation as a problem solution

Technical Systems Product Development

- Systems theorie
- Contact and Channel Approach C&C²-A

Basics of selected construction and machine elements

- Federn
- bearings and fence
- sealings

The lecture is accompanied by exercises with the following content:

gear workshop

Tools for visualization (technical drawing)

Technical Systems Product Development

- Systemtheorie
- Contact amd Channel Approach C&C²-A

Exercises for springs

Exercises for bearings and fence

MKL II:

- sealings
- design
- dimensioning
- component connections
- bolts

Recommendation

An in-depth study of machine design (parts 3 + 4) can be carried out as part of the "Extracurricular Module in Engineering".

Workload**MKL1:**

Attendance at lectures (15 VL): 22,5h

Presence exercises (8 exercises): 12h

Attendance (3x 2h) and preparation (3x3h) Workshop sessions: 15h

Preparation and execution of online test: 6h

Personal preparation and follow-up of lecture and exercise: 34,5hMKL1:

MKL2:

Attendance lectures (15 VL): 22,5h

Presence exercises (7 ÜB): 10,5h

Personal preparation and follow-up of lecture and exercise, incl. prerequisite and preparation for the exam:: 117h

Learning type

Lecture

Tutorial

Project work during the semester

Online-test

M

6.53 Module: Methodical Foundations of OR [M-WIWI-101414]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [Operations Research \(Vertiefungsprogramm Operations Research\)](#)
[Compulsory Elective Modules \(Operations Research\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	8

Election block: Wahlpflichtangebot (at least 1 item as well as between 4,5 and 9 credits)			
T-WIWI-102726	Global Optimization I	4,5 CR	Stein
T-WIWI-103638	Global Optimization I and II	9 CR	Stein
T-WIWI-102724	Nonlinear Optimization I	4,5 CR	Stein
T-WIWI-103637	Nonlinear Optimization I and II	9 CR	Stein
Election block: Ergänzungsangebot ()			
T-WIWI-106546	Introduction to Stochastic Optimization	4,5 CR	Rebennack
T-WIWI-102727	Global Optimization II	4,5 CR	Stein
T-WIWI-102725	Nonlinear Optimization II	4,5 CR	Stein
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 CR	Nickel

Competence Certificate

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 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 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.

Prerequisites

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

Successful passing of the corresponding modules of the basic program.

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.

Recommendation

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

Annotation

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 approximately 270 hours. For further information see German version.

M

6.54 Module: Microsystem Technology [M-MACH-101287]

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

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Mikrosystemtechnik (at least 9 credits)			
T-MACH-102165	Selected Topics on Optics and Microoptics for Mechanical Engineers	3 CR	Mappes
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II	3 CR	Guber
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III	3 CR	Guber
T-MACH-102172	Bionics for Engineers and Natural Scientists	3 CR	Hölscher
T-MACH-105182	Introduction to Microsystem Technology I	3 CR	Badilita, Jouda, Korvink
T-MACH-105183	Introduction to Microsystem Technology II	3 CR	Jouda, Korvink
T-MACH-101910	Microactuators	3 CR	Kohl
T-MACH-102080	Nanotechnology with Clusterbeams	3 CR	Gspann
T-MACH-102152	Novel Actuators and Sensors	4 CR	Kohl, Sommer
T-ETIT-101907	Optoelectronic Components	4 CR	Freude
T-MACH-100530	Physics for Engineers	6 CR	Dienwiebel, Gumbsch, Nesterov-Müller, Weygand
T-MACH-102164	Practical Training in Basics of Microsystem Technology	3 CR	Last

Competence Certificate

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.

Competence Goal

construction and production of e. g. mechanical, optical, fluidic and sensory microsystems.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

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

6.55 Module: Mobile Machines [M-MACH-101267]

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

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Level	Version
9	Once	1 semester	4	1

Election block: Mobile Arbeitsmaschinen (at least 9 credits)			
T-MACH-102093	Fluid Power Systems	5 CR	Geimer, Pult
T-MACH-105172	Simulation of Coupled Systems	4 CR	Geimer, Xiang
T-MACH-102150	BUS-Controls	3 CR	Becker, Geimer
T-MACH-105168	Mobile Machines	9 CR	Geimer
T-MACH-105160	Fundamentals in the Development of Commercial Vehicles I	1,5 CR	Zürn
T-MACH-105161	Fundamentals in the Development of Commercial Vehicles II	1,5 CR	Zürn

Competence Certificate

The assessment is carried out as a general oral exam (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 separately.

Competence Goal

The student

- knows and understands the basic structure of the machines
- masters the basic skills to develop the selected machines

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.
2. The module [M-MACH-101260 - Materials Science](#) must have been passed.
3. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
4. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.

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.

Recommendation

Knowledge of Fluid Power Systems are helpful, otherwise it is recommended to take the course *Fluid Power Systems* [2114093].

Workload

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

M

6.56 Module: Mobility and Infrastructure [M-BGU-101067]**Responsible:** Prof. Dr.-Ing. Ralf Roos**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences**Part of:** [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each summer term	1 semester	Deutsch	3	1

Mandatory			
T-BGU-101791	Mobility and Infrastructure	9 CR	Roos, Vortisch

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Recommendation

None

Annotation

None

M

6.57 Module: Module Bachelor Thesis [M-WIWI-101601]

Responsible: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften
Organisation: KIT Department of Economics and Management
Part of: Bachelor Thesis

Credits	Language	Level	Version
12	Deutsch	3	5

Mandatory			
T-WIWI-103067	Bachelor Thesis	12 CR	Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Competence Certificate

The Bachelor Thesis is a written exam which shows that the student can autonomously investigate a scientific problem in Industrial Engineering and Management. The Bachelor Thesis is described in detail in § 11 (SPO 2007) and § 14 (SPO 2015) of the examination regulation. The review is carried out

- according to SPO 2007 by at least one examiner of the Department of Economics and Management, or, after approval by at least one examiner of another faculty. The examiner has to be involved in the degree programme. Involved in the degree programme are the persons that coordinate a module or a lecture of the degree programme.
- according to SPO 2015 by at least two examiners of the Department of Economics and Management.

The regular processing time takes three/six months (SPO 2007/SPO2015). On a reasoned request of the student, the examination board can extend the processing time of a maximum of one month. If the Bachelor Thesis is not completed in time, this exam is "failed", unless the student is not being responsible (eg maternity leave).

With consent of the examiner the thesis can be written in English as well. Other languages require besides the consent of the examiner the approval of the examination board. The issue of the Bachelor Thesis may only be returned once and only within the first month of processing time. A new topic has to be released within four weeks.

The overall grade of the module is the grade of the Bachelor Thesis.

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.

Prerequisites

Prerequisites for admission to the Bachelor Thesis:

- according to SPO 2007: the student is in the 3rd Academic year (5th and 6th semester) and has not been completed at most one of the exams of the basic program.
- according to SPO 2015: A minimum of 120 credits must be earned. All module examinations of the basic program 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: "I hereby declare that I produced this thesis without external assistance, and that no other than the listed references have been used as sources of information. Passages taken literally or analogously from published or non published sources are marked as this." If this declaration is not given, the Bachelor Thesis will not be accepted.

Modeled Conditions

The following conditions have to be fulfilled:

1. You need to earn at least 120 credits in the following fields:
 - Internship
 - Business Administration
 - Informatics
 - Engineering Sciences
 - Mathematics
 - Operations Research
 - Statistics
 - Economics
 - Compulsory Elective Modules
2. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
3. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.
4. The module [M-WIWI-101398 - Introduction to Economics](#) must have been passed.
5. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.
6. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.
7. The module [M-WIWI-101418 - Introduction to Operations Research](#) must have been passed.
8. The module [M-MACH-101260 - Materials Science](#) must have been passed.
9. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
10. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
11. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

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 examiner. The topic has to be related to Industrial Engineering and Management and has to refer to subject-specific or interdisciplinary problems.

Workload

The total workload for this module is approximately 360 hours. For further information see German version.

M

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

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: [Operations Research \(Vertiefungsprogramm Operations Research\)](#)
[Compulsory Elective Modules \(Operations Research\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	3

Election block: Wahlpflichtangebot (between 1 and 2 items)			
T-WIWI-106546	Introduction to Stochastic Optimization	4,5 CR	Rebennack
T-WIWI-106545	Optimization under Uncertainty	5 CR	Rebennack
Election block: Ergänzungsangebot (at most 1 item)			
T-WIWI-102724	Nonlinear Optimization I	4,5 CR	Stein
T-WIWI-102714	Tactical and Operational Supply Chain Management	4,5 CR	Nickel

Competence Certificate

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 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 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.

Prerequisites

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

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101418 - Introduction to Operations Research](#) must have been passed.

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.

Recommendation

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

Annotation

The curriculum, planned for three years in advance, can be found on the Internet at <http://sop.iior.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.

M

6.59 Module: Power Network [M-ETIT-102379]

Responsible: Dr.-Ing. Bernd Hoferer
Prof. Dr.-Ing. Thomas Leibfried

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	3	1

Mandatory			
T-ETIT-101923	Electric Energy Systems	5 CR	Leibfried
T-ETIT-100830	Power Network	6 CR	Leibfried

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

M

6.60 Module: Product Lifecycle Management [M-MACH-101270]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	4	2

Election block: Product Lifecycle Management (Kernbereich) (1 item)			
T-MACH-105147	Product Lifecycle Management	4 CR	Ovtcharova
Election block: Product Lifecycle Management (2 items)			
T-MACH-102153	PLM-CAD Workshop	4 CR	Ovtcharova
T-MACH-102181	PLM for Product Development in Mechatronics	4 CR	Eigner
T-MACH-102209	Information Engineering	3 CR	Ovtcharova
T-MACH-106744	Agile product innovation management - value-driven planning of new products	4 CR	Kläger
T-MACH-106457	I4.0 Systems platform	4 CR	Maier, Ovtcharova
T-MACH-102083	Integrated Information Systems for Engineers	4 CR	Ovtcharova
T-MACH-102155	Product, Process and Resource Integration in the Automotive Industry	4 CR	Ovtcharova
T-MACH-102149	Virtual Reality Practical Course	4 CR	Ovtcharova
T-MACH-102187	CAD-NX Training Course	2 CR	Ovtcharova

Competence Certificate

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 students should:

- have basic knowledge about the challenges in product and process data management regarding the whole product lifecycle;
- have understanding about challenges and functional concepts of product lifecycle management;
- be able to rudimental operate common PLM/CAX/VR - systems,
- develop and present prototype solutions in teams of different domains.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

Content

Product Lifecycle Management (PLM), Generation and management of information, Architecture and functionality of information systems, Industry 4.0, CAX and VR-systems.

Workload

270 hours

M

6.61 Module: Public Finance [M-WIWI-101403]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [Economics \(Vertiefungsprogramm Volkswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Volkswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	4

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102877	Introduction to Public Finance	4,5 CR	Wigger
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102739	Public Revenues	4,5 CR	Wigger
T-WIWI-109590	Public Sector Finance	4,5 CR	Wigger

Competence Certificate

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

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

See German version.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101398 - Introduction to Economics](#) must have been passed.

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.

Recommendation

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

Annotation

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

Workload

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

M

6.62 Module: Rail System Technology [M-MACH-101274]

Responsible: Prof. Dr.-Ing. Peter Gratzfeld
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	3

Mandatory			
T-MACH-102143	Rail System Technology	9 CR	Gratzfeld

Competence Certificate

Oral examination

Duration: 45 minutes

No tools or reference materials may be used during the exam.

Competence Goal

- The students understand relations and interdependencies between rail vehicles, infrastructure and operation in a rail system.
- Based on operating requirements and legal framework they derive the requirements concerning a capable infrastructure and suitable concepts of rail vehicles.
- They recognize the impact of alignment, understand the important function of the wheel-rail-contact and estimate the impact of driving dynamics on the operating program.
- They evaluate the impact of operating concepts on safety and capacity of a rail system.
- They know the infrastructure to provide power supply to rail vehicles with different drive systems.
- The students learn the role of rail vehicles and understand their classification. They understand the basic structure and know the functions of the main systems. They understand the overall tasks of vehicle system technology.
- They learn functions and requirements of car bodies and judge advantages and disadvantages of design principles. They know the functions of the car body's interfaces.
- They know about the basics of running dynamics and bogies.
- The students learn about advantages and disadvantages of different types of traction drives and judge, which one fits best for each application.
- They understand brakes from a vehicular and an operational point of view. They assess the fitness of different brake systems.
- They know the basic setup of train control management system and understand the most important functions.
- They specify and define suitable vehicle concepts based on requirements for modern rail vehicles.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Content

1. Railway System: railway as system, subsystems and interdependencies, definitions, laws, rules, railway and environment, economic impact
2. Operation: Transportation, public transport, regional transport, long-distance transport, freight service, scheduling
3. Infrastructure: rail facilities, track alignment, railway stations, clearance diagram
4. Wheel-rail-contact: carrying of vehicle mass, adhesion, wheel guidance, current return
5. Vehicle dynamics: tractive and brake effort, driving resistance, inertial force, load cycles
6. Signaling and Control: operating procedure, succession of trains, European Train Control System, blocking period, automatic train control
7. Traction power supply: power supply of rail vehicles, power networks, filling stations
8. History (optional)
9. Vehicle system technology: structure and main systems of rail vehicles
10. Car body: functions, requirements, design principles, crash elements, interfaces
11. Bogies: forces, running gears, axle configuration
12. Drives: vehicle with/without contact wire, dual-mode vehicle
13. Brakes: tasks, basics, principles, blending, brake control
14. Train control management system: definitions, networks, bus systems, components, examples
15. Vehicle concepts: trams, metros, regional trains, intercity trains, high speed trains, double deck coaches, locomotives, freight wagons

Annotation

A bibliography is available for download (Ilias-platform).

The lectures can be attended in the same term.

Workload

1. Regular attendance: 42 hours
2. Self-study: 42 hours
3. Exam and preparation: 186 hours

Learning type

Lectures

M

6.63 Module: Real Estate Management [M-WIWI-101466]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	1

Mandatory			
T-WIWI-102744	Real Estate Management I	4,5 CR	Lützkendorf
T-WIWI-102745	Real Estate Management II	4,5 CR	Lützkendorf

Competence Certificate

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.

Competence Goal

The student

- possesses an overview concerning the different facets and interrelationships within the real estate business, the important decision points in real estate lifecycle and the different views and interests of the actors concerned, and
- is capable of applying basic economic methods and procedures to problems within the real estate area.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

The real estate business offers graduates very interesting jobs and excellent work- and advancement possibilities. This module provides an insight into the macroeconomic importance of this industry, discusses problems concerned to the administration of real estate and housing companies and provides basic knowledge for making decisions both along the lifecycle of a single building and the management of real estate portfolios. Innovative operating and financing models are illustrated, as well as the current development when looking at real estate as an asset-class. This module is also suitable for students who want to discuss macroeconomic, business-management or financial problems in a real estate context.

Recommendation

The combination with the module *Design Constructions and Assessment of Green Buildings* is recommended.

Furthermore a combination with courses in the area of

- Finance
- Insurance
- Civil engineering and architecture (building physics, building construction, facility management)

is recommended.

Workload

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

M

6.64 Module: Risk and Insurance Management [M-WIWI-101436]**Responsible:** Prof. Dr. Ute Werner**Organisation:** KIT Department of Economics and Management**Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	3	1

Mandatory			
T-WIWI-102603	Principles of Insurance Management	4,5 CR	Werner
T-WIWI-102608	Enterprise Risk Management	4,5 CR	Werner

Competence Certificate

From winter term 2017/2018 the module is not offered anymore.

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 lectures are examined by oral presentations and related term papers in the context of the lectures. Furthermore, there is a final oral examination.

The grade of each examination consists of the oral presentation and the term paper (50 percent) and the oral examination (50 percent). 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

- can identify, analyze and evaluate entrepreneurial risks.
- is able to design suitable strategies and packages of measures for operational risk management
- can assess the role of insurance protection as a risk-policy tool at macroeconomic and macroeconomic level,
- knows and understands the legal framework and techniques of the production of insurance protection as well as other services of insurance companies (risk consulting, claims management).

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

The module introduces the various functions of insurance protection at individual and macroeconomic level, as well as the legal framework and the technology of insurance coverage production. In addition, knowledge is provided that serves to identify, analyze and assess entrepreneurial risks. Building on this, we discuss strategies and measures for optimizing the company-wide opportunity and risk potential, taking into account sector-specific goals for optimizing risk-bearing capacity and acceptance.

Annotation

Please note:

- The examination T-WIWI-102603 Principles of Insurance Management will be offered latest until summer term 2017 (beginners only).
- The examination T-WIWI-102608 Enterprise Risk Management will be offered latest until winterterm 2017/2018 (beginners only).

Workload

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

M

6.65 Module: Seminar Module [M-WIWI-101816]

Responsible: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften
Organisation: KIT Department of Economics and Management
Part of: **Compulsory Elective Modules (mandatory)**

Credits	Language	Level	Version
3	Deutsch	3	4

Election block: Wahlpflichtangebot (3 credits)			
T-WIWI-103486	Seminar in Business Administration (Bachelor)	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103485	Seminar in Informatics (Bachelor)	3 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-108763	Seminar in Engineering Science Master (approval)	3 CR	Fachvertreter ingenieurwissenschaftlicher Fakultäten
T-MATH-102265	Seminar in Mathematics (Bachelor)	3 CR	Folkers, Last
T-WIWI-103488	Seminar in Operations Research (Bachelor)	3 CR	Nickel, Rebennack, Stein
T-INFO-101997	Seminar: Legal Studies I	3 CR	Dreier
T-WIWI-103489	Seminar in Statistics (Bachelor)	3 CR	Grothe, Schienle
T-WIWI-103487	Seminar in Economics (Bachelor)	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-MACH-109062	Seminar Production Technology	3 CR	Fleischer, Lanza, Schulze
T-MACH-108737	Seminar Data-Mining in Production	3 CR	Lanza

Competence Certificate

SPO 2015: The modul examination consists of **one** seminar (according to §4 (3), 3 of the examintaion regulation). A detailed description of the assessment is given in the specific course characerization.

SPO 2007:The modul examination consists of **two** seminars and of at least one **key qualification** (KQ) course (according to §4 (3), 3 of the examintaion regulation). As key qualification one of the following courses must be chosen: Academic Learning HoC (2-3 credits), Key Qualifikations ZAK (1-3 credits), Elective „Educational development for student teachers“ (2-3 credits) or language courses SpZ. A detailed description of every singled assessment is given in the specific course characerization.

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.

Prerequisites

All modules of the basic program should be completed. For further information see German version.

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 detailed 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.

Annotation

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

See German version.

M

6.66 Module: Sociology/Empirical Social Research [M-GEISTSOZ-101167]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: [Compulsory Elective Modules \(Recht oder Soziologie\)](#)

Credits	Language	Level	Version
9	Deutsch	3	2

Mandatory			
T-GEISTSOZ-109047	Analysis of Social Structures (WiWi)	3 CR	Nollmann
T-GEISTSOZ-109048	Social Science A (WiWi)	3 CR	Nollmann
T-GEISTSOZ-109049	Social Science B (WiWi)	3 CR	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

6.67 Module: Specialization in Customer Relationship Management [M-WIWI-101422]**Responsible:** Prof. Dr. Andreas Geyer-Schulz**Organisation:** KIT Department of Economics and Management**Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Language	Level	Version
9	Deutsch	3	3

Election block: Wahlpflichtangebot (between 1 and 2 items)			
T-WIWI-102596	Analytical CRM	4,5 CR	Geyer-Schulz
T-WIWI-102597	Operative CRM	4,5 CR	Geyer-Schulz
Election block: Ergänzungsangebot (at most 1 item)			
T-WIWI-109938	Digital Services	4,5 CR	
T-WIWI-100005	Competition in Networks	4,5 CR	Mitusch

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(1), S. 2 2nd clause 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 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 student

- knows the scientific methods (from business administration, statistics, informatics) which are most relevant for analytic CRM and he autonomously applies these methods to standard cases,
- gains an overview of the market for CRM software,
- designs, implements, and analyzes operative CRM processes in concrete application domains (e.g. campaign management, call center management, ...),
- is aware of the problems of protecting the privacy of customers and the implications of privacy law.

Prerequisites

Successful passing of the corresponding modules of the basic program.

- It is only possible to choose this module in combination with the module *CRM and Servicemanagement*. The module is passed only after the final partial exam of *CRM and Servicemanagement* is additionally passed.
- At least, one of the courses *Analytic CRM* [2540522] and *Operative CRM* [2540520] has to be taken.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101460 - CRM and Service Management](#) must have been started.
2. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
3. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

In this module, analysis methods and techniques for the management and improvement of customer relations are presented. Furthermore, modelling, implementation, introduction, change, analysis and valuation of operative CRM processes are treated. Regarding the first part, we teach analysis methods and techniques suitable for the management and improvement of customer relations. For this goal we treat the principles of customer- and service-oriented management as the foundation of successful customer relationship management. In addition, we show how knowledge of the customer can be used for decision-making at an aggregate level (e.g. planning of assortments, analysis of customer loyalty, ...). A basic requirement for this is the integration and collection of data from operative processes in a suitably defined data-warehouse in which all relevant data is kept for future analysis. The process of transferring data from the operative systems into the data warehouse is known as the ETL process (Extract / Transform / Load). The process of modelling a data-warehouse as well as the so-called extraction, transformation, and loading process for building and maintaining a data-warehouse are discussed in-depth. The data-warehouse serves as a base for flexible management reporting. In addition, various statistic methods (e.g. cluster analysis, regression analysis, stochastic models, ...) are presented which help in computing suitable key performance indicators or which support decision-making.

Regarding the operative part, we emphasize the design of operative CRM processes. This includes the modelling, implementation, introduction and change, as well as the analysis and evaluation of operative CRM processes. Petri nets and their extensions are the scientific foundation of process modelling. The link of Petri nets to process models used in industry as e.g. UML activity diagrams is presented. In addition, a framework for process innovation which aims at a radical improvement of key business processes is introduced. The following application areas of operative CRM processes are presented and discussed:

Strategic marketing processes

Operative marketing processes (campaign management, permission marketing, ...)

Customer service processes (sales force management, field services, call center management, ...)

Workload

The total amount of work for this module is approximately 270 hours (9 credits). The subdivision is based on the credits of the courses of the module.

The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam periods and the time that is required to achieve the objectives of the module as an average student with an average performance.

M

6.68 Module: Specialization in Production Engineering [M-MACH-101284]

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

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	3	2

Election block: Vertiefung der Produktionstechnik (at least 9 credits)			
T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars	4 CR	Schlichtenmayer
T-MACH-105783	Learning Factory "Global Production"	4 CR	Lanza
T-MACH-105166	Materials and Processes for Body Lightweight Construction in the Automotive Industry	4 CR	Kienzle, Steegmüller
T-MACH-108878	Laboratory Production Metrology	4 CR	Häfner
T-MACH-102107	Quality Management	4 CR	Lanza
T-MACH-105185	Control Technology	4 CR	Gönnheimer
T-MACH-105177	Metal Forming	3 CR	Herlan
T-MACH-102148	Gear Cutting Technology	4 CR	Klaiber

Competence Certificate

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.

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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

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.

Learning type

Lectures, seminars, workshops, excursions

M

6.69 Module: Statistics and Econometrics [M-WIWI-101599]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [Compulsory Elective Modules \(Statistik\)](#)

Credits
9

Recurrence
Each term

Language
Deutsch

Level
3

Version
2

Election block: Wahlpflichtangebot (1 item)			
T-WIWI-102736	Economics III: Introduction in Econometrics	5 CR	Schienle
T-WIWI-106623	Technical Conditions Met	0 CR	
Election block: Ergänzungsangebot (between 1 and 2 items)			
T-WIWI-103063	Analysis of Multivariate Data	4,5 CR	Grothe
T-WIWI-103064	Financial Econometrics	4,5 CR	Schienle
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 CR	Heller
T-WIWI-103066	Data Mining and Applications	4,5 CR	Nakhaeizadeh

Competence Certificate

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 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 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

The course „Economics III: 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.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101432 - Introduction to Statistics](#) must have been passed.

Content

The courses provide a solid Econometric and statistical foundation of techniques necessary to conduct valid regression, time series and multivariate analysis.

Workload

The total workload for this module is approximately 270 hours.

M

6.70 Module: Strategy and Organization [M-WIWI-101425]**Responsible:** Prof. Dr. Hagen Lindstädt**Organisation:** KIT Department of Economics and Management**Part of:** [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Language	Level	Version
9	Deutsch	3	3

Election block: Strategie und Organisation (at least 9 credits)			
T-WIWI-102629	Management and Strategy	3,5 CR	Lindstädt
T-WIWI-102630	Managing Organizations	3,5 CR	Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership	2 CR	Lindstädt

Competence Certificate

Erfolgreicher Abschluss aller fachlich entsprechenden Module aus dem Grundlagenprogramm.

Competence Goal

- The student describes both central concepts of strategic management as well as concepts and models for the design of organizational structures.
- He / she evaluates the strengths and weaknesses of existing organizational structures and regulations on the basis of systematic criteria.
- The management of organizational changes discusses and examines the students by means of case studies to what extent the models can be used in practice and what conditions must apply to them.
- In addition, students plan to use IT to support corporate governance.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

Content

The module has a practical and action-oriented structure and provides the student with an up-to-date overview of basic skills concepts and models of strategic management and a realistic picture of possibilities and limitations rational design approaches of the organization.

The focus is firstly on internal and external strategic analysis, concept and sources of competitive advantage, Formulation of competitive and corporate strategies as well as strategy assessment and implementation. Secondly strengths and weaknesses of organizational structures and regulations are assessed on the basis of systematic criteria. Concepts for the organization of organizational structures, the regulation of organizational processes and the control organizational changes are presented.

Workload

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

M

6.71 Module: Supply Chain Management [M-WIWI-101421]**Responsible:** Prof. Dr. Stefan Nickel**Organisation:** KIT Department of Economics and Management**Part of:** [Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	7

Mandatory			
T-WIWI-107506	Platform Economy	4,5 CR	Straub, Weinhardt
Election block: Ergänzungsangebot (at most 4 items)			
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 CR	Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management	4,5 CR	Nickel
T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems	6 CR	Furmans
T-WIWI-109802	Wildcard Supply Chain Management	4,5 CR	
T-WIWI-109803	Wildcard Supply Chain Management	4,5 CR	

Competence Certificate

This module is only available in the elective field. In the specialization program Business Administration, the election is not permitted.

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.

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

Prerequisites

The course T-WIWI-107506 "Platform Economy" has to be taken.

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.

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.

Annotation

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

6.72 Module: Topics in Finance I [M-WIWI-101465]

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

Organisation: KIT Department of Economics and Management

Part of: **Business Administration (Vertiefungsprogramm Betriebswirtschaftslehre)**
Compulsory Elective Modules (Betriebswirtschaftslehre oder Ingenieurwissenschaften)
Compulsory Elective Modules (Betriebswirtschaftslehre)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	5

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-108445	Applied Asset Management	3 CR	Sauer
T-WIWI-102625	Exchanges	1,5 CR	Franke
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-107505	Financial Accounting for Global Firms	4,5 CR	Luedecke
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg

Competence Certificate

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 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 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

Prerequisites

Successful passing of the corresponding modules of the basic program.

It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.

In addition to that it is possible to choose the module *Topics in Finance II*.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module **M-WIWI-101494 - Fundamentals of Business Administration 1** must have been passed.
2. The module **M-WIWI-101578 - Fundamentals of Business Administration 2** must have been passed.
3. The module **M-WIWI-101435 - Essentials of Finance** must have been started.

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.

Annotation

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

Workload

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

M

6.73 Module: Topics in Finance II [M-WIWI-101423]

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

Organisation: KIT Department of Economics and Management

Part of: [Business Administration \(Vertiefungsprogramm Betriebswirtschaftslehre\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	3	6

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-108445	Applied Asset Management	3 CR	Sauer
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-107505	Financial Accounting for Global Firms	4,5 CR	Luedecke
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg

Competence Certificate

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 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 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

Prerequisites

Successful passing of the corresponding modules of the basic program.

It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.

In addition to that it is possible to choose the module *Topics in Finance I*.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101494 - Fundamentals of Business Administration 1](#) must have been passed.
2. The module [M-WIWI-101578 - Fundamentals of Business Administration 2](#) must have been passed.
3. The module [M-WIWI-101435 - Essentials of Finance](#) must have been started.

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.

Annotation

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

Workload

The total workload for this module is approximately 270 hours.

M

6.74 Module: Vehicle Development [M-MACH-101265]

Responsible: Prof. Dr. Frank Gauterin
Organisation: KIT Department of Mechanical Engineering

Part of: [Engineering Sciences \(Vertiefungsprogramm Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Betriebswirtschaftslehre oder Ingenieurwissenschaften\)](#)
[Compulsory Elective Modules \(Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Once	1 semester	Deutsch/Englisch	4	2

Election block: Fahrzeugentwicklung (at least 9 credits)			
T-MACH-105156	Vehicle Mechatronics I	3 CR	Ammon
T-MACH-105160	Fundamentals in the Development of Commercial Vehicles I	1,5 CR	Zürn
T-MACH-105161	Fundamentals in the Development of Commercial Vehicles II	1,5 CR	Zürn
T-MACH-102207	Tires and Wheel Development for Passenger Cars	3 CR	Leister
T-MACH-105162	Fundamentals of Automobile Development I	1,5 CR	Frech
T-MACH-105163	Fundamentals of Automobile Development II	1,5 CR	Frech
T-MACH-102156	Project Workshop: Automotive Engineering	4,5 CR	Frey, Gauterin, Gießler
T-MACH-105172	Simulation of Coupled Systems	4 CR	Geimer, Xiang
T-MACH-108888	Simulation of Coupled Systems - Advance	0 CR	Geimer, Xiang

Competence Certificate

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 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 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.

Prerequisites

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.
2. The module [M-ETIT-101155 - Electrical Engineering](#) must have been passed.
3. The module [M-WIWI-101839 - Additional Fundamentals of Engineering](#) must have been passed.
4. The module [M-MACH-101259 - Engineering Mechanics](#) must have been passed.

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.

Recommendation

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.

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.

Learning type

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

7 Courses

T

7.1 Course: Advanced Programming - Application of Business Software [T-WIWI-102748]

Responsible: Prof. Dr. Stefan Klink
Prof. Dr. Andreas Oberweis

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2511026	Advanced Programming - Application of Business Software	2 SWS	Lecture (V)	Klink
WS 18/19	2511027	Übungen zu Programmierung kommerzieller Systeme - Einsatz betrieblicher Standard-Software	1 SWS	Practice (Ü)	Klink, Ullrich
WS 18/19	2511028	Rechnerübung zu Programmierung kommerzieller Systeme - Einsatz betrieblicher Standard-Software	2 SWS	Practice (Ü)	Ullrich
Exams					
WS 18/19	7900019	Advanced Programming - Application of Business Software		Prüfung (PR)	
SS 2019	7900049	Advanced Programming - Application of Business Software		Prüfung (PR)	Klink

Competence Certificate

The assessment consists of a written examination of 2 hours (Section 4 (2), 1 of the examination regulations) and of assignments during the course (Section 4 (2), 3 SPO 2007 respectively Section 4 (3) SPO 2015). Successful participation to the computer lab is precondition for permission to the assessment. Further information will be given at the first lesson and via the homepage of the course.

The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

This course cannot be taken together with *Advanced Programming - Java Network Programming*.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102747 - Advanced Programming - Java Network Programming](#) must not have been started.

Recommendation

Knowledge of the course "Grundlagen der Informatik I und II" are helpful.

Below you will find excerpts from events related to this course:

V

Advanced Programming - Application of Business Software

2511026, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Business information systems enable, support, and accelerate new forms of business processes and forms of organisation. They are the central infrastructure of the economy in the age of eBusiness. Thus, basic knowledge is given in lectures, in exercises and in the computer lab which deals with installation, configuration and parameterization of business information systems. The course communicates profound knowledge in following topics:

- Analysis of cooperation scenarios and business process scenarios
- Selection of modelling methods according to defined criteria
- Implementation of business process models and cooperation models with the help of standard software
- Identification and assessment of challenges during the installation of information systems
- Economical evaluation of business information systems.

Workload

Lecture 30h

Exercise course 17h

Review and preparation of lectures 30h

Review and preparation of exercises 15h

Computer Lab 30h

Exam preparation 29h

Exam 1h

Total 150 h

Exercise courses are done by student tutors (size about 50 students)

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.

Further literature will be given during the course.

T

7.2 Course: Advanced Programming - Java Network Programming [T-WIWI-102747]

Responsible: Prof. Dr. Dietmar Ratz

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	2

Events					
SS 2019	2511020	Advanced Programming - Java Network Programming	2 SWS	Lecture (V)	Ratz
SS 2019	2511021	Tutorium zu Programmierung kommerzieller Systeme - Anwendungen in Netzen mit Java	1 SWS	Tutorial (Tu)	Ratz, Struppek, Ulrich
SS 2019	2511023	Rechnerpraktikum zu Programmierung kommerzieller Systeme - Anwendungen in Netzen mit Java	2 SWS	Practice (PÜ)	Ratz, Struppek, Ulrich
Exams					
WS 18/19	7900020	Advanced Programming - Java Network Programming		Prüfung (PR)	
SS 2019	7900041	Advanced Programming - Java Network Programming		Prüfung (PR)	Ratz

Competence Certificate

At the end of the lecture period, a written examination (90 min.) (according to §4(2), 1 SPO) 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.

The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

This course cannot be taken together with [Advanced Programming - Application of Business Software](#) [2511026].

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102748 - Advanced Programming - Application of Business Software](#) must not have been started.

Annotation

The registration for the participation in the computer lab (precondition for the exam participation) already takes place in the first lecture week!

Below you will find excerpts from events related to this course:

V

Advanced Programming - Java Network Programming

2511020, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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.

Annotation

The registration for the participation in the computer lab (precondition for the exam participation) already takes place in the first lecture week!

Workload

The total workload for this course is approximately 150 hours. For further information see German version.

Literature

D. Ratz, J. Scheffler, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. 6. aktualisierte und erweiterte Auflage, Hanser 2011.

Elective literature:

- 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.
- Further references will be given in the lecture.

T

7.3 Course: Advanced Topics in Economic Theory [T-WIWI-102609]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101501 - Wirtschaftstheorie](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
SS 2019	2520527	Advanced Topics in Economic Theory	2 SWS	Lecture (V)	Mitusch, Scheffel
SS 2019	2520528	Übung zu Advanced Topics in Economic Theory	1 SWS	Practice (Ü)	Pegorari

Competence Certificate

The course T-WIWI-102609 "Advanced Topics in Economic Theory" restarts in summer term 2019.

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

Recommendation

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.

Below you will find excerpts from events related to this course:

V

Advanced Topics in Economic Theory

2520527, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course deals with basic elements of modern economic theory. It is divided into two parts. The first part introduces the microeconomic foundations of general equilibrium à la Debreu ("The Theory of Value", 1959) and Hildenbrand/Kirman ("Equilibrium Analysis", 1988). The second part deals with asymmetric information and introduces the basic techniques of contract theory.

The course is largely based on the textbook "Microeconomic Theory" (Chapters 1-5, 10, 13-20) by A.Mas-Colell, M.D.Whinston, and J.R.Green.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

The course is based on the excellent textbook "Microeconomic Theory" (Chapters 1-5, 10, 13-20) by A.Mas-Colell, M.D.Whinston, and J.R.Green.

T

7.4 Course: Agile product innovation management - value-driven planning of new products [T-MACH-106744]

Responsible: Dr.-Ing. Roland Kläger

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	3

Events					
SS 2019	2122300	Agile product innovation management - value-driven planning of new products	SWS	Lecture (V)	Kläger
Exams					
WS 18/19	76-T-MACH-106744	Agile product innovation management - value-driven planning of new products		Prüfung (PR)	Kläger

Competence Certificate

Oral examination, 20 min.

Prerequisites

None

T 7.5 Course: Airport Logistics [T-MACH-105175]

Responsible: André Richter
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	2

Events					
WS 18/19	2117056	Airport logistics	2 SWS	Lecture (V)	Richter
Exams					
WS 18/19	76-T-MACH-105175	Airport Logistics		Prüfung (PR)	Furmans

Competence Certificate

The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites

none

Below you will find excerpts from events related to this course:

V Airport logistics

2117056, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Media:

presentations

Learning Content

Introduction
 airport installations
 luggage transport
 passenger transport
 security on the airport
 legal bases of the air traffic
 freight on the airport

Annotation

Limited number of participants: allocation of places in sequence of application (first come first served)

Application via "ILIAS" mandatory

personal presence during lectures mandatory

Workload

regular attendance: 21 hours

self-study: 99 hours

Literature

„Gepäcklogistik auf Flughäfen“ à <http://www.springer.com/de/book/9783642328527>

T

7.6 Course: Analysis of Social Structures (WiWi) [T-GEISTSOZ-109047]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: [M-GEISTSOZ-101167 - Soziologie/Empirische Sozialforschung](#)
[M-WIWI-104906 - Geistes- und Sozialwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	5011007	Sozialstrukturanalyse	2 SWS	Practice (Ü)	Nollmann
Exams					
WS 18/19	7400029	Analysis of Social Structures (WiWi)		Prüfung (PR)	Nollmann

T

7.7 Course: Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines [T-MACH-105173]

Responsible: Dr.-Ing. Marcus Gohl
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101303 - Verbrennungsmotoren II](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2134150	Analysis of Exhaust Gas und Lubricating Oil in Combustion Engines	2 SWS	Lecture (V)	Gohl
Exams					
SS 2019	76--T-Mach-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines		Prüfung (PR)	Gohl

Competence Certificate

Letter of attendance or oral exam (25 minutes, no auxillary means)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Analysis of Exhaust Gas und Lubricating Oil in Combustion Engines

2134150, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Media:

Lecture with Powerpoint slides

Learning Content

The students get involved in the application of different measurement techniques in the field of exhaust gas and lubricating oil analysis. The functional principles of the systems as well as the application areas of the latter are discussed. In addition to a general overview of standard applications, current specific development and research activities are introduced.

Workload

regular attendance: 24 hrs

self study: 96 hrs

Literature

The lecture documents are distributed during the courses.

T

7.8 Course: Analysis of Multivariate Data [T-WIWI-103063]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101599 - Statistik und Ökonometrie](#)
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Exams				
WS 18/19	7900240	Analysis of Multivariate Data	Prüfung (PR)	Grothe

Competence Certificate

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

Recommendation

Attendance of the courses Statistics 1 [2600008] and Statistics 2 [2610020] is recommended.

Annotation

The lecture is not offered regularly. The courses planned for three years in advance can be found online.

T

7.9 Course: Analysis Tools for Combustion Diagnostics [T-MACH-105167]

Responsible: Jürgen Pfeil
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101303 - Verbrennungsmotoren II](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2134134	Analysis tools for combustion diagnostics	2 SWS	Lecture (V)	Pfeil

Competence Certificate

oral examination, Duration: 25 min., no auxiliary means

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Analysis tools for combustion diagnostics

2134134, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

energy balance at the engine
 energy conversion in the combustion chamber
 thermodynamics of the combustion process
 flow velocities
 flame propagation
 special measurement techniques

Workload

regular attendance: 24 hours
 self-study: 96 hours

Literature

Lecture notes available in the lectures

T 7.10 Course: Analytical CRM [T-WIWI-102596]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101422 - Vertiefung im Customer Relationship Management](#)
[M-WIWI-101460 - CRM und Servicemanagement](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2540522	Analytical CRM	2 SWS	Lecture (V)	Geyer-Schulz
SS 2019	2540523	Übungen zu Analytisches CRM	2 SWS	Practice (Ü)	Schweizer
Exams					
WS 18/19	7979571	Analytical CRM (Nachklausur SS 2018)		Prüfung (PR)	Geyer-Schulz

Competence Certificate

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.

A bonus can be acquired through successful participation in the practice. 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

Recommendation

We expect knowledge about data models and the UML modelling language concerning information systems.

Below you will find excerpts from events related to this course:

V

Analytical CRM

2540522, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course Analytical CRM deals with methods and techniques for analysis concerning the management and improvement of customer relationships. Knowledge about customers is aggregated and used for enterprise decision problems like product line planning, customer loyalty, etc. A necessary precondition for these analyses is the transformation of data stemming from operative systems into a common data warehouse that assembles all necessary information. This requires transformation of data models and processes for creating and managing a data warehouse, like ETL processes, data quality and monitoring. The generation of customer oriented and flexible reports for different business purposes is covered. The course finally treats several different statistical analysis methods like clustering, regression etc. that are necessary for generating important indicators (like customer lifetime value, customer segmentation). As external data source, customer surveys are introduced.

Workload

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Literature

Ponniah, Paulraj. Data Warehousing Fundamentals: A Comprehensive Guide for IT Professionals. Wiley, New York, 2001.

Duda, Richard O. und Hart, Peter E. und Stork, David G. Pattern Classification. Wiley-Interscience, New York, 2. Ausgabe, 2001.

Maddala, G. S. Introduction to Econometrics. Wiley, Chichester, 3rd Ed., 2001.

Theil, H. Principles of Econometrics. Wiley, New York, 1971.

T

7.11 Course: Applications of Artificial Intelligence [T-WIWI-109263]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2511314	Applications of Artificial Intelligence	2 SWS	Lecture (V)	Sure-Vetter
WS 18/19	2511315	Exercises to Applications of Artificial Intelligence	1 SWS	Practice (Ü)	Sure-Vetter, Weller
Exams					
WS 18/19	7900091	Applications of Artificial Intelligence		Prüfung (PR)	Sure-Vetter

Competence Certificate

Written Examination (60 min) according to §4, Abs. 2, 1 of the examination regulations or oral examination of 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.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.
2. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.

Recommendation

Basics in logic, e.g. from lecture Foundations of Informatics 1 are important.

Below you will find excerpts from events related to this course:

V

Applications of Artificial Intelligence

2511314, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

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.

Learning Content

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.

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preparation and postprocessing: 67.5 hours
- Exam and exam preparation: 37.5 hours

**Exercises to Applications of Artificial Intelligence**2511315, WS 18/19, 1 SWS, [Open in study portal](#)**Practice (Ü)****Description**

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.

Learning Content

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.

Workload

The total workload for the lecture Anwendungen der KI is given out on the description of the lecture.

T

7.12 Course: Applied Asset Management [T-WIWI-108445]

Responsible: Dr. Andreas Sauer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	2

Events					
WS 18/19	2530219	Applied Asset Management	2 SWS	Lecture (V)	Sauer
Exams					
WS 18/19	7900061	Applied Asset Management		Prüfung (PR)	Sauer, Ruckes

Competence Certificate

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

T-WIWI-102879 "Asset Management" must not be selected.

Recommendation

Proficiency of the topics covered in the course "Investments" is required.

Annotation

Former title of the course until winter term 2017/2018: "Asset Management"

Below you will find excerpts from events related to this course:

V

Applied Asset Management

2530219, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course familiarizes students with the instruments, methods and terms of professional asset management. It conveys the knowledge of applying the relevant methods to students via practical exercises.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Investments and Portfolio Management,
 Zvi Bodie, Alex Kane, Alan J. Marcus,
 McGraw-Hill Publ.Comp., 9. Auflage (2011)

The Theory and Practice of Investment Management: Asset Allocation, Valuation, Portfolio Construction, and Strategies

Frank J. Fabozzi, Harry Markowitz
 John Wiley & Sons; 2. Auflage (2011)

T

7.13 Course: Applied Informatics I - Modelling [T-WIWI-102652]

Responsible: Prof. Dr. Andreas Oberweis
Prof. Dr. York Sure-Vetter

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	3

Events					
WS 18/19	2511030	Applied Informatics I - Modelling	2 SWS	Lecture (V)	Sure-Vetter, Koschmider, Schiefer, Oberweis
WS 18/19	2511031	Exercises to Applied Informatics I - Modelling	1 SWS	Practice (Ü)	Sure-Vetter, Koschmider, Schiefer, Thoma, Käfer
Exams					
WS 18/19	7900003	Applied Informatics I - Modelling		Prüfung (PR)	Oberweis, Sure-Vetter
SS 2019	7900018	Applied Informatics I - Modelling		Prüfung (PR)	Oberweis, Sure-Vetter

Competence Certificate

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

Modeled Conditions

You have to fulfill one of 2 conditions:

1. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.
2. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.

Below you will find excerpts from events related to this course:

V

Applied Informatics I - Modelling

2511030, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

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 aspects, the second part covers the modelling of dynamic aspects of information systems.

Learning Content

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 description 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.

Workload

Total effort: 120-150 hours

Presence time: 30 hours

Self study: 90-120 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.

Additional literature:

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web - Grundlagen, Springer, 2008 (ISBN 978-3-540-33993-9)
- Staab, Studer: Handbook on Ontologies, Springer, 2003
- J.L. Peterson: Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
- Franz Baader, Diego Calvanese, Deborah McGuinness, Daniele Nardi, Peter Patel-Schneider. The Description Logic Handbook - Theory, Implementation and Applications, Cambridge 2003.

**Exercises to Applied Informatics I - Modelling**

2511031, WS 18/19, 1 SWS, [Open in study portal](#)

Practice (Ü)

Description

Multiple exercises are held that capture the topics, held in the lecture Applied Informatics I - Modelling, and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

Learning Content

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 description 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.

Workload

The total workload for the lecture Applied Informatics I - Modelling is given out on the description of the lecture.

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.

Additional literature:

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web - Grundlagen, Springer, 2008 (ISBN 978-3-540-33993-9)
- Staab, Studer: Handbook on Ontologies, Springer, 2003
- J.L. Peterson: Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
- Franz Baader, Diego Calvanese, Deborah McGuinness, Daniele Nardi, Peter Patel-Schneider. The Description Logic Handbook - Theory, Implementation and Applications, Cambridge 2003.

T

7.14 Course: Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-109445]

Responsible: Prof. Dr. Ali Sunyaev

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-101628 - Vertiefung Informatik](#)
[M-WIWI-101630 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	2

Events					
SS 2019	2511032	Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	2 SWS	Lecture (V)	Sunyaev
SS 2019	2511033	Übungen zu Angewandte Informatik II – Internet Computing	1 SWS	Practice (Ü)	Sunyaev
Exams					
SS 2019	7900025	Applied Informatics II - Internet Computing		Prüfung (PR)	Sunyaev

Competence Certificate

The assessment consists of a written exam (120 min) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is recommended for the written exam, which is offered at the end of the winter semester and at the end of the summer semester.

By successful processing the exercises a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.
2. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.
3. The course [T-WIWI-102651 - Applied Informatics II - IT Systems for eCommerce](#) must not have been started.

Below you will find excerpts from events related to this course:

V

Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services

Lecture (V)

2511032, SS 2019, 2 SWS, [Open in study portal](#)

Learning Content

The lecture Applied Computer Science II provides insights into fundamental concepts and future technologies of distributed systems and Internet computing. Students should be able to select, design and apply the presented concepts and technologies. The course first introduces basic concepts of distributed systems (e.g. design of architectures for distributed systems, internet architectures, web services, middleware).

In the second part of the course, emerging technologies of Internet computing will be examined in depth. These include, among others:

- Cloud Computing
- Edge & Fog Computing
- Internet of Things
- Blockchain
- Artificial Intelligence

Workload

The total workload for this course is approximately 150 hours. For further information see German version.

Literature

Tba in the lecture.

T

7.15 Course: Auction & Mechanism Design [T-WIWI-102876]

Responsible: Prof. Dr. Nora Szech
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Angewandte Mikroökonomik](#)
[M-WIWI-101501 - Wirtschaftstheorie](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2560550	Auction and Mechanism Design	2 SWS	Lecture (V)	Szech
SS 2019	2560551	Übung zu Auction and Mechanism Design	1 SWS	Practice (Ü)	Szech, Huber

Competence Certificate

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 exercise. 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

Recommendation

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Annotation

The lecture will be held in English.

Below you will find excerpts from events related to this course:

V

Auction and Mechanism Design

2560550, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course starts with the basic theory of equilibrium behavior and revenue management in one object standard auctions. The revenue equivalence theorem for standard auctions is introduced. Thereafter, the course focuses on mechanism design and its applications to one object auctions and bilateral trade.

Annotation

The lecture will be held in English.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Krishna, V.: Auction Theory, Academic Press, 2009.

Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2010.

Mathews, S.: A Technical Primer on Auction Theory I: Independent Private Values No. 1096. Northwestern University, Center for Mathematical Studies in Economics and Management Science, 1995.

T

7.16 Course: Automotive Engineering I [T-MACH-100092]

Responsible: Prof. Dr. Frank Gauterin
Dr.-Ing. Hans-Joachim Unrau

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101266 - Fahrzeugtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Expansion	Language	Version
Prüfungsleistung schriftlich	6	Each winter term	1 terms		2

Events					
WS 18/19	2113805	Automotive Engineering I	4 SWS	Lecture (V)	Gauterin, Unrau
WS 18/19	2113809	Automotive Engineering I	4 SWS	Lecture (V)	Gauterin, Gießler
Exams					
WS 18/19	76-T-MACH-100092	Automotive Engineering		Prüfung (PR)	Unrau, Gauterin
SS 2019	76-T-MACH-100092	Automotive Engineering		Prüfung (PR)	Gauterin, Unrau

Competence Certificate

Written examination

Duration: 120 minutes

Auxiliary means: none

Prerequisites

The brick "T-MACH-102203 - Automotive Engineering I" is not started or finished. The bricks "T-MACH-100092 - Grundlagen der Fahrzeugtechnik I" and "T-MACH-102203 - Automotive Engineering I" can not be combined.

Below you will find excerpts from events related to this course:

V

Automotive Engineering I

2113805, WS 18/19, 4 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Workload

regular attendance: 45 hours
self-study: 195 hours

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.: Script to the lecture 'Grundlagen der Fahrzeugtechnik I', KIT, Institute of Vehicle System Technology, Karlsruhe, annual update

**Automotive Engineering I**2113809, WS 18/19, 4 SWS, [Open in study portal](#)**Lecture (V)****Notes**

In English language.

Learning 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

Workload

regular attendance: 45 hours

self-study: 195 hours

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.: Script to the lecture 'Automotive Engineering I', KIT, Institute of Vehicle System Technology, Karlsruhe, annual update

T

7.17 Course: Automotive Engineering II [T-MACH-102117]

Responsible: Prof. Dr. Frank Gauterin
Dr.-Ing. Hans-Joachim Unrau

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101266 - Fahrzeugtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2114835	Automotive Engineering II	2 SWS	Lecture (V)	Unrau
SS 2019	2114855	Automotive Engineering II	2 SWS	Lecture (V)	Gießler
Exams					
WS 18/19	76-T-MACH-102117	Automotive Engineering II		Prüfung (PR)	Unrau, Gauterin
WS 18/19	76T-MACH-102117-2	Automotive Engineering II		Prüfung (PR)	Gauterin, Unrau
SS 2019	76-T-MACH-102117	Automotive Engineering II		Prüfung (PR)	Unrau, Gauterin

Competence Certificate

Written Examination

Duration: 90 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Automotive Engineering II2114835, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning 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

Workload

regular attendance: 22,5 hours

self-study: 97,5 hours

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.: Script to the lecture 'Grundlagen der Fahrzeugtechnik II', KIT, Institute of Vehicle System Technology, Karlsruhe, annual update

V

Automotive Engineering II2114855, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning 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

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

7.18 Course: Automotive Logistics [T-MACH-105165]

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

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Events					
SS 2019	2118085	Automotive Logistics	2 SWS	Lecture (V)	Furmans
Exams					
WS 18/19	76-T-MACH-105165	Automotive Logistics		Prüfung (PR)	Furmans, Mittwollen
SS 2019	76-T-MACH-105165	Automotive Logistics		Prüfung (PR)	Mittwollen, Furmans

Competence Certificate

The assessment consists of a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Automotive Logistics

2118085, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

presentations, black board

Notes

The event will be offered for the last time in the summer semester 2019.

Learning Content

- Logistic questions within the automobile industry
- basic model of automobile production and distribution
- relation with the suppliers
- Disposition and physical execution
- Vehicle production in the interaction of shell, paint shop and assembly
- Sequence planning
- Assembly supply
- vehicle distribution and linkage with selling processes
- Physical execution, planning and control

Annotation

none

Workload

regular attendance: 21 hours

self-study: 99 hours

Literature

None.

T

7.19 Course: Bachelor Thesis [T-WIWI-103067]

Responsible: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101601 - Modul Bachelorarbeit](#)

Type	Credits	Version
Abschlussarbeit	12	1

Competence Certificate

see module description

Prerequisites

see module description

Final Thesis

This course represents a final thesis. The following periods have been supplied:

Submission deadline 6 months

Maximum extension period 1 months

Correction period 8 weeks

This thesis requires confirmation by the examination office.

T

7.20 Course: Basic Principles of Economic Policy [T-WIWI-103213]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101668 - Wirtschaftspolitik I](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2560280	Basic Principles of Economic Policy	2 SWS	Lecture (V)	Ott
SS 2019	2560281	Übungen zur Einführung in die Wirtschaftspolitik	1 SWS	Practice (Ü)	Ott, Bälz, Scheu
Exams					
WS 18/19	7900079	Basic Principles of Economic Policy		Prüfung (PR)	Ott

Competence Certificate

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. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

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

Below you will find excerpts from events related to this course:

V

Basic Principles of Economic Policy

2560280, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Annotation

The course "Basic Principles of Economic Policy" [2560280] is not offered in summer term 2015.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

See announcements to the lecture

T

7.21 Course: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]

Responsible: Gerd Gutekunst
Prof. Dr. Berthold Wigger

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101403 - Finanzwissenschaft](#)
[M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2560134	Basics of German Company Tax Law and Tax Planning	3 SWS	Lecture (V)	Wigger, Gutekunst
Exams					
WS 18/19	790unbe	Basics of German Company Tax Law and Tax Planning		Prüfung (PR)	Wigger
SS 2019	790unbe	Basics of German Company Tax Law and Tax Planning		Prüfung (PR)	Wigger

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None

Recommendation

Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course "Öffentliche Einnahmen" beforehand.

T

7.22 Course: Basics of Technical Logistics [T-MACH-102163]

Responsible: Dr.-Ing. Martin Mittwollen
Jan Oellerich

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each winter term	4

Events					
WS 18/19	2117095	Basics of Technical Logistics	4 SWS	Lecture / Practice (VÜ)	Mittwollen, Oellerich
Exams					
WS 18/19	76-T-MACH-102163	Basics of Technical Logistics		Prüfung (PR)	Mittwollen
SS 2019	76-T-MACH-102163	Basics of Technical Logistics		Prüfung (PR)	Mittwollen

Competence Certificate

The assessment consists of a written exam (60 min.).

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Basics of Technical Logistics

2117095, WS 18/19, 4 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Description**Media:**

supplementary sheets, presentations, blackboard

Notes

lectures and practice; practice dates: look up ILIAS

Learning Content

- effect model of conveyor machines
- elements for the change of position and orientation
- conveyor processes
- identification systems
- drives
- mechanical behaviour of conveyors
- structure and function of conveyor machines
- elements of intralogistics
- sample applications and calculations in addition to the lectures inside practical lectures

Annotation

Basics knowledge of technical mechanics is preconditioned

Workload

presence: 48h

rework: 132h

Literature

Recommendations during lessons

T

7.23 Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II [T-MACH-100967]

Responsible: Prof. Dr. Andreas Guber
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2142883	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II	2 SWS	Lecture (V)	Guber
Exams					
WS 18/19	76-T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II		Prüfung (PR)	Guber
SS 2019	76-T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II		Prüfung (PR)	Guber

Competence Certificate

Written exam (75 Min.)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II

2142883, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Media:

Lecture script

Learning Content

Examples of use in Life-Sciences and biomedicine: Microfluidic Systems:

LabCD, Protein Crystallisation

Microarrays

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

Workload

Literature: 20 h

Lessons: 21 h

Preparation and Review: 50 h

Exam preparation: 30 h

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

7.24 Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III [T-MACH-100968]

Responsible: Prof. Dr. Andreas Guber
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2142879	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III	2 SWS	Lecture (V)	Guber
Exams					
WS 18/19	76-T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III		Prüfung (PR)	Guber
SS 2019	76-T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III		Prüfung (PR)	Guber

Competence Certificate

Written exam (75 Min.)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III

2142879, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Media:

Lecture script

Learning 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

Workload

Literature: 20 h

Lessions: 21 h

Preparation and Review: 50 h

Exam preparation: 30 h

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

7.25 Course: Bionics for Engineers and Natural Scientists [T-MACH-102172]

Responsible: PD Dr. Hendrik Hölscher
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2142140	Bionics for Engineers and Natural Scientists	2 SWS	Lecture (V)	Hölscher, Walheim, Greiner
Exams					
WS 18/19	76-T-MACH-102172	Bionics for Engineers and Natural Scientists		Prüfung (PR)	Hölscher

Competence Certificate

written or oral exam

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Bionics for Engineers and Natural Scientists

2142140, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Slides of the lectures

Learning 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.

Workload

lectures 30 h

self study 30 h

preparation for examination 30 h

Literature

Werner Nachtigall: Bionik – Grundlagen und Beispiele für Ingenieure und Naturwissenschaftler. Springer-Verlag Berlin (2002), 2. Aufl.

T

7.26 Course: BUS-Controls [T-MACH-102150]

Responsible: Simon Becker
Prof. Dr.-Ing. Marcus Geimer

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101266 - Fahrzeugtechnik](#)
[M-MACH-101267 - Mobile Arbeitsmaschinen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	2

Events					
SS 2019	2114092	BUS-Controls	2 SWS	Lecture (V)	Geimer, Daiß
Exams					
WS 18/19	76T-MACH-102150	BUS-Controls		Prüfung (PR)	Geimer
SS 2019	76T-MACH-102150	BUS-Controls		Prüfung (PR)	Geimer

Competence Certificate

The assessment consists of an oral exam (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

Required for the participation in the examination is the preparation of a report during the semester. The partial service with the code T-MACH-108889 must have been passed.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-MACH-108889 - BUS-Controls - Advance](#) must have been passed.

Recommendation

Basic knowledge of electrical engineering is recommended. Programming skills are also helpful.

The number of participants is limited. 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.

Annotation

The students will get an overview of the theoretic and practical functioning of different bus systems.

After the practical oriented lessons the students will be able to visualize the communication structure of different applications, design basic systems and evaluate the complexity of programming of the complete system.

Hereunto the students program in the practical orientated lessons IFM-controllers using the programming environment CoDeSys.

Content:

- Knowledge of the basics of data communication in networks
- Overview of the operating mode of current field buses
- Explicit observation of the operating mode and application areas of CAN buses
- Practical programming of an example application (hardware is provided)

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.

Below you will find excerpts from events related to this course:

V**BUS-Controls**2114092, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning Content**

- Knowledge of the basics of data communication in networks
- Overview of the operating mode of current field buses
- Explicit observation of the operating mode and application areas of CAN buses
- Practical programming of an example application (hardware is provided)

Annotation

The course will be replenished by interesting lectures of professionals.

Workload

- regular attendance: 21 hours
- self-study: 92 hours

Literature**Elective 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.

T

7.27 Course: BUS-Controls - Advance [T-MACH-108889]

Responsible: Kevin Daiß
Prof. Dr.-Ing. Marcus Geimer

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101266 - Fahrzeugtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung	0	Each summer term	1

Exams				
WS 18/19	76-T-MACH-108889	BUS-Controls - Advance	Prüfung (PR)	Geimer

Competence Certificate
Creation of control program

Prerequisites
none

T

7.28 Course: Business Administration: Finance and Accounting [T-WIWI-102819]

Responsible: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg
Prof. Dr. Marcus Wouters

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101494 - Grundlagen BWL 1](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	1

Events					
WS 18/19	2610026	Business Administration: Finance and Accounting	2 SWS	Lecture (V)	Ruckes, Wouters
WS 18/19	2610027	Tutorien zu Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen	2 SWS	Tutorial (Tu)	Strych
Exams					
WS 18/19	7900245	Business Administration: Finance and Accounting		Prüfung (PR)	Wouters, Ruckes
SS 2019	7900036	Business Administration: Finance and Accounting		Prüfung (PR)	Ruckes, Wouters

Competence Certificate

The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation. The assessment takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Annotation

Key qualifications can be shown in an active participation through presentations of solutions and discussions in the tutorials which accompany the course. Each part of the course is taught by instructors specialised in the field of that part.

Below you will find excerpts from events related to this course:

V

Business Administration: Finance and Accounting

2610026, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

- **Investment and Finance:**
 - Valuation of Bonds and Stocks
 - Capital Budgeting
 - Portfolio Theory
- **Financial Accounting**
- **Management Accounting**

Annotation

Key qualifications can be shown in an active participation through presentations of solutions and discussions in the tutorials which accompany the course. Each part of the course is taught by instructors specialised in the field of that part.

Workload

The total workload for this course is approximately 120 hours. For further information see German version.

Literature

Extensive bibliographic information will be given in the materials to the lecture.

T

7.29 Course: Business Administration: Production Economics and Marketing [T-WIWI-102818]

Responsible: Prof. Dr. Wolf Fichtner
 Prof. Dr. Martin Klarmann
 Prof. Dr.-Ing. Thomas Lützkendorf
 Prof. Dr. Martin Ruckes
 Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101578 - Grundlagen BWL 2](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Events					
SS 2019	2500027	Tutorien zu BWL PM	2 SWS	Tutorial (Tu)	Klarmann, Strych, Assistenten
SS 2019	2600024	Business Administration: Production Economics and Marketing	2 SWS	Lecture (V)	Klarmann, Schultmann, Fichtner
Exams					
WS 18/19	7900207	Business Administration: Production Economics and Marketing		Prüfung (PR)	Fichtner, Klarmann

Competence Certificate

The assessment consists of a written exam (90 minutes) according to Section 4(2), 1 of the examination regulation.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Business Administration: Production Economics and Marketing

2600024, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

1. Marketing:

Marketing is an organizational function to handle situations, activities, and processes for creating, communicating, and delivering value to customers in a best way. (Customer) relationship management comprises collecting, aggregating, and analyzing information (e.g., developments in the society, changing conditions of markets, alterations w.r.t. buying behavior) to benefit different target groups.

Main topics will deal with market research and optimized application of marketing mix instruments with emphasis on 'marketing and the web', 'innovation management', and 'international marketing'.

2. Production economics

In the part of production economics the student will learn basics in the field of production theory, procurement and resource acquisitions, production and operations management and industrial engineering.

Aspects of electrical engineering industry, technological foresights, construction industry and real estate markets will be treated.

3. Information systems

In today's economy, information is a competitive factor that calls for an interdisciplinary investigation from economics and business administration, informatics and law. In this part of the lecture, selected topics from information engineering and management and their impact in market competition are presented

Topics include: Information in a company, Information processing: From an agent to business networks, social networks, service value networks, market engineering

Learning Content

The course is made up of the following topics:

Marketing

- Foundations of marketing
- Strategic marketing
- Consumer behaviour
- Product
- Price
- Promotion
- Sales
- Marketing Metrics

Production economics

In the part of production economics the student will learn basics in the field of production theory, procurement and resource acquisitions, production and operations management and industrial engineering.

Aspects of energy economics, technological foresights, construction industry and real estate markets will be treated.

Annotation

Key qualifications can be shown in an active participation through presentations of solutions and discussions in the tutorials which accompany the course.

Each part of the course is taught by instructors specialised in the field of that part.

Workload

The total workload for this course is approximately 120 hours. For further information see German version.

Literature

Further literature references are announced in the materials to the lecture.

T

7.30 Course: Business Administration: Strategic Management and Information Engineering and Management [T-WIWI-102817]

Responsible: Prof. Dr. Petra Nieken
Prof. Dr. Martin Ruckes

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101494 - Grundlagen BWL 1](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2600023	Betriebswirtschaftslehre: Unternehmensführung und Informationswirtschaft	2 SWS	Lecture (V)	Lindstädt, Weinhardt, Strych, Graf
Exams					
WS 18/19	7900246	Business Administration: Strategic Management and Information Engineering and Management		Prüfung (PR)	Lindstädt, Weinhardt
SS 2019	7900033	Business Administration: Strategic Management and Information Engineering and Management		Prüfung (PR)	Lindstädt, Weinhardt

Competence Certificate

The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation. The assessment takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

T

7.31 Course: Business Strategies of Banks [T-WIWI-102626]

Responsible: Prof. Dr. Wolfgang Müller
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2530299	Business Strategies of Banks	2 SWS	Lecture (V)	Müller
Exams					
WS 18/19	7900064	Business Strategies of Banks		Prüfung (PR)	Müller, Ruckes
SS 2019	7900079	Business Strategies of Banks		Prüfung (PR)	Müller

Competence Certificate

See German version.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Business Strategies of Banks

2530299, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.

The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

Learning Content

The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.

The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Elective literature:

- A script is disseminated chapter by chapter during the course of the lecture.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2000, Bankbetriebslehre, 6th edition, Springer

T

7.32 Course: CAD-NX Training Course [T-MACH-102187]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung praktisch	2	Each term	2

Events					
WS 18/19	2123357	CAD-NX training course	2 SWS	Practical course (P)	Ovtcharova, Mitarbeiter
SS 2019	2123357	CAD-NX training course	3 SWS	Practical course (P)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102187	CAD-NX Training Course		Prüfung (PR)	Ovtcharova

Competence Certificate

Practical examination on CAD computer, duration: 60 min.

Prerequisites

None

Recommendation

Dealing with technical drawings is required.

Annotation

For the practical course compulsory attendance exists.

Below you will find excerpts from events related to this course:

V

CAD-NX training course

2123357, WS 18/19, 2 SWS, [Open in study portal](#)

Practical course (P)

Learning Content

The participant will learn the following knowledge:

- Overview of the functional range
- Introduction to the work environment of NX
- Basics of 3D-CAD modelling
- Feature-based modelling
- Freeform modelling
- Generation of technical drawings
- Assembly modelling
- Finite element method (FEM) and multi-body simulation (MBS) with NX

Annotation

For the practical course compulsory attendance exists.

Workload

Regular attendance: 35 hours,
Self-study: 12 hours

Literature

Practical course skript

**CAD-NX training course**2123357, SS 2019, 3 SWS, [Open in study portal](#)**Practical course (P)****Learning Content**

The participant will learn the following knowledge:

- Overview of the functional range
- Introduction to the work environment of NX
- Basics of 3D-CAD modelling
- Feature-based modelling
- Freeform modelling
- Generation of technical drawings
- Assembly modelling
- Finite element method (FEM) and multi-body simulation (MBS) with NX

Annotation

For the practical course compulsory attendance exists.

Workload

Regular attendance: 35 hours,
Self-study: 12 hours

Literature

Practical course skript

T

7.33 Course: Civil Law for Beginners [T-INFO-103339]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101187 - Recht Wahlpflicht](#)
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	2

Events					
WS 18/19	24012	Civil Law for Beginners	4 SWS	Lecture (V)	Matz
Exams					
WS 18/19	7500012	Civil Law for Beginners		Prüfung (PR)	Matz, Dreier
SS 2019	7500041	Civil Law for Beginners		Prüfung (PR)	Dreier, Matz

T

7.34 Course: Climatology [T-PHYS-101092]

Responsible: Prof. Dr. Joaquim José Ginete Werner Pinto

Organisation: KIT Department of Physics

Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104904 - Physik](#)

Type	Credits	Recurrence	Version
Studienleistung	5	Each summer term	3

Events					
SS 2019	4051111	Klimatologie	3 SWS	Lecture (V)	Ginete Werner Pinto
SS 2019	4051112	Übungen zu Klimatologie	1 SWS	Practice (Ü)	Ginete Werner Pinto, Ludwig, Mömken

Prerequisites

none

T

7.35 Course: Combustion Engines I [T-MACH-102194]

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

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101275 - Verbrennungsmotoren I](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each winter term	1

Events					
WS 18/19	2133113	Combustion Engines I	4 SWS	Lecture / Practice (VÜ)	Koch
Exams					
WS 18/19	76-T-MACH-102194	Combustion Engines I		Prüfung (PR)	Kubach, Koch
SS 2019	76-T-MACH-102194	Combustion Engines I		Prüfung (PR)	Koch, Kubach

Competence Certificate

oral examination, Duration: 25 min., no auxiliary means

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Combustion Engines I

2133113, WS 18/19, 4 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Learning Content

Introduction, History, Concepts
Working Principle and Thermodynamics
Characteristic Parameters
Air Path
Fuel Path
Energy Conversion
Fuels
Emissions
Exhaust Gas Aftertreatment

Workload

regular attendance: 32 hours
self-study: 88 hours

T

7.36 Course: Combustion Engines II [T-MACH-104609]

Responsible: Dr.-Ing. Rainer Koch
Dr.-Ing. Heiko Kubach

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101303 - Verbrennungsmotoren II](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each summer term	1

Events					
SS 2019	2134151	Combustion Engines II	3 SWS	Lecture / Practice (VÜ)	Koch
Exams					
WS 18/19	76-T-MACH-104609	Combustion Engines II		Prüfung (PR)	Kubach, Koch
SS 2019	76-T-MACH-104609	Combustion Engines II		Prüfung (PR)	Koch, Kubach

Competence Certificate

oral examination, duration: 25 minutes, no auxiliary means

Prerequisites

none

Recommendation

Fundamentals of Combustion Engines I helpful

Below you will find excerpts from events related to this course:

V

Combustion Engines II

2134151, SS 2019, 3 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Learning Content

Emissions

Fuels

Drive Train Dynamics

Engine Parts

Boosting

Alternative Powertrain Concepts

Special Engine Concepts

Power Transmission

Workload

regular attendance: 31,5 hours

self-study: 90 hours

T

7.37 Course: Competition in Networks [T-WIWI-100005]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101422 - Vertiefung im Customer Relationship Management](#)
[M-WIWI-101499 - Angewandte Mikroökonomik](#)
[M-WIWI-101668 - Wirtschaftspolitik I](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	2

Events					
WS 18/19	2561204	Competition in Networks	2 SWS	Lecture (V)	Mitusch
WS 18/19	2561205	Übung zu Wettbewerb in Netzen	1 SWS	Practice (Ü)	Wisotzky
Exams					
WS 18/19	7900268	Competition in Networks		Prüfung (PR)	Mitusch

Competence Certificate

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.

Recommendation

Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required.

Below you will find excerpts from events related to this course:

V

Competition in Networks

2561204, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

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.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Will be announced in the lecture.

T

7.38 Course: Constitution and Properties of Wearresistant Materials [T-MACH-102141]

Responsible: Prof. Dr. Sven Ulrich
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	2

Events					
SS 2019	2194643	Constitution and Properties of Wear resistant materials	2 SWS	Lecture (V)	Ulrich
Exams					
WS 18/19	76-T-MACH-102141	Constitution and Properties of Wearresistant Materials		Prüfung (PR)	Ulrich

Competence Certificate

oral examination (about 30 min)

no tools or reference materials

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Constitution and Properties of Wear resistant materials

2194643, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Workload

regular attendance: 22 hours

self-study: 98 hours

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

Copies with figures and tables will be distributed

T

7.39 Course: Construction Technology [T-BGU-101691]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-BGU-101004 - Grundlagen des Baubetriebs](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events					
SS 2019	6200410	Construction Technology	3 SWS	Lecture (V)	Gentes, Haghsheno, Schneider
SS 2019	6200411	Exercises to Construction Technology	1 SWS	Practice (Ü)	Gentes, Haghsheno, Schneider, Waleczko
Exams					
WS 18/19	8230101691	Construction Technology		Prüfung (PR)	Haghsheno, Gentes, Schneider

Competence Certificate
written exam with 90 minutes

Prerequisites
None

Recommendation
None

Annotation
None

T

7.40 Course: Control Technology [T-MACH-105185]

Responsible: Christoph Gönzheimer
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101284 - Vertiefung der Produktionstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	2

Events					
SS 2019	2150683	Control Technology	2 SWS	Lecture (V)	Gönzheimer
Exams					
WS 18/19	76-T-MACH-105185	Control Technology		Prüfung (PR)	Fleischer

Competence Certificate

Written Exam (60 min)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Control Technology

2150683, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Lecture notes will be provided in ilias (<https://ilias.studium.kit.edu/>).

Learning 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

Annotation

None

Workload

regular attendance: 21 hours

self-study: 99 hours

T

7.41 Course: Customer Relationship Management [T-WIWI-102595]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101460 - CRM und Servicemanagement](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2540508	Customer Relationship Management	2 SWS	Lecture (V)	Geyer-Schulz
WS 18/19	2540509	Übung zu Customer Relationship Management	1 SWS	Practice (Ü)	Schweigert
Exams					
WS 18/19	7979242	Customer Relationship Management		Prüfung (PR)	Geyer-Schulz

Competence Certificate

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.

A bonus can be acquired through successful participation in the practice. 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

Below you will find excerpts from events related to this course:

V

Customer Relationship Management

2540508, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course begins with an introduction into Service Management as the strategic concept which also covers all CRM applications. The course is divided in the basics of Service Management as well as different topics within this concept like external and internal marketing, quality management and organizational requirements.

Workload

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Literature

Christian Grönroos. Service Management and Marketing : A Customer Relationship Management Approach. Wiley, Chichester, 2nd edition, 2000.

Elective literature:

Jill Dyché. The CRM Handbook: A Business Guide to Customer Relationship Management. Addison-Wesley, Boston, 2nd edition, 2002.

Ronald S. Swift. Accelerating Customer Relationships: Using CRM and RelationshipTechnologies. Prentice Hall, Upper Saddle River, 2001.

Stanley A. Brown. Customer Relationship Management: A Strategic Imperative in theWorld of E-Business. John Wiley, Toronto, 2000.

T

7.42 Course: Data Mining and Applications [T-WIWI-103066]

Responsible: Rheza Nakhaeizadeh
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101599 - Statistik und Ökonometrie](#)
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	Each summer term	2

Events					
SS 2019	2520375	Data Mining and Applications	2/4 SWS	Lecture (V)	Nakhaeizadeh

Competence Certificate

- Conduction of a larger empirical study in groups
- reporting of milestones
- final presentation (app. 45 minutes)

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Data Mining and Applications

2520375, SS 2019, 2/4 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Part one: Data Mining

Why Data Mining?

- What is Data Mining?
- History of Data Mining
- Conferences and Journals on Data Mining
- Potential Applications
- Data Mining Process:
- Business Understanding
- Data Understanding
- Data Preparation
- Modeling
- Evaluation
- Deployment
- Interdisciplinary aspects of Data Mining
- Data Mining tasks
- Data Mining Algorithms (Decision Trees, Association Rules, Regression, Clustering, Neural Networks)
- Fuzzy Mining
- OLAP and Data Warehouse
- Data Mining Tools
- Trends in Data Mining

Part two: Examples of application of Data Mining

- Success parameters of Data Mining Projects
- Application in industry
- Application in Commerce

Workload

The total workload for this course is approximately 135 hours. For further information see German version.

Literature

U. Fayyad, G. Piatetsky-Shapiro, P. Smyth, R. Uthurusamy, editors, *Advances in Knowledge Discovery and Data Mining*, AAAI/MIT Press, 1996 (order on-line from Amazon.com or from MIT Press).

- Jiawei Han, Micheline Kamber, *Data Mining : Concepts and Techniques*, 2nd edition, Morgan Kaufmann, ISBN 1558609016, 2006.
- David J. Hand, Heikki Mannila and Padhraic Smyth, *Principles of Data Mining*, MIT Press, Fall 2000
- Trevor Hastie, Robert Tibshirani, Jerome Friedman, *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*, Springer Verlag, 2001.
- Pang-Ning Tan, Michael Steinbach, Vipin Kumar, *Introduction to Data Mining*, Pearson Addison wesley (May, 2005). Hardcover: 769 pages. ISBN: 0321321367
- Ripley, B.D. (1996) *Pattern Recognition and Neural Networks*, Cambridge: Cambridge University Press.
- Ian witten and Eibe Frank, *Data Mining: Practical Machine Learning Tools and Techniques*, 2nd Edition, Morgan Kaufmann, ISBN 0120884070, 2005.

T

7.43 Course: Database Systems [T-WIWI-102660]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	2

Events					
SS 2019	2511200	Database Systems	2 SWS	Lecture (V)	Sommer
SS 2019	2511201	Übungen zu Datenbanksysteme	1 SWS	Practice (Ü)	Sommer
Exams					
WS 18/19	7900006	Database Systems		Prüfung (PR)	Oberweis
SS 2019	7900037	Database Systems		Prüfung (PR)	Oberweis

Competence Certificate

The assessment consists of an 1h written exam in the first week after lecture period.

Prerequisites

None

Modeled Conditions

You have to fulfill one of 2 conditions:

1. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.
2. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.

Below you will find excerpts from events related to this course:

V

Database Systems

2511200, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Database systems (DBS) play an important role in today's companies. Internal and external data is stored and processed in databases in every company. The proper management and organization of data helps to solve many problems, enables simultaneous queries from multiple users and is the organizational and operational base for the entire working procedures and processes of the company. The lecture leads in the area of the database theory, covers the basics of database languages and database systems, considers basic concepts of object-oriented and XML databases, conveys the principles of multi-user control of databases and physical data organization. In addition, it gives an overview of business problems often encountered in practice such as:

- Correctness of data (operational, semantic integrity)
- Restore of a consistent database state
- Synchronization of parallel transactions (phantom problem).

Workload

Lecture 30h

Exercise 15h

Preparation of lecture 30h

Preparation of exercises 30h

Exam preparation 44h

Exam & 1h

Total: 150h

Literature

- Schlageter, Stucky. Datenbanksysteme: Konzepte und Modelle. Teubner 1983.
- S. M. Lang, P. C. Lockemann. Datenbankeinsatz. Springer-Verlag 1995.
- Jim Gray, Andreas Reuter. Transaction Processing: Concepts and Techniques. Morgan Kaufmann 1993.

Further literature will be given individually.

T 7.44 Course: Decision Theory [T-WIWI-102792]

Responsible: Prof. Dr. Karl-Martin Ehrhart
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Angewandte Mikroökonomik](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2520365	Decision Theory	2 SWS	Lecture (V)	Ehrhart
SS 2019	2520366	Übungen zu Entscheidungstheorie	1 SWS	Practice (Ü)	Ehrhart
Exams					
WS 18/19	7900223	Decision Theory		Prüfung (PR)	Ehrhart

Competence Certificate

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

Recommendation

Knowledge in mathematics and statistics is required.

Below you will find excerpts from events related to this course:

V

Decision Theory

2520365, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

In the first part of the course we deal with problems of decision making under uncertainty and introduce models like expected utility theory, stochastic dominance, risk aversion, and prospect. theory. We also consider the empirical validity of the different approaches.

In the second part the concepts learned in the first part are applied for example to search models and Bayesian games.

Learning Content

This course deals with problems of decision making particularly under uncertainty. We introduce the expected utility theory of Neumann/Morgenstern and the prospect theory of Kahnemann/Tversky and discuss the concepts of stochastic dominance, risk aversion, loss aversion, reference points etc. We also consider the empirical validity of the different approaches. Additionally, the lecture provides an introduction to the theory of findings (epistemology), particularly with respect to decision theory.

Annotation

The course "Decision Theory" [2520365] will not be offered any more in M.Sc. from winter term 2015/2016 on.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

- Ehrhart, K.-M. und S.K. Berninghaus (2012): Decision Theory, Script, KIT.
- Hirshleifer und Riley (1997): The Analytics of Uncertainty and Information. London: Cambridge University Press, 4. Edition.
- Berninghaus, S.K., K.-M. Ehrhart und W. Güth (2006): Strategische Spiele. Berlin u.a.: Springer, 3., Edition

T 7.45 Course: Derivatives [T-WIWI-102643]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101402 - eFinance](#)
[M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2530550	Derivatives	2 SWS	Lecture (V)	Uhrig-Homburg
SS 2019	2530551	Übungen zu Derivate	1 SWS	Practice (Ü)	Uhrig-Homburg, Eska
Exams					
WS 18/19	7900051	Derivatives		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

See German version.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V Derivatives

2530550, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The lecture deals with the application areas and valuation of financial derivatives. After an overview of the most important derivatives and their relevance, forwards and futures are analysed. Then, an introduction to the Option Pricing Theory follows. The main emphasis is on option valuation in discrete and continuous time models. Finally, construction and usage of derivatives are discussed, e.g. in the context of risk management.

Learning Content

The lecture deals with the application areas and valuation of financial derivatives. After an overview of the most important derivatives and their relevance, forwards and futures are analysed. Then, an introduction to the Option Pricing Theory follows. The main emphasis is on option valuation in discrete and continuous time models. Finally, construction and usage of derivatives are discussed, e.g. in the context of risk management.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

Elective literature:

Cox/Rubinstein (1985): Option Markets, Prentice Hall

T

7.46 Course: Design and Operation of Power Transformers [T-ETIT-101925]

Responsible: Mitarbeiter
N. N.

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: [M-ETIT-101165 - Energieerzeugung und Netzkomponenten](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung mündlich	3	1

Events					
SS 2019	2307390	Design and Operation of Power Transformers	2 SWS	Block (B)	Schäfer
Exams					
SS 2019	7307390	Design and Operation of Power Transformers		Prüfung (PR)	Leibfried

T

7.47 Course: Design, Construction and Sustainability Assessment of Buildings I [T-WIWI-102742]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101467 - Bauökologie](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2586404	Design and Construction of Buildings	2 SWS	Lecture (V)	Ströbele, Lützkendorf
WS 18/19	2586405	Übung zu Bauökologie I	1 SWS	Practice (Ü)	Ströbele
Exams					
WS 18/19	7900247	Design, Construction and Sustainability Assessment of Buildings I		Prüfung (PR)	Lützkendorf
WS 18/19	7900248	Design, Construction and Sustainability Assessment of Buildings I		Prüfung (PR)	Lützkendorf

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

A combination with the module *Real Estate Management* and with engineering science modules in the area of building physics and structural design is recommended.

Below you will find excerpts from events related to this course:

V

Design and Construction of Buildings

2586404, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Taking low-energy buildings as an example the course is an introduction to cheap, energy-efficient, resource-saving and health-supporting design, construction and operation of buildings. Questions of the implementation of the principles of a sustainable development within the building sector are discussed on the levels of the whole building, its components, building equipment as well as the materials. Besides technical interrelationships basics dimensioning and various approaches to ecological and economical assessment play a role during the lectures, as well as the different roles of people involved into the building process. Topics are the integration of economical and ecological aspects into the design process, strategies of energy supply, low-energy and passive buildings, active and passive use of solar energy, selection and assessment of construction details, selection and assessment of insulation materials, greened roofs plus health and comfort.

Learning Content

Taking low-energy buildings as an example the course is an introduction to cheap, energy-efficient, resource-saving and health-supporting design, construction and operation of buildings. Questions of the implementation of the principles of a sustainable development within the building sector are discussed on the levels of the whole building, its components, building equipment as well as the materials. Besides technical interrelationships basics dimensioning and various approaches to ecological and economical assessment play a role during the lectures, as well as the different roles of people involved into the building process. Topics are the integration of economical and ecological aspects into the design process, strategies of energy supply, low-energy and passive buildings, active and passive use of solar energy, selection and assessment of construction details, selection and assessment of insulation materials, greened roofs plus health and comfort.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature**Elective literature:**

See german version.

T

7.48 Course: Design, Construction and Sustainability Assessment of Buildings II [T-WIWI-102743]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101467 - Bauökologie](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2585403	Übung zu Bauökologie II	1 SWS	Practice (Ü)	Ströbele
SS 2019	2585404	Sustainability Assessment of Buildings	2 SWS	Lecture (V)	Lützkendorf, Ströbele

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

A combination with the module *Real Estate Management* and with engineering science modules from the areas building physics and structural designis recommended.

Below you will find excerpts from events related to this course:

V

Sustainability Assessment of Buildings

2585404, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The course identifies problems concerning the economical and environmental assessment of buildings along their lifecycle and discusses suitable procedures and tools supporting the decision making process. For example, the course addresses topics like operating costs, heat cost allocation, comparisons of heating costs, applied economical assessment methods, life cycle assessment as well as related design and assessment tools (e.g. element catalogues, databases, emblems, tools) and assessment procedures (e.g. carbon footprint, MIPS, KEA), which are currently available.

Learning Content

The course identifies problems concerning the economical and environmental assessment of buildings along their lifecycle and discusses suitable procedures and tools supporting the decision making process. For example, the course addresses topics like operating costs, heat cost allocation, comparisons of heating costs, applied economical assessment methods, life cycle assessment as well as related design and assessment tools (e.g. element catalogues, databases, emblems, tools) and assessment procedures (e.g. carbon footprint, MIPS, KEA), which are currently available.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Elective literature:

See german version.

T

7.49 Course: Digital Services [T-WIWI-109938]

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101422 - Vertiefung im Customer Relationship Management](#)
[M-WIWI-101434 - eBusiness und Service Management](#)
[M-WIWI-102752 - Fundamentals of Digital Service Systems](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)
[M-WIWI-104912 - Information Systems & Digital Business: Platforms](#)
[M-WIWI-104913 - Information Systems & Digital Business: Servitization](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	3

Competence Certificate

The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations). By successful completion of the exercises (§4(2), 3 SPO 2007 respectively §4(3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites

see below

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-105771 - Foundations of Digital Services A](#) must not have been started.

Annotation

This course replaces T-WIWI-105771 "Foundations of Digital Services A" as of winter semester 2019/2020.

Students who wish to register for the examination in the summer semester 2019 please select the examination "Foundations of Digital Services A".

T

7.50 Course: Economics and Behavior [T-WIWI-102892]

Responsible: Prof. Dr. Nora Szech
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Angewandte Mikroökonomik](#)
[M-WIWI-101501 - Wirtschaftstheorie](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2560137	Economics and Behavior	2 SWS	Lecture (V)	Szech
WS 18/19	2560138	Übung zu Economics and Behavior	1 SWS	Practice (Ü)	Szech
Exams					
WS 18/19	7900134	Exam Economics and Behavior		Prüfung (PR)	Szech
WS 18/19	7900135	Exam Economics and Behavior (2)		Prüfung (PR)	Szech

Competence Certificate

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. The grade will be determined in a final written exam. Students can earn a bonus to the final grade by successfully participating in the exercises.

Prerequisites

None

Recommendation

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Annotation

The lecture will be held in English.

Below you will find excerpts from events related to this course:

V

Economics and Behavior

2560137, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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.

Annotation

The lecture will be held in English.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Kahnemann, Daniel: Thinking, Fast and Slow. Farrar, Straus and Giroux, 2011.
 Ariely, Dan: Predictably irrational. New York: Harper Collins, 2008.
 Ariely, Dan: The Upside of Irrationality. New York: HarperCollins, 2011.

T

7.51 Course: Economics I: Microeconomics [T-WIWI-102708]

Responsible: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101398 - Einführung in die Volkswirtschaftslehre](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2610012	Economics I: Microeconomics	3 SWS	Lecture (V)	Reiß
Exams					
WS 18/19	791vwl1	Economics I: Microeconomics		Prüfung (PR)	Reiß
WS 18/19	792vwl1	Economics I: Microeconomics		Prüfung (PR)	Reiß

Competence Certificate

The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation. There may be offered a practice exam in the middle of the semester. The results of this exam may be used to improve the grade of the main exam. A detailed description of the examination modalities will be given by the respective lecturer. 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 events related to this course:

V

Economics I: Microeconomics2610012, WS 18/19, 3 SWS, [Open in study portal](#)**Lecture (V)****Description**

The students learn the basic concepts in Microeconomics and some basics in game theory. The student will understand the working of markets in modern economies and the role of decision making. Furthermore, she should be able to understand simple game theoretic argumentation in different fields of Economics.

In the two main parts of the course problems of microeconomic decision making (household behavior, firm behavior) and problems of commodity allocation on markets (market equilibria and efficiency of markets) as well are discussed. In the final part of the course basics of imperfect competition (oligopolistic markets) and of game theory are presented.

Learning Content

The students learn the basic concepts in Microeconomics and some basics in game theory. The student will understand the working of markets in modern economies and the role of decision making. Furthermore, she should be able to understand simple game theoretic argumentation in different fields of Economics.

In the two main parts of the course, problems of microeconomic decision making (household behavior, firm behavior) and problems of commodity allocation on markets (market equilibria and efficiency of markets) are discussed. In the final part of the course, basics of imperfect competition (oligopolistic markets) and of game theory as well as welfare economics are presented.

Workload

The total workload for this course is approximately 150 hours.

Literature

- H. Varian, Grundzüge der Mikroökonomik, 5. edition (2001), Oldenburg Verlag
- Pindyck, Robert S./Rubinfeld, Daniel L., Mikroökonomie, 6. Aufl., Pearson. München, 2005
- Frank, Robert H., Microeconomics and Behavior, 5. Aufl., McGraw-Hill, New York, 2005

T

7.52 Course: Economics II: Macroeconomics [T-WIWI-102709]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101398 - Einführung in die Volkswirtschaftslehre](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2560015	Economics II : Macroeconomics, Tutorial	SWS	Tutorial (Tu)	Wigger, Zimmermann
SS 2019	2600014	Economics II: Macroeconomics	4 SWS	Lecture (V)	Wigger
Exams					
WS 18/19	7900197	Economics II: Macroeconomics		Prüfung (PR)	Ott

Competence Certificate

The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Economics II: Macroeconomics

2600014, SS 2019, 4 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Workload

Total effort for 5 credit points: approx. 150 hours

Presence time: 45 hours

Before and after the LV: 67.5 hours

Exam and exam preparation: 37.5 hours

Literature

This lecture is based on the well-known textbook "Macroeconomics" by Greg Mankiw from Schäffer Poeschel Verlag in the current version.

T

7.53 Course: Economics III: Introduction in Econometrics [T-WIWI-102736]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Angewandte Mikroökonomik](#)
[M-WIWI-101599 - Statistik und Ökonometrie](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2520016	Economics III: Introduction in Econometrics	2 SWS	Lecture (V)	Schienle
SS 2019	2520017	Übungen zu VWL III	2 SWS	Practice (Ü)	Schienle, Buse

Competence Certificate

The assessment consists of an 1h written exam according to Section 4(2), 1 of the examination regulation.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Economics III: Introduction in Econometrics

2520016, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)**Learning Content**

Simple and multiple linear regression (estimating parameters, confidence interval, testing, prognosis, testing assumptions)

Multi equation models

Dynamic models

Workload

180 hours (6.0 Credits)

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

Elective literature:

Additional literature will be suggested in course

T

7.54 Course: eFinance: Information Systems for Securities Trading [T-WIWI-109941]

Responsible: Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101402 - eFinance](#)

[M-WIWI-101423 - Topics in Finance II](#)

[M-WIWI-101434 - eBusiness und Service Management](#)

[M-WIWI-101465 - Topics in Finance I](#)

[M-WIWI-104900 - Betriebswirtschaftslehre](#)

[M-WIWI-104912 - Information Systems & Digital Business: Platforms](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2540454	eFinance: Information Systems for Securities Trading	2 SWS	Lecture (V)	Weinhardt, Notheisen, Glaser
WS 18/19	2540455	Übungen zu eFinance: Wirtschaftsinformatik für den Wertpapierhandel	1 SWS	Practice (Ü)	Notheisen, Glaser

Competence Certificate

The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations) and by submitting written essays as part of the exercise (§4(2), 3 SPO 2007 respectively §4(3) SPO 2015). 70% of the final grade is based on the written exam and 30% is based on assignments from the exercises. The points obtained in the exercises only apply to the first and second exam of the semester in which they were obtained.

Prerequisites

see below

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102600 - eFinance: Information Engineering and Management for Securities Trading](#) must not have been started.

Recommendation

None

Below you will find excerpts from events related to this course:

V

eFinance: Information Systems for Securities Trading

2540454, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The theoretical part of the course examines the New Institutions Economics which provides a theoretically found explanation for the existence of markets and intermediaries. Building upon the foundations of the market micro structure, several key parameters and factors of electronic trading are examined. These insights gained along a structured securities trading process are complemented and verified by the analysis of prototypical trading systems developed at the institute as well as selected trading systems used by leading exchanges in the world. In the more practical-oriented second part of the lecture, speakers from practice will give talks about financial trading systems and link the theoretical findings to real-world systems and applications.

Learning Content

The theoretical part of the course examines the New Institutions Economics which provides a theoretically found explanation for the existence of markets and intermediaries. Building upon the foundations of the market micro structure, several key parameters and factors of electronic trading are examined. These insights gained along a structured securities trading process are complemented and verified by the analysis of prototypical trading systems developed at the institute as well as selected trading systems used by leading exchanges in the world. In the more practical-oriented second part of the lecture, speakers from practice will give talks about financial trading systems and link the theoretical findings to real-world systems and applications.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

- Picot, Arnold, Christine Bortenlänger, Heiner Röhl (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners". Oxford University Press, New York

Elective literature:

- 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

7.55 Course: Electric Energy Systems [T-ETIT-101923]

Responsible: Prof. Dr.-Ing. Thomas Leibfried
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: [M-ETIT-102379 - Elektrische Energienetze](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2307391	Electric Energy Systems	2 SWS	Lecture (V)	Leibfried
SS 2019	2307393	Übungen zu 2307391 Elektroenergiesysteme	1 SWS	Practice (Ü)	Görtz
Exams					
WS 18/19	7307391	Electric Energy Systems		Prüfung (PR)	Leibfried
SS 2019	7307391	Electric Energy Systems		Prüfung (PR)	Leibfried

Prerequisites
none

T

7.56 Course: Electrical Engineering for Business Engineers, Part I [T-ETIT-100533]

Responsible: Dr. Wolfgang Menesklou

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: [M-ETIT-101155 - Elektrotechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2304223	Elektrotechnik I für Wirtschaftsingenieure	2 SWS	Lecture (V)	Menesklou
WS 18/19	2304225	Übungen zu 2304223 Elektrotechnik I für Wirtschaftsingenieure	2 SWS	Practice (Ü)	Menesklou
Exams					
WS 18/19	7304223	Electrical Engineering for Business Engineers, Part I		Prüfung (PR)	Menesklou

T

7.57 Course: Electrical Engineering for Business Engineers, Part II [T-ETIT-100534]

Responsible: Dr. Wolfgang Menesklou

Organisation: KIT Department of Electrical Engineering and Information Technology

Part of: [M-MACH-101261 - Vertiefung ingenieurwissenschaftlicher Grundlagen](#)
[M-WIWI-101839 - Weiterführende ingenieurwissenschaftliche Grundlagen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2304224	Elektrotechnik II für Wirtschaftsingenieure	3 SWS	Lecture (V)	Menesklou
Exams					
WS 18/19	7304224	Electrical Engineering for Business Engineers, Part II		Prüfung (PR)	Menesklou

T

7.58 Course: Elements and Systems of Technical Logistics [T-MACH-102159]

Responsible: Georg Fischer
Dr.-Ing. Martin Mittwollen

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2117096	Elements and systems of Technical Logistics	3 SWS	Lecture / Practice (VÜ)	Mittwollen, Fischer
Exams					
WS 18/19	76-T-MACH-102159	Elements and Systems of Technical Logistics		Prüfung (PR)	Mittwollen
SS 2019	76-T-MACH-102159	Elements and Systems of Technical Logistics		Prüfung (PR)	Mittwollen

Competence Certificate

The assessment consists of an oral exam (20min) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites

none

Recommendation

Knowledge out of Basics of Technical Logistics (T-MACH-102163) preconditioned

Below you will find excerpts from events related to this course:

V

Elements and systems of Technical Logistics

2117096, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Learning Content

- material flow systems and their (conveying) technical components
- mechanical behaviour of conveyors;
- structure and function of conveyor machines; elements of intralogistics (belt conveyor, racks, automatic guided vehicles, fan-in, bifurcation, and etc.)
- sample applications and calculations in addition to the lectures inside practical lectures

Annotation

Knowledge out of **Basics of Technical Logistics** preconditioned

Workload

presence: 36h

rework: 84h

Literature

recommendations during lectures

T

7.59 Course: Elements and Systems of Technical Logistics - Project [T-MACH-108946]

Responsible: Georg Fischer
Dr.-Ing. Martin Mittwollen

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	2	Each winter term	1

Events					
WS 18/19	2117097	Elements and systems of Technical Logistics - project	SWS	Project (PRO)	Mittwollen, Fischer
Exams					
WS 18/19	76-T-MACH-108946	Elements and Systems of Technical Logistics - Project		Prüfung (PR)	Mittwollen

Competence Certificate

Presentation of performed project and defense (30min) according to §4 (2), No. 3 of the examination regulation

Prerequisites

T-MACH-102159 (Elements and Systems of Technical Logistics) must have been started

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-MACH-102159 - Elements and Systems of Technical Logistics](#) must have been started.

Recommendation

Knowledge out of Basics of Technical Logistics (T-MACH-102163) preconditioned

Below you will find excerpts from events related to this course:

V

Elements and systems of Technical Logistics - project

2117097, WS 18/19, SWS, [Open in study portal](#)

Project (PRO)

Description

Media:

supplementary sheets, presentations, blackboard

Learning Content

- mechanical behaviour of conveyors;
- structure and function of conveyor machines;
- elements of intralogistics (belt conveyor, racks, automatic guided vehicles, fan-in, bifurcation, and etc.)
- sample applications and calculations in addition to the lectures inside practical lectures
- Self manufacturing of a project report to recesses the topic.

Annotation

Knowledge out of **Basics of Technical Logistics (LV 2117095)** preconditioned

T

7.60 Course: Energy Conversion and Increased Efficiency in Internal Combustion Engines [T-MACH-105564]

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

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101275 - Verbrennungsmotoren I](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2133121	Energy Conversion and Increased Efficiency in Internal Combustion Engines	2 SWS	Lecture (V)	Koch
Exams					
WS 18/19	76-T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines		Prüfung (PR)	Koch
SS 2019	76-T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines		Prüfung (PR)	Koch, Kubach

Competence Certificate

oral exam, 25 minutes, no auxiliary means

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Energy Conversion and Increased Efficiency in Internal Combustion Engines

2133121, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

1. Introduction
2. Thermodynamics of combustion engines
3. Fundamentals
4. gas exchange
5. Flow field
6. Wall heat losses
7. Combustion in gasoline engines
8. APR und DVA
9. Combustion in Diesel engines
10. Emissions
11. Waste heat recovery
12. Measures to increase efficiency

Workload

regular attendance: 24 hours, self-study: 96 hours

T

7.61 Course: Energy Efficient Intralogistic Systems [T-MACH-105151]

Responsible: Dr.-Ing. Meike Braun
Dr.-Ing. Frank Schönung

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2117500	Energy efficient intralogistic systems	2 SWS	Lecture (V)	Braun, Schönung
Exams					
WS 18/19	76-T-MACH-105151	Energy Efficient Intralogistic Systems		Prüfung (PR)	Braun
SS 2019	76-T-MACH-105151	Energy Efficient Intralogistic Systems		Prüfung (PR)	Braun

Competence Certificate

Oral, 30 min. examination dates after the end of each lesson period.

Prerequisites

none

Recommendation

The content of course "Basics of Technical Logistics" should be known.

Annotation

Visit the IFL homepage of the course for the course dates and/or possible limitations of course participation.

Below you will find excerpts from events related to this course:

V

Energy efficient intralogistic systems

2117500, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

presentations, black board

Notes

The content of course "Basics of Technical Logistics" should be known.

Learning Content

The main focuses of the course are:

- green supply chain
- processes in Intralogistic systems
- evaluation of energy consumption of conveyors
- modeling of conveying systems
- methods for energy savings
- approaches for energy efficiency increasing of continuous and discontinuous conveyors
- dimensioning energy efficient drives
- new approaches for resource efficient conveying systems.

Annotation

Visit the IFL homepage of the course for the course dates and/or possible limitations of course participation

Workload

regular attendance: 21 hours

self-study: 99 hours

Literature

None.

T 7.62 Course: Energy Policy [T-WIWI-102607]

Responsible: Prof. Dr. Martin Wietschel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101464 - Energiewirtschaft](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each summer term	3

Events					
SS 2019	2581959	Energy Policy	2 SWS	Lecture (V)	Wietschel
Exams					
WS 18/19	7981959	Energy Policy		Prüfung (PR)	Fichtner

Competence Certificate

In all **Master's** degree programs the following applies: The exam is offered to first-time applicants for the last time in the winter semester 2017/18. The exam will continue to be offered in the **bachelor's** degree programs.

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Energy Policy

2581959, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The course deals with material and energy policy of policy makers and includes the effects of such policies on the economy as well as the involvement of industrial and other stakeholders in the policy design. At the beginning the neoclassical environment policy is discussed. Afterwards the Sustainable Development concept is presented and strategies how to translate the concept in policy decision follows. In the next part of the course an overview about the different environmental instruments classes, evaluation criteria for these instruments and examples of environmental instruments like taxes or certificates will be discussed. The final part deals with implementation strategies of material and energy policy.

Learning Content

The course deals with material and energy policy of policy makers and includes the effects of such policies on the economy as well as the involvement of industrial and other stakeholders in the policy design. At the beginning the neoclassical environment policy is discussed. Afterwards the Sustainable Development concept is presented and strategies how to translate the concept in policy decision follows. In the next part of the course an overview about the different environmental instruments classes, evaluation criteria for these instruments and examples of environmental instruments like taxes or certificates will be discussed. The final part deals with implementation strategies of material and energy policy.

Workload

The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature

Will be announced in the lecture.

T

7.63 Course: Engine Measurement Techniques [T-MACH-105169]

Responsible: Dr.-Ing. Sören Bernhardt
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101303 - Verbrennungsmotoren II](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2134137	Engine measurement techniques	2 SWS	Lecture (V)	Bernhardt

Competence Certificate

oral examination, Duration: 0,5 hours, no auxiliary means

Prerequisites

none

Recommendation

T-MACH-102194 Combustion Engines I

Below you will find excerpts from events related to this course:

V

Engine measurement techniques

2134137, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Students get to know state-of-the-art measurement techniques for combustion engines. In particular basic techniques for measuring engine operating parameters such as torque, speed, power and temperature.

Possible measurement errors and aberrations are discussed.

Furthermore techniques for measuring exhaust emissions, air/fuel ratio, fuel consumption as well as pressure indication for thermodynamic analysis are covered.

Workload

regular attendance: 21 hours

self-study: 100 hours

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

7.64 Course: Enterprise Risk Management [T-WIWI-102608]

Responsible: Prof. Dr. Ute Werner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101436 - Risk and Insurance Management](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	Each winter term	1

Competence Certificate

The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).

The overall grade consists of the assessment of the oral presentations incl. term papers (50 percent) and the assessment of the oral exam (50 percent).

The examination will be offered latest until winter term 2017/2018 (beginners only).

Prerequisites

None

Recommendation

None

T

7.65 Course: Exam on Climatology [T-PHYS-105594]

Responsible: Prof. Dr. Joaquim José Ginete Werner Pinto
Organisation: KIT Department of Physics
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104904 - Physik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1	Each summer term	3

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-PHYS-101092 - Climatology](#) must have been passed.

T 7.66 Course: Exchanges [T-WIWI-102625]

Responsible: Dr. Jörg Franke
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101402 - eFinance](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	1,5	Each summer term	1

Exams			
WS 18/19	7900062	Exchanges	Prüfung (PR) Franke, Ruckes

Competence Certificate

The examination will be offered latest until winter term 2018/2019 (repeaters only).

Prerequisites

None

Recommendation

None

T

7.67 Course: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Anwendungen des Operations Research](#)
[M-WIWI-101414 - Methodische Grundlagen des OR](#)
[M-WIWI-101421 - Supply Chain Management](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	4

Events					
WS 18/19	2550486	Facility Location and Strategic Supply Chain Management	2 SWS	Lecture (V)	Nickel
WS 18/19	2550487	Übungen zu Standortplanung und strategisches SCM	1 SWS	Practice (Ü)	Bakker
Exams					
WS 18/19	7900221	Facility Location and Strategic Supply Chain Management		Prüfung (PR)	Nickel

Competence Certificate

Due to a research semester of Professor Nickel in WS 19/20, the course "Facility Location and Strategic Supply Chain Management" does NOT take place in WS 19/20. In particular, neither WS 19/20 nor SS 20 will offer an exam for the lecture. The follow-up exam to the lecture in WS 18/19 takes place in SS 19 and is exclusively for students in the second examination. 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 successful completion of the online assessments.

Prerequisites

Prerequisite for admission to examination is the successful completion of the online assessments.

Recommendation

None

Annotation

The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

Below you will find excerpts from events related to this course:

V

Facility Location and Strategic Supply Chain Management

2550486, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Since the classical work "Theory of the Location of Industries" of Weber from 1909, the determination of an optimal location of a new facility with respect to existing customers is strongly connected to strategic logistics planning. Strategic decisions concerning the location of facilities as production plants, distribution centers or warehouses are of high importance for the rentability of supply chains. Thoroughly carried out, location planning allows an efficient flow of materials and leads to lower costs and increased customer service.

Subject of the course is an introduction to the most important terms and definitions in location planning as well as the presentation of basic quantitative location planning models. Furthermore, specialized location planning models for Supply Chain Management will be addressed as they are part in many commercial SCM tools for strategic planning tasks.

Annotation

The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature**Elective literature:**

- 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

7.68 Course: Failure of Structural Materials: Deformation and Fracture [T-MACH-102140]

Responsible: Prof. Dr. Peter Gumbsch
Dr. Daniel Weygand

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2181711	Failure of structural materials: deformation and fracture	3 SWS	Lecture / Practice (VÜ)	Gumbsch, Weygand
Exams					
WS 18/19	76-T-MACH-102140	Failure of Structural Materials: Deformation and Fracture		Prüfung (PR)	Weygand, Gumbsch, Kraft

Competence Certificate

oral exam ca. 30 minutes

no tools or reference materials

Prerequisites

none

Recommendation

preliminary knowledge in mathematics, mechanics and materials science

Below you will find excerpts from events related to this course:

V

Failure of structural materials: deformation and fracture

2181711, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Learning Content

1. Introduction
2. linear elasticity
3. classification of stresses
4. Failure due to plasticity
 - tensile test
 - dislocations
 - hardening mechanisms
 - guidelines for dimensioning
5. composite materials
6. fracture mechanics
 - hypotheses for failure
 - linear elastic fracture mechanics
 - crack resistance
 - experimental measurement of fracture toughness
 - defect measurement
 - crack propagation
 - application of fracture mechanics
 - atomistics of fracture

Workload

regular attendance: 22,5 hours

self-study: 97,5 hours

Literature

- Engineering Materials, M. Ashby and D.R. Jones (2nd Edition, Butterworth-Heinemann, Oxford, 1998); worth reading, relatively simple but comprehensive
- Mechanical Behavior of Materials, Thomas H. Courtney (2nd Edition, McGraw Hill, Singapur); classic on the mechanical behavior of materials, extensive and good
- Bruchvorgänge in metallischen Werkstoffen, D. Aurich (Werkstofftechnische Verlagsgesellschaft Karlsruhe), relatively simple but yet comprehensive overview of metallic materials

T

7.69 Course: Failure of Structural Materials: Fatigue and Creep [T-MACH-102139]

Responsible: Dr. Patric Gruber
Prof. Dr. Peter Gumbsch

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2181715	Failure of Structural Materials: Fatigue and Creep	2 SWS	Lecture (V)	Gruber, Gumbsch
Exams					
WS 18/19	76-T-MACH-102139	Failure of Structural Materials: Fatigue and Creep		Prüfung (PR)	Kraft, Gumbsch, Gruber
SS 2019	76-T-MACH-102139	Failure of Structural Materials: Fatigue and Creep		Prüfung (PR)	Gruber, Kraft, Gumbsch

Competence Certificate

oral exam ca. 30 minutes

no tools or reference materials

Prerequisites

none

Recommendation

preliminary knowledge in mathematics, mechanics and materials science

Below you will find excerpts from events related to this course:

V

Failure of Structural Materials: Fatigue and Creep

2181715, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

1 Fatigue

1.1 Introduction

1.2 Statistical Aspects

1.3 Lifetime

1.4 Fatigue Mechanisms

1.5 Material Selection

1.6 Thermomechanical Loading

1.7 Notches and Shape Optimization

1.8 Case Study: ICE-Desaster

2 Creep

2.1 Introduction

2.2 High Temperature Plasticity

2.3 Phänomenological Description of Creep

2.4 Creep Mechanisms

2.5 Alloying Effects

Workload

regular attendance: 22,5 hours

self-study: 97,5 hours

Literature

- Engineering Materials, M. Ashby and D.R. Jones (2nd Edition, Butterworth-Heinemann, Oxford, 1998); worth reading, relatively simple but comprehensive
- Mechanical Behavior of Materials, Thomas H. Courtney (2nd Edition, McGraw Hill, Singapur); classic on the mechanical behavior of materials, extensive and good
- Bruchvorgänge in metallischen Werkstoffen, D. Aurich (Werkstofftechnische Verlagsgesellschaft Karlsruhe), relatively simple but yet comprehensive overview of metallic materials
- Fatigue of Materials, Subra Suresh (2nd Edition, Cambridge University Press); standard work on fatigue, all classes of materials, extensive, for beginners and advanced student

T

7.70 Course: Financial Accounting and Cost Accounting [T-WIWI-102816]

Responsible: Dr. Jan-Oliver Strych
Organisation: KIT Department of Informatics
 KIT Department of Economics and Management
Part of: [M-WIWI-101578 - Grundlagen BWL 2](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	1

Events					
WS 18/19	2600002	Rechnungswesen I	2 SWS	Lecture (V)	Strych
WS 18/19	2600003	Übung zu Rechnungswesen	2 SWS	Practice (Ü)	Strych
Exams					
WS 18/19	7900244	Financial Accounting and Cost Accounting		Prüfung (PR)	Ruckes
SS 2019	7900040	Financial Accounting and Cost Accounting		Prüfung (PR)	Ruckes

Competence Certificate

The assessment consists of a written exam following §4, Abs. 2, 1 of the examination regulation.
 The examination takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Rechnungswesen I

2600002, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

1. Introduction to accounting standards (IFRS, HGB)
2. Annual report and financial statements
3. Selected topics in financial accounting
4. Operational efficiency analysis
5. Financial Statement Analysis
6. Value-based management
7. Taxes
8. Creative accounting and compliance
9. Budgeting and benchmarking
10. Reporting

Annotation

It is recommended to have some skills about financial accounting on an introductory level.

Workload

The total workload for this course is approximately 120 hours. For further information see German version.

T 7.71 Course: Financial Accounting for Global Firms [T-WIWI-107505]

Responsible: Dr. Torsten Luedecke
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2530242	Financial Accounting for Global Firms	2 SWS	Lecture (V)	Luedecke
WS 18/19	2530243	Übung zu Financial Accounting for Global Firms	SWS	Practice (Ü)	Luedecke
Exams					
WS 18/19	7900142	Financial Accounting for Global Firms		Prüfung (PR)	Luedecke
SS 2019	7900195	Financial Accounting for Global Firms		Prüfung (PR)	Luedecke

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None

Recommendation

Basic knowledge in corporate finance and accounting.

Annotation

New lecture in the winter term 2017/18.

Below you will find excerpts from events related to this course:

V Financial Accounting for Global Firms

2530242, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Increasing globalization coupled with related regulations continues to put pressure on moving towards a common global accounting framework - International Financial Reporting Standards (IFRS). Currently, more than 100 countries use IFRS, so if a firm's business include global transactions, it is critical to know about the impact of IFRS on the financial reporting process and business. In the EU, IFRS are compulsory for listed companies's consolidated statements but have also gained factual significance for companies without statutory duty to use IFRS. The course introduces the conceptual framework of IFRS, discuss the primary financial statements according to IFRS and explains the underlying principles, concepts, and methods to prepare the financial statements. Special focus is given to some more complex accounting issues related to revenue recognition from contracts with customers, consolidation of different types of intercorporate investments, and foreign currency translation.

Learning Content

The lecture covers the following topics:

- The context of financial accounting for global firms
- The mechanics of financial accounting
- Accounting frameworks and concepts
- Content and presentation of financial statements
- Preparing financial statements
- Revenue recognition from contracts
- Tangible and intangible non-current assets
- Financial assets, liabilities, and equity
- Consolidation and the assessment of control
- Investment in associates and joint arrangements
- Business combinations
- Foreign currency translation

Literature

Alexander, D. and C. Nobes (2017): Financial Accounting – An International Introduction, 6th ed., Pearson.

T

7.72 Course: Financial Econometrics [T-WIWI-103064]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101599 - Statistik und Ökonometrie](#)
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Annotation

The course takes place each second summer term: 2018/2020....

T

7.73 Course: Financial Intermediation [T-WIWI-102623]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2530232	Financial Intermediation	2 SWS	Lecture (V)	Ruckes
WS 18/19	2530233	Übung zu Finanzintermediation	1 SWS	Practice (Ü)	Ruckes, Hoang, Benz
Exams					
WS 18/19	7900063	Financial Intermediation		Prüfung (PR)	Ruckes
SS 2019	7900078	Financial Intermediation		Prüfung (PR)	Ruckes

Competence Certificate

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

Recommendation

None

Below you will find excerpts from events related to this course:

V

Financial Intermediation

2530232, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Competition in the banking sector
- Stability of the financial system
- The macroeconomic role of financial intermediation

Learning Content

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Stability of the financial system
- The macroeconomic role of financial intermediation
- Principles of the prudential regulation of banks

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature**Elective literature:**

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6th edition, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2nd edition, MIT Press.

T

7.74 Course: Financial Management [T-WIWI-102605]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101435 - Essentials of Finance](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2530216	Financial Management	2 SWS	Lecture (V)	Ruckes
SS 2019	2530217	Übung zu Financial Management	1 SWS	Practice (Ü)	Ruckes, Schubert
Exams					
WS 18/19	7900060	Financial Management		Prüfung (PR)	Ruckes
SS 2019	7900074	Financial Management		Prüfung (PR)	Ruckes

Competence Certificate

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

Recommendation

Knowledge of the content of the course Business Administration: Finance and Accounting [25026/25027] is recommended.

Below you will find excerpts from events related to this course:

V

Financial Management

2530216, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Analytical methods and theories in the field 'Capital investments and financing' with the main focus on:

- Capital Structure
- Dividend policy
- Essentials of valuation
- Investment decisions
- Short term/ long term finance
- Working Capital Management

Learning Content

Analytical methods and theories in the field of corporate finance with the main focus on:

- Liquidity and Working Capital Management
- Sources of short term/ long term finance
- Capital Structure
- Dividend policy

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Elective literature:

- Ross, Westerfield, Jaffe, Jordan (2009): Modern Financial Management, McGraw-Hill International Edition
- Berk, De Marzo (2016): Corporate Finance, 4th edition, Pearson Addison Wesley

T

7.75 Course: Fluid Power Systems [T-MACH-102093]

Responsible: Prof. Dr.-Ing. Marcus Geimer
Felix Pult

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101266 - Fahrzeugtechnik](#)
[M-MACH-101267 - Mobile Arbeitsmaschinen](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	2

Events					
WS 18/19	2114093	Fluid Technology	2 SWS	Lecture (V)	Geimer, Pult
Exams					
WS 18/19	76T-MACH-102093	Fluid Power Systems		Prüfung (PR)	Geimer
SS 2019	76-T-MACH-102093	Fluid Power Systems		Prüfung (PR)	Geimer

Competence Certificate

The assessment consists of a written exam (90 minutes) taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fluid Technology

2114093, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

In the range of hydrostatics the following topics will be introduced:

- Hydraulic fluids
- Pumps and motors
- Valves
- Accessories
- Hydraulic circuits.

In the range of pneumatics the following topics will be introduced:

- Compressors
- Motors
- Valves
- Pneumatic circuits.

Workload

- regular attendance: 21 hours
- self-study: 92 hours

Literature

Scritum for the lecture *Fluidtechnik*
Institute of Vehicle System Technology
downloadable

T

7.76 Course: Foundations of Informatics I [T-WIWI-102749]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101417 - Grundlagen der Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2500002	Exercises to Foundations of Informatics I	SWS	Practice (Ü)	Sure-Vetter, Färber, Nguyen, Weller
SS 2019	2511010	Foundations of Informatics I	2 SWS	Lecture (V)	Sure-Vetter, Färber
SS 2019	2511011	Exercises to Foundations of Informatics I	SWS	Practice (Ü)	Sure-Vetter, Nguyen, Weller
Exams					
WS 18/19	7900011	Foundations of Informatics I		Prüfung (PR)	Sure-Vetter
SS 2019	7900035	Foundations of Informatics I		Prüfung (PR)	Sure-Vetter

Competence Certificate

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 events related to this course:

V

Exercises to Foundations of Informatics I

2500002, SS 2019, SWS, [Open in study portal](#)

Practice (Ü)

Description

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.

Learning Content

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

Workload

The total workload for the lecture Foundations of Informatics I is given out on the description of the lecture.

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.

Additional literature will be announced in the lecture.



Foundations of Informatics I

2511010, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

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.

Learning Content

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

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preparation and postprocessing: 67.5 hours
- Exam and exam preparation: 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.

Additional literature will be announced in the lecture.



Exercises to Foundations of Informatics I

2511011, SS 2019, SWS, [Open in study portal](#)

Practice (Ü)

Description

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.

Learning Content

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

Workload

The total workload for the lecture Foundations of Informatics I is given out on the description of the lecture.

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.

Additional literature will be announced in the lecture.

T

7.77 Course: Foundations of Informatics II [T-WIWI-102707]

Responsible: Dr. rer. nat. Achim Rettinger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101417 - Grundlagen der Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2511012	Foundations of Informatics II	3 SWS	Lecture (V)	Rettinger
WS 18/19	2511013	Tutorien zu Grundlagen der Informatik II	1 SWS	Tutorial (Tu)	Rettinger, Nguyen
Exams					
WS 18/19	7900012	Foundations of Informatics II		Prüfung (PR)	Sure-Vetter
SS 2019	7900050	Foundations of Informatics II		Prüfung (PR)	Shukla

Competence Certificate

The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation. The grade of the exam can be improved by successfully participating in the tutorials. The examination takes place every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

It is recommended to attend the course *Foundations of Informatics I* [2511010] beforehand. Active participation in the practical lessons is strongly recommended.

Below you will find excerpts from events related to this course:

V

Foundations of Informatics II

2511012, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The lecture deals with formal models for automata, languages and algorithms as well as real instances of these models, i.e. computer architecture and organization (hardware development, computer arithmetic, architecture models), programming languages (different language levels, from microprogramming to higher programming languages, as well as compiling and execution), operating systems and modes (architecture and properties of operating systems, operating system tasks, client-server systems), data organization and management (types of data organization, primary and secondary organization).

Workload

The total workload for this course is approximately 150 hours. For further information see German version.

Literature**Elective literature:**

Will be announced in the lecture.

T

7.78 Course: Foundations of Interactive Systems [T-WIWI-109816]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101434 - eBusiness und Service Management](#)
[M-WIWI-102752 - Fundamentals of Digital Service Systems](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)
[M-WIWI-104911 - Information Systems & Digital Business: Interaction](#)
[M-WIWI-104913 - Information Systems & Digital Business: Servitization](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2540560	Foundations of Interactive Systems	3 SWS	Lecture (V)	Mädche

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None

Recommendation

None

Annotation

New course starting summer term 2019.

Below you will find excerpts from events related to this course:

V

Foundations of Interactive Systems

2540560, SS 2019, 3 SWS, [Open in study portal](#)

Lecture (V)

Description

Advanced information and communication technologies make interactive systems ever-present in the users' private and business life. They are an integral part of smartphones, devices in the smart home, mobility vehicles as well as at the working place.

With the continuous growing capabilities of computers, the design of the interaction between human and computer becomes even more important. This lecture introduces foundations on design processes and principles for interactive systems.

The lecture focuses on foundational concepts, theories, practices and methods for the design of interactive systems. The students get the foundational knowledge to guide the design of interactive systems in business and private life.

T

7.79 Course: Foundations of Mobile Business [T-WIWI-104679]

Responsible: Prof. Dr. Andreas Oberweis
Dr.-Ing. Gunther Schiefer

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	2

Events					
SS 2019	2511226	Grundlagen für mobile Business	2 SWS	Lecture (V)	Schiefer
SS 2019	2511227	Übungen zu Grundlagen für mobile Business	1 SWS	Practice (Ü)	Schiefer
Exams					
WS 18/19	7900118	Foundations of mobile Business		Prüfung (PR)	Oberweis
SS 2019	7900001	Foundations of mobile Business		Prüfung (PR)	Oberweis

Competence Certificate

The assessment of this course is a written (60 min.) or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites

None

Modeled Conditions

You have to fulfill one of 2 conditions:

1. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.
2. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.

Annotation

Lecture and exercises are integrated.

T

7.80 Course: Fuels and Lubricants for Combustion Engines [T-MACH-105184]

Responsible: Dr.-Ing. Bernhard Ulrich Kehrwald
Dr.-Ing. Heiko Kubach

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101303 - Verbrennungsmotoren II](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2133108	Fuels and Lubricants for Combustion Engines	2 SWS	Lecture (V)	Kehrwald
Exams					
WS 18/19	76-T-MACH-105184	Fuels and Lubricants for Combustion Engines		Prüfung (PR)	
SS 2019	76-T-MACH-105184	Fuels and Lubricants for Combustion Engines		Prüfung (PR)	Kehrwald

Competence Certificate

oral examination, Duration: ca. 25 min., no auxiliary means

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fuels and Lubricants for Combustion Engines

2133108, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Introduction and basics

Fuels for Gasoline and Diesel engines

Hydrogen

Lubricants for Gasoline and Diesel engines

Coolants for combustion engines

Workload

regular attendance: 24 hours

self-study: 96 hours

Literature

Lecturer notes

T

7.81 Course: Fundamentals for Design of Motor-Vehicle Bodies I [T-MACH-102116]

Responsible: Horst Dietmar Bardehle
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101266 - Fahrzeugtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each winter term	1

Events					
WS 18/19	2113814	Fundamentals for Design of Motor-Vehicles Bodies I	1 SWS	Lecture (V)	Bardehle
Exams					
WS 18/19	76-T-MACH-102116	Fundamentals for Design of Motor-Vehicle Bodies I		Prüfung (PR)	Unrau, Bardehle
SS 2019	76-T-MACH-102116	Fundamentals for Design of Motor-Vehicle Bodies I		Prüfung (PR)	Bardehle, Unrau

Competence Certificate

Oral group examination

Duration: 30 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fundamentals for Design of Motor-Vehicles Bodies I

2113814, WS 18/19, 1 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Workload

regular attendance: 10,5 hours

self-study: 49,5 hours

Literature

1. Automobiltechnische Zeitschrift ATZ, Friedr. Vieweg & Sohn Verlagsges. mbH, Wiesbaden
2. Automobil Revue, Bern (Schweiz)
3. Automobil Produktion, Verlag Moderne Industrie, Landsberg

T

7.82 Course: Fundamentals for Design of Motor-Vehicle Bodies II [T-MACH-102119]

Responsible: Horst Dietmar Bardehle
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101266 - Fahrzeugtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each summer term	1

Events					
SS 2019	2114840	Fundamentals for Design of Motor-Vehicles Bodies II	1 SWS	Lecture (V)	Bardehle
Exams					
WS 18/19	76-T-MACH-102119	Fundamentals for Design of Motor-Vehicle Bodies II		Prüfung (PR)	Bardehle
SS 2019	76-T-MACH-102119	Fundamentals for Design of Motor-Vehicle Bodies II		Prüfung (PR)	Bardehle, Gauterin

Competence Certificate

Oral group examination

Duration: 30 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fundamentals for Design of Motor-Vehicles Bodies II

2114840, SS 2019, 1 SWS, [Open in study portal](#)

Lecture (V)

Notes

Scheduled dates:

see homepage of the institute.

Further information and possible changes of date: see homepage of the institute.

Learning 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

Workload

regular attendance: 10,5 hours

self-study: 49,5 hours

Literature

1. Automobiltechnische Zeitschrift ATZ, Friedr. Vieweg & Sohn Verlagsges. mbH, Wiesbaden
2. Automobil Revue, Bern (Schweiz)
3. Automobil Produktion, Verlag Moderne Industrie, Landsberg

T

7.83 Course: Fundamentals in the Development of Commercial Vehicles I [T-MACH-105160]

Responsible: Prof. Dr. Jörg Zürn
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101265 - Fahrzeugentwicklung](#)
[M-MACH-101267 - Mobile Arbeitsmaschinen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each winter term	1

Events					
WS 18/19	2113812	Fundamentals in the Development of Commercial Vehicles I	1 SWS	Lecture (V)	Zürn
Exams					
WS 18/19	76-T-MACH-105160	Fundamentals in the Development of Commercial Vehicles I		Prüfung (PR)	Zürn
SS 2019	76-T-MACH-105160	Fundamentals in the Development of Commercial Vehicles I		Prüfung (PR)	Zürn

Competence Certificate

Oral group examination

Duration: 30 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fundamentals in the Development of Commercial Vehicles I

2113812, WS 18/19, 1 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Workload

regular attendance: 10,5 hours
 self-study: 49,5 hours

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

7.84 Course: Fundamentals in the Development of Commercial Vehicles II [T-MACH-105161]

Responsible: Prof. Dr. Jörg Zürn

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101265 - Fahrzeugentwicklung](#)
[M-MACH-101267 - Mobile Arbeitsmaschinen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each summer term	1

Events					
SS 2019	2114844	Fundamentals in the Development of Commercial Vehicles II	1 SWS	Lecture (V)	Zürn
Exams					
WS 18/19	76-T-MACH-105161	Fundamentals in the Development of Commercial Vehicles II		Prüfung (PR)	Zürn
SS 2019	76-T-MACH-105161	Fundamentals in the Development of Commercial Vehicles II		Prüfung (PR)	Zürn

Competence Certificate

Oral group examination

Duration: 30 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fundamentals in the Development of Commercial Vehicles II

2114844, SS 2019, 1 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Workload

regular attendance: 10,5 hours

self-study: 49,5 hours

Literature

1. Schittler, M., Heinrich, R., Kerschbaum, W.: Mercedes-Benz Baureihe 500 -- neue V-Motorengeneration für schwere Nutzfahrzeuge, MTZ 57 Nr. 9, S. 460 ff., 1996
2. Robert Bosch GmbH (Hrsg.): Bremsanlagen für Kraftfahrzeuge, VDI-Verlag, Düsseldorf, 1. Auflage, 1994
3. Rubi, V., Striffler, P. (Hrsg. Institut für Kraftfahrwesen RWTH Aachen): Industrielle Nutzfahrzeugentwicklung, Schriftenreihe Automobiltechnik, 1993

T

7.85 Course: Fundamentals of Automobile Development I [T-MACH-105162]

Responsible: Dipl.-Ing. Rolf Frech
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101265 - Fahrzeugentwicklung](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	1,5	Each winter term	1

Events					
WS 18/19	2113810	Fundamentals of Automobile Development I	1 SWS	Lecture (V)	Frech
WS 18/19	2113851	Principles of Whole Vehicle Engineering I	1 SWS	Lecture (V)	Frech
Exams					
WS 18/19	76-T-MACH-105162	Fundamentals of Automobile Development I	Prüfung (PR)		Frech, Unrau
SS 2019	76-T-MACH-105162	Fundamentals of Automobile Development I	Prüfung (PR)		Frech, Unrau

Competence Certificate

Written examination

Duration: 90 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fundamentals of Automobile Development I

2113810, WS 18/19, 1 SWS, [Open in study portal](#)

Lecture (V)

Notes

Block lecture on two days. Room and data will be published on the homepage of the institute.

Learning Content

1. Process of automobile development
2. Conceptual dimensioning and design of an automobile
3. Laws and regulations – National and international boundary conditions
4. Aero dynamical dimensioning and design of an automobile I
5. Aero dynamical dimensioning and design of an automobile II
6. Thermo-management in the conflict of objectives between styling, aerodynamic and packaging guidelines I
7. Thermo-management in the conflict of objectives between styling, aerodynamic and packaging guidelines II

Workload

regular attendance: 10,5 hours

self-study: 49,5 hours

Literature

The scriptum will be provided during the first lessons

**Principles of Whole Vehicle Engineering I**2113851, WS 18/19, 1 SWS, [Open in study portal](#)**Lecture (V)****Notes**

Block lecture on two days. Room and data will be published on the homepage of the institute.

In English language.

Learning Content

1. Process of automobile development
2. Conceptual dimensioning and design of an automobile
3. Laws and regulations – National and international boundary conditions
4. Aero dynamical dimensioning and design of an automobile I
5. Aero dynamical dimensioning and design of an automobile II
6. Thermo-management in the conflict of objectives between styling, aerodynamic and packaging guidelines I
7. Thermo-management in the conflict of objectives between styling, aerodynamic and packaging guidelines II

Workload

regular attendance: 10,5 hours

self-study: 49,5 hours

Literature

The scriptum will be provided during the first lessons

T

7.86 Course: Fundamentals of Automobile Development II [T-MACH-105163]

Responsible: Dipl.-Ing. Rolf Frech
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101265 - Fahrzeugentwicklung](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	1,5	Each summer term	2

Events					
SS 2019	2114842	Fundamentals of Automobile Development II	1 SWS	Lecture (V)	Frech
SS 2019	2114860	Principles of Whole Vehicle Engineering II	1 SWS	Block lecture (BV)	Frech
Exams					
WS 18/19	76-T-MACH-105163	Fundamentals of Automobile Development II		Prüfung (PR)	Unrau, Frech
SS 2019	76-T-MACH-105163	Fundamentals of Automobile Development II		Prüfung (PR)	Frech, Unrau

Competence Certificate

Written examination

Duration: 90 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fundamentals of Automobile Development II

2114842, SS 2019, 1 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

1. Application-oriented material and production technology I
2. Application-oriented material and production technology II
3. Overall vehicle acoustics in the automobile development
4. Drive train acoustics in the automobile development
5. Testing of the complete vehicle
6. Properties of the complete automobile

Workload

regular attendance: 10,5 hours

self-study: 49,5 hours

Literature

The scriptum will be provided during the first lessons.

**Principles of Whole Vehicle Engineering II**2114860, SS 2019, 1 SWS, [Open in study portal](#)**Block lecture (BV)****Learning Content**

1. Application-oriented material and production technology I
2. Application-oriented material and production technology II
3. Overall vehicle acoustics in the automobile development
4. Drive train acoustics in the automobile development
5. Testing of the complete vehicle
6. Properties of the complete automobile

Workload

regular attendance: 10,5 hours

self-study: 49,5 hours

Literature

The scriptum will be provided during the first lessons.

T

7.87 Course: Fundamentals of Catalytic Exhaust Gas Aftertreatment [T-MACH-105044]

Responsible: Prof. Dr. Olaf Deutschmann
 Prof. Dr. Jan-Dierk Grunwaldt
 Dr.-Ing. Heiko Kubach
 Prof. Dr.-Ing. Egbert Lox

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101303 - Verbrennungsmotoren II](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2134138	Fundamentals of catalytic exhaust gas aftertreatment	2 SWS	Lecture (V)	Lox, Grunwaldt, Deutschmann
Exams					
WS 18/19	76-T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment		Prüfung (PR)	
SS 2019	76-T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment		Prüfung (PR)	Lox

Competence Certificate

oral examination, Duration: 25 min., no auxiliary means

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Fundamentals of catalytic exhaust gas aftertreatment

2134138, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

1. kind and source of emissions
2. emission legislation
3. principal of catalytic exhaust gas aftertreatment (EGA)
4. EGA at stoichiometric gasoline engines
5. EGA at gasoline engines with lean mixtures
6. EGA at diesel engines
7. economical basic conditions for catalytic EGA

Workload

regular attendance: 36 hours
 self-study: 84 hours

Literature

Lecture notes available in the lectures

1. "Environmental Catalysis" Edited by G.Ertl, H. Knötzinger, J. Weitkamp Wiley-VCH Verlag GmbH, Weinheim, 1999 ISBN 3-527-29827-4
2. "Cleaner Cars- the history and technology of emission control since the 1960s" J. R. Mondt Society of Automotive Engineers, Inc., USA, 2000 Publication R-226, ISBN 0-7680-0222-2
3. "Catalytic Air Pollution Control - commercial technology" R. M. Heck, R. J. Farrauto John Wiley & Sons, Inc., USA, 1995 ISBN 0-471-28614-1
4. "Automobiles and Pollution" P. Degobert Editions Technic, Paris, 1995 ISBN 2-7108-0676-2
5. "Reduced Emissions and Fuel Consumption in Automobile Engines" F. Schaeder, R. van Basshuysen, Springer Verlag Wien New York, 1995 ISBN 3-211-82718-8
6. "Autoabgaskatalysatoren : Grundlagen - Herstellung - Entwicklung - Recycling - Ökologie" Ch. Hagelüken und 11 Mitautoren, Expert Verlag, Renningen, 2001 ISBN 3-8169-1932-4

T

7.88 Course: Fundamentals of Production Management [T-WIWI-102606]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101437 - Industrielle Produktion I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5,5	Each summer term	1

Events					
SS 2019	2581950	Fundamentals of Production Management	2 SWS	Lecture (V)	Schultmann
SS 2019	2581951	Übungen Grundlagen der Produktionswirtschaft	2 SWS	Practice (Ü)	Müller, Naber
Exams					
WS 18/19	7981950	Fundamentals of Production Management		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of a written exam (90 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

Below you will find excerpts from events related to this course:

V

Fundamentals of Production Management

2581950, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

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 with respect to supply chain management and disposal logistics.

Medien und Pflichtliteratur: können aus der alten Fassung übernommen werden.

Learning 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 with respect to supply chain management and disposal logistics.

Workload

Total effort required will account for approximately 165h (5.5 credits).

Literature

will be announced in the course

T**7.89 Course: Gas Engines [T-MACH-102197]**

Responsible: Dr.-Ing. Rainer Golloch
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101303 - Verbrennungsmotoren II](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Competence Certificate

Oral examination, duration 25 min., no auxillary means

Prerequisites

none

T

7.90 Course: Gear Cutting Technology [T-MACH-102148]

Responsible: Dr. Markus Klaiber
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101284 - Vertiefung der Produktionstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2149655	Gear Cutting Technology	2 SWS	Lecture (V)	Klaiber
Exams					
WS 18/19	76-T-MACH-102148	Gear Cutting Technology		Prüfung (PR)	Schulze

Competence Certificate

Oral Exam (20 min)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Gear Cutting Technology

2149655, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)**Description****Media:**

Lecture notes will be provided in Ilias (<https://ilias.studium.kit.edu/>)

Learning 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.

Workload

regular attendance: 21 hours

self-study: 99 hours

T

7.91 Course: Geological Hazards and Risks for external students [T-PHYS-103117]

Responsible: Dr. Ellen Gottschämmer

Organisation: KIT Department of Physics

Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104904 - Physik](#)

Type	Credits	Version
Prüfungsleistung mündlich	4	1

Events					
WS 18/19	4060121	Geological Hazards and Risk	2 SWS	Lecture (V)	Gottschämmer, Daniell
WS 18/19	4060122	Exercises on Geological Hazards and Risk	2 SWS	Practice (Ü)	Gottschämmer, Daniell

T

7.92 Course: Global Optimization I [T-WIWI-102726]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Anwendungen des Operations Research](#)
[M-WIWI-101414 - Methodische Grundlagen des OR](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2550134	Globale Optimierung I	2 SWS	Lecture (V)	Stein
SS 2019	2550135	Übungen zu Globale Optimierung I+II	1 SWS	Practice (Ü)	Stein
Exams					
WS 18/19	7900007_NK_WS1819	Global Optimization I		Prüfung (PR)	Stein

Competence Certificate

Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO) and possibly of a compulsory prerequisite.

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 Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-103638 - Global Optimization I and II](#) must not have been started.

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

Below you will find excerpts from events related to this course:

V

Globale Optimierung I

2550134, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods 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.

Part I of the lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Numerical methods

Nonconvex optimization problems are treated in part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- 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

7.93 Course: Global Optimization I and II [T-WIWI-103638]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101414 - Methodische Grundlagen des OR](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each summer term	1

Events					
SS 2019	2550134	Globale Optimierung I	2 SWS	Lecture (V)	Stein
SS 2019	2550136	Globale Optimierung II	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900001_NK_WS1819	Global optimization I and II		Prüfung (PR)	Stein

Competence Certificate

The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The examination is held in the semester of the lecture and in the following semester.

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102726 - Global Optimization I](#) must not have been started.
2. The course [T-WIWI-102727 - Global Optimization II](#) must not have been started.

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

Below you will find excerpts from events related to this course:

V

Globale Optimierung I

2550134, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods 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.

Part I of the lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Numerical methods

Nonconvex optimization problems are treated in part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- 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

Globale Optimierung II

2550136, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods 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 global solution of convex optimization problems is subject of part I of the lecture.

Part II of 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 aBB method
- Branch and bound methods
- Lipschitz optimization

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- 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

7.94 Course: Global Optimization II [T-WIWI-102727]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101414 - Methodische Grundlagen des OR](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	2

Events					
SS 2019	2550135	Übungen zu Globale Optimierung I+II	1 SWS	Practice (Ü)	Stein
SS 2019	2550136	Globale Optimierung II	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900152_NK_WS1819	Global Optimization II		Prüfung (PR)	Stein

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

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 Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-103638 - Global Optimization I and II](#) must not have been started.

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

Below you will find excerpts from events related to this course:

V

Globale Optimierung II

2550136, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods 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 global solution of convex optimization problems is subject of part I of the lecture.

Part II of 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 aBB method
- Branch and bound methods
- Lipschitz optimization

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- 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

7.95 Course: Handling Characteristics of Motor Vehicles I [T-MACH-105152]

Responsible: Dr.-Ing. Hans-Joachim Unrau
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101264 - Fahrzeugeigenschaften](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	2113807	Handling Characteristics of Motor Vehicles I	2 SWS	Lecture (V)	Unrau
Exams					
WS 18/19	76-T-MACH-105152	Handling Characteristics of Motor Vehicles I		Prüfung (PR)	Unrau
SS 2019	76-T-MACH-105152	Handling Characteristics of Motor Vehicles I		Prüfung (PR)	Unrau

Competence Certificate

Verbally

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Handling Characteristics of Motor Vehicles I2113807, WS 18/19, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning 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

Workload

regular attendance: 22,5 hours
 self-study: 97,5 hours

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.: Reprint collection to the lecture Handling Characteristics of Motor Vehicles I

T

7.96 Course: Handling Characteristics of Motor Vehicles II [T-MACH-105153]

Responsible: Dr.-Ing. Hans-Joachim Unrau
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101264 - Fahrzeugeigenschaften](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2114838	Handling Characteristics of Motor Vehicles II	2 SWS	Lecture (V)	Unrau
Exams					
WS 18/19	76-T-MACH-105153	Handling Characteristics of Motor Vehicles II		Prüfung (PR)	Unrau
SS 2019	76-T-MACH-105153	Handling Characteristics of Motor Vehicles II		Prüfung (PR)	Unrau

Competence Certificate

Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Handling Characteristics of Motor Vehicles II

2114838, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Workload

regular attendance: 22,5 hours

self-study: 97,5 hours

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.: Reprint collection to the lecture Handling Characteristics of Motor Vehicles II

T

7.97 Course: High Performance Powder Metallurgy Materials [T-MACH-102157]

Responsible: Dr.-Ing. Rainer Oberacker
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2126749	Advanced powder metals	2 SWS	Lecture (V)	Schell
Exams					
SS 2019	76-T-MACH-102157	High Performance Powder Metallurgy Materials		Prüfung (PR)	Schell

Competence Certificate

oral exam, 20- 30 min

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Advanced powder metals

2126749, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The lecture gives an overview on production, properties and application of structural and functional powder metallurgy material. The following groups of materials are presented: PM High Speed Steels, Cemented Carbides, PM Metal Matrix Composites, PM Specialities, PM Soft Magnetic and Hard Magnetic Materials.

Workload

regular attendance: 22 hours

self-study: 98 hours

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. Thümmeler, R. Oberacker. "Introduction to Powder Metallurgy", Institute of Materials, 1993

T

7.98 Course: Human Resource Management [T-WIWI-102909]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101513 - Personal und Organisation](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2573003	Human Resource Management	2 SWS	Lecture (V)	Nieken
WS 18/19	2573004	Übung zu Human Resource Management	1 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
WS 18/19	7900200	Human Resource Management		Prüfung (PR)	Nieken

Competence Certificate

The assessment of this course is a written examination (60 min) 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. In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites

None

Recommendation

Completion of module Business Administration is recommended.
 Basic knowledge of microeconomics, game theory, and statistics is recommended.

Below you will find excerpts from events related to this course:

V

Human Resource Management

2573003, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The students acquire basic knowledge in the fields of human resource planning, selection and talent management. Different processes and instruments and their link to corporate strategy are evaluated based on microeconomic and behavioral approaches. The results are tested and discussed based on empirical data.

Annotation**Recommendations**

Completion of module Business Administration is recommended.
 Basic knowledge of microeconomics, game theory, and statistics is recommended.

Workload

The total workload for this course is approximately 135 hours.

Lecture 32h

Preparation of lecture 52h

Exam preparation 51h

Literature

- Personnel Economics in Practice, Lazear & Gibbs, John Wiley & Sons, 2014
- Strategic Human Resources. Frameworks for General Managers, Baron & Kreps, John Wiley & Sons, 1999

T

7.99 Course: Hydraulic Engineering and Water Management [T-BGU-101667]

Responsible: Prof. Dr. Franz Nestmann
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	1

Events					
WS 18/19	6200511	Wasserbau und Wasserwirtschaft [bauIBFP4-WASSER]	2 SWS	Lecture (V)	Nestmann
WS 18/19	6200512	Übungen zu Wasserbau und Wasserwirtschaft [bauIBFP4-WASSER]	1 SWS	Practice (Ü)	Seidel
Exams					
WS 18/19	8230101667	Hydraulic Engineering and Water Management		Prüfung (PR)	Nestmann

Competence Certificate

written exam with 60 minutes

Prerequisites

None

Recommendation

None

Annotation

None

T 7.100 Course: Hydrology [T-BGU-101693]

Responsible: Prof. Dr.-Ing. Erwin Zehe
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	2

Events					
WS 18/19	6200513	Hydrologie [bauIBFP4-WASSER]	2 SWS	Lecture (V)	Zehe, Wienhöfer
WS 18/19	6200514	Übungen zu Hydrologie [bauIBFP4-WASSER]	1 SWS	Practice (Ü)	Zehe, Wienhöfer
Exams					
WS 18/19	8230101693	Hydrology		Prüfung (PR)	Zehe

Prerequisites

None

Recommendation

None

Annotation

None

T

7.101 Course: I4.0 Systems platform [T-MACH-106457]

Responsible: Dipl.-Ing. Thomas Maier
Prof. Dr.-Ing. Jivka Ovtcharova

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	2

Events					
WS 18/19	2123900	I4.0 Systems platform	4 SWS	Project/Seminar (P)/S	Ovtcharova, Maier
SS 2019	2123900	I4.0 Systems platform	4 SWS	Project/Seminar (P)/S	Ovtcharova, Maier
Exams					
WS 18/19	76-T-MACH-106457	I4.0 Systems platform		Prüfung (PR)	Ovtcharova

Competence Certificate

Alternative exam assessment (project work)

Prerequisites

None

Annotation

Limited number of participants.

Below you will find excerpts from events related to this course:

V

I4.0 Systems platform

2123900, SS 2019, 4 SWS, [Open in study portal](#)

Project/Seminar (P)/S

Notes

Number of participants limited to 15 people. There is a participant selection process.

Learning Content

Industry 4.0, IT systems for fabrication (e.g.: CAx, PDM, CAM, ERP, MES), process modelling and execution, project work in teams, practice-relevant I4.0 problems, in automation, manufacturing industry and service.

T

7.102 Course: Industrial Organization [T-WIWI-102844]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Angewandte Mikroökonomik](#)
[M-WIWI-101501 - Wirtschaftstheorie](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
SS 2019	2560238	Industrial Organization	2 SWS	Lecture (V)	Reiß, Hofmann
SS 2019	2560239	Übung zu Industrieökonomie	2 SWS	Practice (Ü)	Reiß, Hofmann
Exams					
WS 18/19	7919110	Industrial Organization		Prüfung (PR)	Reiß

Competence Certificate

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

Recommendation

Completion of the module Economics [WW1VWL] is assumed.

Annotation

This course is not given in summer 2017.

Below you will find excerpts from events related to this course:

V

Industrial Organization

2560238, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

This course introduces the theory of industrial organization using game theoretical models. The course is divided into two parts: The first part reviews standard market forms (monopoly, oligopoly, perfect competition). The second part discusses more advanced topics including price discrimination, strategic product differentiation, cartel formation, market entry, and research and development.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature**Compulsory Textbook:**

H. Bester (2012): Theorie der Industrieökonomik, Springer-Verlag.

Additional Literature:

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

7.103 Course: Information Engineering [T-MACH-102209]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	2

Events					
SS 2019	2122014	Information Engineering	2 SWS	Seminar (S)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102209	Information Engineering		Prüfung (PR)	Ovtcharova

Competence Certificate

Alternative exam assessment (written composition and speech)

Prerequisites

None

T

7.104 Course: Information Security [T-WIWI-108387]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2511550	Information Security	2 SWS	Lecture (V)	Volkamer
SS 2019	2511551	Exercise Information Security	1 SWS	Practice (Ü)	Volkamer, Mayer
Exams					
WS 18/19	7900074	Information Security		Prüfung (PR)	Volkamer
SS 2019	7900064	Information Security		Prüfung (PR)	Volkamer

Competence Certificate

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.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Information Security

2511550, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

- 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

Learning 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.

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

T

7.105 Course: Information Systems and Supply Chain Management [T-MACH-102128]

Responsible: Dr. Christoph Kilger

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	2

Events					
SS 2019	2118094	Information Systems in Logistics and Supply Chain Management	2 SWS	Lecture (V)	Kilger
Exams					
WS 18/19	76T-MACH-102128	Information Systems and Supply Chain Management		Prüfung (PR)	Mittwollen
WS 18/19	76-T-MACH-102128	Information Systems and Supply Chain Management		Prüfung (PR)	Mittwollen
SS 2019	76-T-MACH-102128	Information Systems and Supply Chain Management		Prüfung (PR)	Mittwollen

Competence Certificate

The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Information Systems in Logistics and Supply Chain Management

2118094, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Media:

presentations

Learning Content

- 1) Overview of logistics systems and processes
- 2) Basic concepts of information systems and information technology
- 3) Introduction to IS in logistics: Overview and applications
- 4) Detailed discussion of selected SAP modules for logistics support

Annotation

none

Workload

regular attendance: 21 hours

self-study: 99 hours

Literature

Stadtler, Kilger: Supply Chain Management and Advanced Planning, Springer, 4. Auflage 2008

T

7.106 Course: Integrated Information Systems for Engineers [T-MACH-102083]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	2

Events					
SS 2019	2121001	Integrated Information Systems for engineers	3 SWS	Lecture / Practice (VÜ)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102083	Integrated Information Systems for Engineers		Prüfung (PR)	Ovtcharova

Competence Certificate

Oral examination 20 min.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Integrated Information Systems for engineers

2121001, SS 2019, 3 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Learning Content

- Information systems, information management
- CAD, CAP and CAM systems
- PPS, ERP and PDM systems
- Knowledge management and ontology
- Process modeling

Workload

Regular attendance: 31,5 hours, self-study: 108 hours

Literature

Lecture slides

T

7.107 Course: Integrated Production Planning in the Age of Industry 4.0 [T-MACH-109054]

Responsible: Prof. Dr.-Ing. Gisela Lanza

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101272 - Integrierte Produktionsplanung](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each summer term	1

Events					
SS 2019	2150660	Integrated Production Planning in the Age of Industry 4.0	6 SWS	Lecture / Practice (VÜ)	Lanza
Exams					
WS 18/19	76-T-MACH-109054	Integrated Production Planning in the Age of Industry 4.0		Prüfung (PR)	Lanza

Competence Certificate

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.

Below you will find excerpts from events related to this course:

V

Integrated Production Planning in the Age of Industry 4.0

2150660, SS 2019, 6 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Description

Media:

Lecture notes will be provided in Ilias (<https://ilias.studium.kit.edu/>)

Learning 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 (production planning and control, fine layout, IT systems in an industry 4.0 factory)
- Preparation and monitoring of implementation
- Start-up and series support

The lecture contents are rounded off by numerous current practical examples with a strong industry 4.0 reference. Within the exercises the lecture contents are deepened and applied to specific problems and tasks.

Workload

MACH:

regular attendance: 63 hours

self-study: 177 hours

WING:

regular attendance: 63 hours

self-study: 207 hours

Literature

Lecture Notes

T

7.108 Course: Integrative Strategies in Production and Development of High Performance Cars [T-MACH-105188]

Responsible: Karl-Hubert Schlichtenmayer

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101284 - Vertiefung der Produktionstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Events					
SS 2019	2150601	Integrative Strategies in Production and Development of High Performance Cars	2 SWS	Lecture (V)	Schlichtenmayer
Exams					
WS 18/19	76-T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars		Prüfung (PR)	Lanza

Competence Certificate

Written Exam (60 min)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Integrative Strategies in Production and Development of High Performance Cars

Lecture (V)

2150601, SS 2019, 2 SWS, [Open in study portal](#)

Description

Media:

Lecture notes will be provided in Ilias (<https://ilias.studium.kit.edu/>).

Learning 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

Workload

regular attendance: 21 hours

self-study: 99 hours

Literature

Lecture Slides

T

7.109 Course: Interdisciplinary Approach to Verifiable e-Voting [T-WIWI-108716]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	1

Events					
WS 18/19	2511552	Interdisciplinary approach to verifiable e-voting	2 SWS	Lecture (V)	Kulyk
Exams					
WS 18/19	7900066	Interdisciplinary Approach to Verifiable E-Voting		Prüfung (PR)	Volkamer
SS 2019	7900089	Interdisciplinary Approach to Verifiable E-Voting		Prüfung (PR)	Volkamer

Competence Certificate

The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites

None.

Annotation

The lecture will not be held in the summer semester 2019.

Below you will find excerpts from events related to this course:

V

Interdisciplinary approach to verifiable e-voting

2511552, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course consists of two parts. The first part is a lecture explaining the background of e-voting technologies and their applications in real-life elections. The lecture will consist of six parts, covering the following topics:

- Overview, including different types of e-voting systems, their advantages and disadvantages and real-world examples.
- Security of e-voting: requirements, adversary models, common risks.
- Verifiability of e-voting: definition and motivation of verifiability as well as its limitations.
- Further relevant topics, including long-term privacy, usability, use of new technologies such as blockchain.

The second part of the course takes part as a seminar, where the students have to present and discuss a specific topic with other participants. The seminar talk is a prerequisite for the participation in the final exam. The seminar topics will be distributed after all the foundations are covered in the lecture. After the topics are distributed, the students have three weeks to prepare their seminar talks. The talks will take place within one or several block seminars, depending on the number of the participating students.

The seminar includes following topics:

- Report on a specific e-voting system or state of e-voting in specific country. The report can focus either on technological aspects such as the cryptographic protocol, or on practical experiences.
- A more in-depth talk on one of the issues from the lecture, such as cryptographical aspects or studies on usability and acceptance of e-voting systems

T 7.110 Course: International Finance [T-WIWI-102646]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101402 - eFinance](#)
[M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2530570	International Finance	2 SWS	Lecture (V)	Walter, Uhrig-Homburg
Exams					
WS 18/19	7900052	International Finance		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

See German version.

Prerequisites

None

Recommendation

None

Annotation

See German version.

Below you will find excerpts from events related to this course:

V International Finance

2530570, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The main aspects of this course are the chances and the risks which are associated with international transactions. We carry out our analysis from two distinct perspectives: First the point of view of an international investor second that, of an international corporation. Several alternatives to the management of foreign exchange risks are shown. Due to the importance of foreign exchange risks, the first part of the course deals with currency markets. Furthermore current exchange rate theories are discussed.

Learning Content

The main aspects of this course are the chances and the risks which are associated with international transactions. We carry out our analysis from two distinct perspectives: First the point of view of an international investor second that, of an international corporation. Several alternatives to the management of foreign exchange risks are shown. Due to the importance of foreign exchange risks, the first part of the course deals with currency markets. Furthermore current exchange rate theories are discussed.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Elective literature:

- Eiteman, D. et al., Multinational Business Finance, 13. edition, 2012.
- Solnik, B. and D. McLeavey, Global Investments, 6. edition, 2008.

T

7.111 Course: International Marketing [T-WIWI-102807]

Responsible: Dr. Sven Feurer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101424 - Grundlagen des Marketing](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	1,5	Each winter term	1

Events					
WS 18/19	2572155	International Marketing	1 SWS	Lecture (V)	Feurer
Exams					
WS 18/19	7900123	International Marketing		Prüfung (PR)	Klarmann
WS 18/19	7900128	International Marketing		Prüfung (PR)	Klarmann

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Annotation

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Below you will find excerpts from events related to this course:

V

International Marketing

2572155, WS 18/19, 1 SWS, [Open in study portal](#)

Lecture (V)

Description

Doing marketing abroad creates a number of significant new challenges for firms. This class is intended to prepare you for meeting these challenges. In the first session, we will discuss the peculiarities of international marketing. The next five sessions will then be dedicated to methods that can be used to address them. For instance, we will look at the following issues:

- Internationalization strategies
- Market entry strategies
- Standardization vs. individualization (e.g. regarding products, prices, and communication)
- Measurement equivalence in international market research

In the final session, we will apply this knowledge to the case of Wal Mart. In particular, Wal Mart, despite being the largest retailing company worldwide, failed to successfully enter the German Market. We will discuss Wal Mart's failure using the methods taught in the weeks before.

Learning Content

Doing marketing abroad creates a number of significant new challenges for firms. This class is intended to prepare you for meeting these challenges. In the first session, we will discuss the peculiarities of international marketing. The next five sessions will then be dedicated to methods that can be used to address them. For instance, we will look at the following issues:

- Internationalization strategies
- Market entry strategies
- Standardization vs. individualization (e.g. regarding products, prices, and communication)
- Measurement equivalence in international market research

In the final session, we will apply this knowledge to the case of Wal Mart. In particular, Wal Mart, despite being the largest retailing company worldwide, failed to successfully enter the German Market. We will discuss Wal Mart's failure using the methods taught in the weeks before.

Annotation

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Workload

The total workload for this course is approximately 45.0 hours. For further information see German version.

Literature

Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T

7.112 Course: Internship [T-WIWI-102611]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101419 - Berufspraktikum](#)

Type	Credits	Version
	10	1

Competence Certificate

see module description

Prerequisites

Kein

T

7.113 Course: Introduction to Ceramics [T-MACH-100287]

Responsible: Prof. Dr. Michael Hoffmann
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	6	Each winter term	1

Events					
WS 18/19	2125757	Introduction to Ceramics	3 SWS	Lecture (V)	Hoffmann
Exams					
WS 18/19	76-T-MACH-100287	Introduction to Ceramics		Prüfung (PR)	Hoffmann, Schell, Wagner
SS 2019	76-T-MACH-100287	Introduction to Ceramics		Prüfung (PR)	Hoffmann, Schell, Wagner

Competence Certificate

The assessment consists of an oral exam (30 min) taking place at a specific date.

The re-examination is offered at a specific date.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Introduction to Ceramics

2125757, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Slides for the lecture:

available under <http://www.iam.kit.edu/km>

Learning Content

After a short introduction to interatomic bonding, fundamental concepts of crystallography, the stereographic projection and the most important symmetry elements will be given. Different types of crystal structures are explained and the relevance of imperfections are analysed with respect to the mechanical and electrical properties of ceramics. Then, the impact of surfaces, interfaces and grain boundaries for the preparation, microstructural evolution and the resulting properties is discussed. Finally, an introduction is given to ternary phase diagrams.

The second part of the course covers structure, preparation and application aspects of nonmetallic inorganic glasses, followed by an introduction to the properties and processing methods of fine-grained technical powders. The most relevant shaping methods, such as pressing, slip casting, injection moulding and extrusion are introduced. Subsequently, the basics of science of sintering and the mechanisms for normal and abnormal grain growth are discussed. Mechanical properties of ceramics are analysed using basic principles of linear elastic fracture mechanics, Weibull statistics, concepts for subcritical crack growth and creep models to explain the behaviour at elevated temperatures. Furthermore it is demonstrated that mechanical properties can be significantly enhanced by various types of microstructural toughening mechanisms. The electronic and ionic conductivity of ceramic materials are explained based on defect-chemical considerations and band structure models. Finally, the characteristics of a dielectric, pyroelectric, and piezoelectric behaviour is discussed.

Workload

regular attendance: 45 hours

self-study: 135 hours

Literature

- H. Salmang, H. Scholze, "Keramik", Springer
- Kingery, Bowen, Uhlmann, "Introduction To Ceramics", Wiley
- Y.-M. Chiang, D. Birnie III and W.D. Kingery, "Physical Ceramics", Wiley
- S.J.L. Kang, "Sintering, Densification, Grain Growth & Microstructure", Elsevier

T

7.114 Course: Introduction to Energy Economics [T-WIWI-102746]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101464 - Energiewirtschaft](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5,5	Each summer term	2

Events					
SS 2019	2581010	Introduction to Energy Economics	2 SWS	Lecture (V)	Fichtner, Sandmeier
SS 2019	2581011	Übungen zu Einführung in die Energiewirtschaft	2 SWS	Practice (Ü)	Lehmann, Kleinebrahm, Jochem, Sandmeier
Exams					
WS 18/19	7981010	Introduction to Energy Economics		Prüfung (PR)	Fichtner

Competence Certificate

The assessment consists of a written exam (90 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Introduction to Energy Economics

2581010, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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)

Workload

The total workload for this course is approximately 165.0 hours. For further information see German version.

Literature**Complementary literature:**

- 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

7.115 Course: Introduction to Engineering Geology [T-BGU-101500]

Responsible: Prof. Dr. Philipp Blum
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	6339057	Einführung in die Ingenieurgeologie	4 SWS	Lecture / Practice (VÜ)	Blum
Exams					
WS 18/19	8210_101500	Introduction to Engineering Geology		Prüfung (PR)	Blum

Prerequisites

none

T

7.116 Course: Introduction to Engineering Mechanics I: Statics and Strength of Materials [T-MACH-102208]

Responsible: Prof. Dr.-Ing. Alexander Fidlin

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101259 - Technische Mechanik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2162238	Introduction to Engineering Mechanics I: Statics and Strength of Materials	2 SWS	Lecture (V)	Fidlin
SS 2019	2162239	Übungen zu Einführung in die Technische Mechanik I: Statik und Festigkeitslehre	1 SWS	Practice (Ü)	Fidlin, Drozdetskaya
Exams					
WS 18/19	76-T-MACH-102208-1	Introduction to Engineering Mechanics I: Statics (75min)		Prüfung (PR)	Fidlin
WS 18/19	76-T-MACH-102208-2	Introduction to Engineering Mechanics I: Statics and Strength of Materials (120min)		Prüfung (PR)	Fidlin

Competence Certificate

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 every ordinary examination date.

Permitted utilities: non-programmable calculator

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Introduction to Engineering Mechanics I: Statics and Strength of Materials

2162238, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Statics: force · moment · general equilibrium conditions · center of mass · inner force in structure · plane frameworks · theory of adhesion

T

7.117 Course: Introduction to Engineering Mechanics II : Dynamics [T-MACH-102210]

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

Part of: [M-MACH-101261 - Vertiefung ingenieurwissenschaftlicher Grundlagen](#)
[M-WIWI-101839 - Weiterführende ingenieurwissenschaftliche Grundlagen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2161276	Introduction to Engineering Mechanics II : Dynamics	2 SWS	Lecture (V)	Fidlin
Exams					
WS 18/19	76-T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics		Prüfung (PR)	Fidlin

Competence Certificate

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

Below you will find excerpts from events related to this course:

V

Introduction to Engineering Mechanics II : Dynamics

2161276, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Annotation

The credits have been changed from 4,5 to 5.

T

7.118 Course: Introduction to Game Theory [T-WIWI-102850]

Responsible: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101499 - Angewandte Mikroökonomik](#)
[M-WIWI-101501 - Wirtschaftstheorie](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2520525	Introduction to Game Theory	2 SWS	Lecture (V)	Reiß
SS 2019	2520526	Übungen zu Einführung in die Spieltheorie	1 SWS	Practice (Ü)	Reiß
Exams					
WS 18/19	7900212	Introduction to Game Theory		Prüfung (PR)	Puppe

Competence Certificate

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 resited at every ordinary examination date.

Prerequisites

None

Recommendation

Basic knowledge of mathematics and statistics is assumed.

Below you will find excerpts from events related to this course:

V

Introduction to Game Theory

2520525, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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. A short introduction to cooperative game theory is given if there is sufficient time.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature**Compulsory textbook:**

Gibbons (1992): A Primer in Game Theory, Harvester-Wheatsheaf.

Additional Literature:

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

7.119 Course: Introduction to GIS for Students of Natural, Engineering and Geo Sciences [T-BGU-101681]

Responsible: Dr.-Ing. Norbert Rösch
Dr.-Ing. Sven Wursthorn

Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences

Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	6071101	Einführung in GIS für Studierende natur-, ingenieur- und geowissenschaftlicher Fachrichtungen, V/Ü	4 SWS	Lecture / Practice (VÜ)	Rösch, Wursthorn
Exams					
WS 18/19	8280101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences		Prüfung (PR)	Rösch, Wursthorn

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-BGU-103541 - Introduction to GIS for Students of Natural, Engineering and Geo Sciences](#) must have been passed.

T

7.120 Course: Introduction to GIS for Students of Natural, Engineering and Geo Sciences [T-BGU-103541]

Responsible: Dr.-Ing. Norbert Rösch
Dr.-Ing. Sven Wursthorn

Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences

Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung	3	Each winter term	1

Events					
WS 18/19	6071101	Einführung in GIS für Studierende natur-, ingenieur- und geowissenschaftlicher Fachrichtungen, V/Ü	4 SWS	Lecture / Practice (VÜ)	Rösch, Wursthorn
Exams					
WS 18/19	8280101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences		Prüfung (PR)	Rösch, Wursthorn
WS 18/19	8280103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences		Prüfung (PR)	Rösch, Wursthorn

T

7.121 Course: Introduction to Microsystem Technology I [T-MACH-105182]

Responsible: Dr. Vlad Badilita
Dr. Mazin Jouda
Prof. Dr. Jan Gerrit Korvink

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2141861	Introduction to Microsystem Technology I	2 SWS	Lecture (V)	Korvink, Badilita
Exams					
WS 18/19	76-T-MACH-105182	Introduction to Microsystem Technology I		Prüfung (PR)	Korvink, Badilita

Competence Certificate

written examination for implementation in a major field, 30 min oral exam for elective subject

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Introduction to Microsystem Technology I

2141861, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

- Introduction in Nano- and Microtechnologies
- Silicon and processes for fabricating microelectronics circuits
- Basic physics background and crystal structure
- Materials for micromachining
- Processing technologies for microfabrication
- Silicon micromachining
- Examples

Workload

Literature: 20 h

Lessons: 21 h

Preparation and Review: 50 h

Exam preparation: 30 h

Literature

M. Madou

Fundamentals of Microfabrication

Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T

7.122 Course: Introduction to Microsystem Technology II [T-MACH-105183]

Responsible: Dr. Mazin Jouda
Prof. Dr. Jan Gerrit Korvink

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2142874	Introduction to Microsystem Technology II	2 SWS	Lecture (V)	Korvink, Badilita
Exams					
WS 18/19	76-T-MACH-105183	Introduction to Microsystem Technology II		Prüfung (PR)	Korvink, Badilita

Competence Certificate

written examination for major field, oral exam (30 min) for elective field

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Introduction to Microsystem Technology II

2142874, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

- Introduction in Nano- and Microtechnologies
- Lithography
- LIGA-technique
- Mechanical microfabrication
- Patterning with lasers
- Assembly and packaging
- Microsystems

Workload

Literature: 20 h

Lessions: 21 h

Preparation and Review: 50 h

Exam preparation: 30 h

Literature

M. Madou

Fundamentals of Microfabrication

Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T

7.123 Course: Introduction to Operations Research I and II [T-WIWI-102758]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101418 - Einführung in das Operations Research](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	see Annotations	1

Events					
WS 18/19	2530043	Introduction to Operations Research II	2 SWS	Lecture (V)	Nickel
WS 18/19	2530044	Tutorien zu Einführung in das Operations Research II	SWS	Tutorial (Tu)	Nickel, Dunke, Assistenten
SS 2019	2550040	Introduction to Operations Research I	2+2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900156	Introduction to Operations Research I and II		Prüfung (PR)	Nickel

Competence Certificate

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 July), one examination is held for both courses.

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

Prerequisites

None

Recommendation

Mathematics I und II. Programming knowledge for computing exercises.

It is strongly recommended to attend the course *Introduction to Operations Research I* [2550040] before attending the course *Introduction to Operations Research II* [2530043].

Below you will find excerpts from events related to this course:

V

Introduction to Operations Research II

2530043, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Integer and Combinatorial Programming: Basic notions, cutting plane methods, branch and bound methods, branch and cut methods, heuristics.

Nonlinear Programming: Basic notions, optimality conditions, solution methods for convex and nonconvex optimization problems.

Dynamic and stochastic models and methods: dynamical programming, Bellman method, lot sizing models, dynamical and stochastic inventory models, queuing theory.

Learning Content

Integer and Combinatorial Programming: Basic notions, cutting plane methods, branch and bound methods, branch and cut methods, heuristics.

Nonlinear Programming: Basic notions, optimality conditions, solution methods for convex and nonconvex optimization problems.

Dynamic and stochastic models and methods: dynamical programming, Bellman method, lot sizing models, dynamical and stochastic inventory models, queuing theory.

Workload

Berechnung des Arbeitsaufwands eines durchschnittlichen Studenten um die Lernziele zu erreichen. (Intern)

Eine Vernetzung von learningoutcomes (Wissen (content), Kompetenzen (skills) und levels mit dem dafür geschätzten Arbeitsaufwand eines durchschnittlichen Studenten ist anzustreben.

Literature

- Nickel, Stein, Waldmann: Operations Research, 2nd edition, Springer, 2014
- 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 Research I2550040, SS 2019, 2+2 SWS, [Open in study portal](#)

Lecture (V)

Description

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 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, multicriteria optimization.

Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal flows in networks.

Workload

Berechnung des Arbeitsaufwands eines durchschnittlichen Studenten um die Lernziele zu erreichen. (Intern)

Eine Vernetzung von learningoutcomes (Wissen (content), Kompetenzen (skills) und levels mit dem dafür geschätzten Arbeitsaufwand eines durchschnittlichen Studenten ist anzustreben.

Literature

- Nickel, Stein, Waldmann: Operations Research, 2nd edition, Springer, 2014
- 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

7.124 Course: Introduction to Programming with Java [T-WIWI-102735]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101581 - Einführung in die Programmierung](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	2

Events					
WS 18/19	2511000	Introduction to Programming with Java	3 SWS	Lecture (V)	Zöllner
WS 18/19	2511002	Tutorien zu Programmieren I: Java	1 SWS	Tutorial (Tu)	Zöllner, Struppek, Ulrich
WS 18/19	2511003	Rechnerpraktikum zu Programmieren I: Java	2 SWS	Practice (PÜ)	Zöllner, Struppek, Ulrich
WS 18/19	2511004	Tutorien zu Programmieren I: Java	1 SWS	Tutorial (Tu)	Zöllner, Struppek, Ulrich
Exams					
WS 18/19	7900018	Introduction to Programming with Java		Prüfung (PR)	Zöllner
SS 2019	7900042	Introduction to Programming with Java		Prüfung (PR)	Zöllner

Competence Certificate

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 prerequisites for admission to the written resp. computer-based exam.

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

Annotation

see german version

Below you will find excerpts from events related to this course:

V

Introduction to Programming with Java

2511000, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture (V)

Learning 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.

Annotation

see German version

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. 8. Aktualisierte und erweiterte Auflage, Hanser 2018

T

7.125 Course: Introduction to Public Finance [T-WIWI-102877]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101403 - Finanzwissenschaft](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2560131	Introduction to Public Finance	3 SWS	Lecture (V)	Wigger
Exams					
WS 18/19	790fiwi	Introduction to Public Finance		Prüfung (PR)	Wigger
SS 2019	790fiwi	Introduction to Public Finance		Prüfung (PR)	Wigger

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation SPO 2015.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Introduction to Public Finance

2560131, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture (V)

Learning 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.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Wigger, B. U. 2006. *Grundzüge der Finanzwissenschaft*. Springer: Berlin.

T

7.126 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101414 - Methodische Grundlagen des OR](#)
[M-WIWI-103278 - Optimierung unter Unsicherheit](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2550470	Einführung in die Stochastische Optimierung	2 SWS	Lecture (V)	Rebennack
SS 2019	2550471	Übung zur Einführung in die Stochastische Optimierung	1 SWS	Practice (Ü)	Rebennack, Assistenten
Exams					
WS 18/19	7900143	Introduction to Stochastic Optimization		Prüfung (PR)	Rebennack

Competence Certificate

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.

T 7.127 Course: Investments [T-WIWI-102604]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101435 - Essentials of Finance](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2530575	Investments	2 SWS	Lecture (V)	Uhrig-Homburg
SS 2019	2530576	Übung zu Investments	1 SWS	Practice (Ü)	Uhrig-Homburg
Exams					
WS 18/19	7900054	Investments		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

The assessment consists of a written exam (75 min) according to Section 4(2), 1 of the examination regulation.

The examination takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be earned through successful participation in the exercise. 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

Recommendation

Knowledge of Business Administration: Finance and Accounting [2610026] is recommended.

Below you will find excerpts from events related to this course:

V Investments

2530575, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The lecture deals with investment decisions under uncertainty, where the main emphasis is on investment decisions on stock markets. After a discussion of the basic questions of corporate valuation, the lecture focuses on portfolio theory. After that, risk and return in equilibrium are derived using the Capital Asset Pricing Model and the Arbitrage Pricing Theory, followed by an introduction into derivatives markets, especially forwards and futures. The lecture concludes with investments on bond markets.

Learning Content

The lecture deals with investment decisions under uncertainty, where the main emphasis is on investment decisions on stock markets. After a discussion of the basic questions of corporate valuation, the lecture focuses on portfolio theory. After that, risk and return in equilibrium are derived using the Capital Asset Pricing Model and the Arbitrage Pricing Theory. The lecture concludes with investments on bond markets.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Elective literature:

Bodie/Kane/Marcus (2010): Essentials of Investments, Eighth Edition, McGraw-Hill Irwin, Boston

T

7.128 Course: Laboratory Production Metrology [T-MACH-108878]

Responsible: Dr.-Ing. Benjamin Häfner
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101284 - Vertiefung der Produktionstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each summer term	1

Events					
SS 2019	2150550	Laboratory Production Metrology	3 SWS	Practical course (P)	Häfner

Competence Certificate

Alternative test achievement:
Group presentation

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Laboratory Production Metrology

2150550, SS 2019, 3 SWS, [Open in study portal](#)

Practical course (P)

Description

Lecture notes will be provided in Ilias (<https://ilias.studium.kit.edu/>). Additional reference to literature will be provided, as well.

Notes

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 (<http://www.wbk.kit.edu/studium-und-lehre.php>).

Learning 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 student 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
- Coordinate measurement technology
- Industrial computed tomography
- Measurement uncertainty evaluation
- Analysis of production data by means of data mining

Workload

regular attendance: 31,5 hours
self-study: 88,5 hours

T

7.129 Course: Learning Factory "Global Production" [T-MACH-105783]

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

Part of: [M-MACH-101284 - Vertiefung der Produktionstechnik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each winter term	2

Events					
WS 18/19	2149612	Lernfabrik Globale Produktion	2 SWS	Seminar / Practical course (S/P)	Lanza
Exams					
WS 18/19	76-T-MACH-105783	Learning Factory "Global Production"		Prüfung (PR)	Lanza

Competence Certificate

Alternative test achievement (graded):

- Knowledge acquisition in the context of the seminar (3 achievements 20 min each) with weighting 40%.
- Interaction between participants with weighting 15%.
- Scientific colloquium (in groups of 3 students approx. 45 min each) with weighting 45%.

Prerequisites

Successful completion of one of the following courses:

- Integrated Production Planning in the Age of Industry 4.0 [T-MACH-108849 or T-MACH-109054]
- Integrated Production Planning [T-MACH-102106]
- Global Production and Logistics – Part 1: Global Production [T-MACH-105158]
- Quality Management [T-MACH-102107]

Modeled Conditions

You have to fulfill one of 5 conditions:

1. The course T-MACH-102106 - Integrated Production Planning must have been passed.
2. The course [T-MACH-105158 - Global Production and Logistics - Part 1: Global Production](#) must have been passed.
3. The course [T-MACH-102107 - Quality Management](#) must have been passed.
4. The course T-MACH-108849 - Integrated Production Planning in the Age of Industry 4.0 must have been passed.
5. The course [T-MACH-109054 - Integrated Production Planning in the Age of Industry 4.0](#) must have been passed.

Below you will find excerpts from events related to this course:

V

Lernfabrik Globale Produktion

2149612, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar / Practical course (S/P)

Description**Media:**

e-learning platform ilias, powerpoint, photo protocol. The media are provided through ilias (<https://ilias.studium.kit.edu/>).

Notes

For organizational reasons the number of participants for the course is limited to 20. Hence a selection process will take place. Applications are made via the homepage of wbk (<http://www.wbk.kit.edu/studium-und-lehre.php>).

Learning Content

The learning factory “Global Production“ serves as a modern teaching environment for the challenges of global production. To make this challenges come alive, students can run a production of electric motors under real production conditions.

The course is divided into e-learning units and presence dates. The e-learning units help to learn essential basics and to immerse themselves in specific topics (e.g. selection of location, supplier selection and planning of production networks).

The focus of the

presence appointments is the case-specific application of relevant methods for planning and control of production systems that are suitable for the location. In addition to traditional methods and tools to organize lean production systems (e.g. Kanban and JIT/ JIS,

Line Balancing) the lecture in particular deals with site-specific quality assurance and scalable automation. Essential methods for quality assurance in complex production systems are taught and brought to practical experience by a Six Sigma project. In the area of scalable automation, it is important to find solutions for the adaption of the level of automation of the production system to the local production conditions (e.g. automated workpiece transport, integration of lightweight robots for process linking) and to

implement them physically. At the same time safety concepts should be developed and implemented as enablers for human-robot collaboration.

The course also includes an excursion to the production plant for the manufacturing of electric motors of an industrial partner.

Main focus of the lecture:

- site selection
- site-specific factory planning
- site-specific quality assurance
- scalable automation
- supplier selection

Workload

e-Learning: ~ 24 h

regular attendance: ~ 36 h

self-study: ~ 60 h

T

7.130 Course: Logistics - Organisation, Design and Control of Logistic Systems [T-MACH-102089]

Responsible: Prof. Dr.-Ing. Kai Furmans

Organisation: KIT Department of Mechanical Engineering

Part of: [M-WIWI-101421 - Supply Chain Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events					
SS 2019	2118078	Logistics - Organisation, Design, and Control of Logistic Systems	3 SWS	Lecture (V)	Furmans
Exams					
WS 18/19	76-T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems		Prüfung (PR)	Furmans, Mittwollen
SS 2019	76-T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems		Prüfung (PR)	Furmans, Mittwollen

Competence Certificate

The assessment consists of a 90 minutes written examination (according to §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

Required are lectures on "Linear Algebra" and "Stochastic".

Below you will find excerpts from events related to this course:

V

Logistics - Organisation, Design, and Control of Logistic Systems

2118078, SS 2019, 3 SWS, [Open in study portal](#)

Lecture (V)

Description

Media:

Blackboard, LCD projector, in exercises also PCs.

Learning Content

Introduction

- historical overview
- lines of development

Structure of logistics systems

Distribution logistics

- location planning
- Vehicle Routing Planning
- distribution centers

Inventory management

- demand forecasting
- Inventory management policies
- Bullwhip effect

Production logistics

- layout planning
- material handling
- flow control

Supply Management

- information flow
- transportation organization
- controlling and development of a logistics system
- co-operation mechanisms
- Lean SCM
- SCOR model

Identification Technologies

Workload

180 hrs

Literature

- Arnold/Isermann/Kuhn/Tempelmeier. Handbuch Logistik, Springer Verlag, 2002 (Neuaufgabe in Arbeit)
- Domschke. Logistik, Rundreisen und Touren, Oldenbourg Verlag, 1982
- Domschke/Drexler. Logistik, Standorte, Oldenbourg Verlag, 1996
- Gudehus. Logistik, Springer Verlag, 2007
- Neumann-Morlock. Operations-Research, Hanser-Verlag, 1993
- Tempelmeier. Bestandsmanagement in Supply Chains, Books on Demand 2006
- Schönsleben. Integrales Logistikmanagement, Springer, 1998

T

7.131 Course: Logistics and Supply Chain Management [T-WIWI-102870]

Responsible: Dr. Marcus Wiens
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101437 - Industrielle Produktion I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each summer term	1

Events					
SS 2019	2581996	Logistics and Supply Chain Management	2 SWS	Lecture (V)	Wiens
SS 2019	2581997	Übung zu Logistics and Supply Chain Management	1 SWS	Practice (Ü)	Diehlmann, Lüttenberg
Exams					
WS 18/19	7981996	Logistics and Supply Chain Management		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (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

Below you will find excerpts from events related to this course:

V

Logistics and Supply Chain Management

2581996, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

- Introduction: Basic Terms and Concepts
- Logistics Systems and Supply Chain Management
- Supply Chain Risk Management
- Extensions and Applications

Workload

Total effort required will account for approximately 105h (3.5 credits).

Literature

will be announced in the course

T

7.132 Course: Machine Tools and Industrial Handling [T-MACH-102158]

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

Part of: [M-MACH-101286 - Werkzeugmaschinen und Handhabungstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each winter term	2

Events					
WS 18/19	2149902	Machine Tools and Industrial Handling	6 SWS	Lecture / Practice (VÜ)	Fleischer
Exams					
WS 18/19	76-T-MACH-102158-MIT	Machine Tools and Industrial Handling		Prüfung (PR)	Fleischer
WS 18/19	76-T-MACH-102158-WING	Machine Tools and Industrial Handling		Prüfung (PR)	Fleischer

Competence Certificate

Written exam (120 minutes)

Prerequisites

"T-MACH-109055 - Werkzeugmaschinen und Handhabungstechnik" must not be commenced.

Below you will find excerpts from events related to this course:

V

Machine Tools and Industrial Handling

2149902, WS 18/19, 6 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Description**Media:**

Lecture notes will be provided in Ilias (<https://ilias.studium.kit.edu/>)

Notes

Lectures on Mondays and Wednesdays, tutorial on Thursdays.
 The tutorial dates will announced in the first lecture.

Learning Content

The lecture gives an overview of the construction, use and application of machine tools and industrial handling equipment. In the course of the lecture a well-founded and practice-oriented knowledge for the selection, design and evaluation of machine tools is conveyed. First, the main components of the machine tools are systematically explained and their design principles as well as the integral machine tool design are discussed. Subsequently, the use and application of machine tools 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.

The individual topics are:

- Frames and frame components
- Feed axes
- Spindles
- Peripheral equipment
- Control unit
- Metrological evaluation and machine testing
- Process monitoring
- Maintenance of machine tools
- Safety assessment of machine tools
- Machine examples

Annotation

None

Workload

MACH:

regular attendance: 63 hours

self-study: 177 hours

WiIng:/TVWL

regular attendance: 63 hours

self-study: 207 hours

T

7.133 Course: Macroeconomic Theory [T-WIWI-109121]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101501 - Wirtschaftstheorie](#)
[M-WIWI-101668 - Wirtschaftspolitik I](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	2

Events					
WS 18/19	2560404	Macroeconomic Theory	2 SWS	Lecture (V)	Brumm
WS 18/19	2560405	Übung zu Macroeconomic Theory	1 SWS	Practice (Ü)	Pegorari
Exams					
WS 18/19	7900264	Macroeconomic Theory		Prüfung (PR)	Scheffel

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

Successful completion of all relevant modules from the basic program.

Below you will find excerpts from events related to this course:

V

Macroeconomic Theory

2560404, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)**Description**

This course introduces a modern approach to macroeconomics by building on microeconomic principles. To be able to rigorously address key macroeconomic questions a general framework based on intertemporal decision making is introduced. Starting by the principles of consumer and firm behavior, this framework is successively expanded by introducing market imperfections, monetary factors as well as international trade. With this framework at hand students are able to analyze labor market policies, government deficits, monetary policy, financial crises, trade policy, and other important macroeconomic problems. Throughout the course, we not only point out the power of theory but also its limitations.

Workload

The total workload for this course is approximately 135 hours. For further information see the German version.

Literature

Literature and lecture notes are provided during the course.

T

7.134 Course: Management Accounting 1 [T-WIWI-102800]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101498 - Controlling \(Management Accounting\)](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2579900	Management Accounting 1	2 SWS	Lecture (V)	Wouters
SS 2019	2579901	Übung zu Management Accounting 1	2 SWS	Practice (Ü)	Riar
Exams					
WS 18/19	79-2579900-00	Management Accounting 1		Prüfung (PR)	Wouters
SS 2019	79-2579900-00	Management Accounting 1		Prüfung (PR)	Wouters

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation) at the end of each semester.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Management Accounting 1

2579900, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

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.

T

7.135 Course: Management Accounting 2 [T-WIWI-102801]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101498 - Controlling \(Management Accounting\)](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2579902	Management Accounting 2	2 SWS	Lecture (V)	Wouters
WS 18/19	2579903	Übung zu Management Accounting 2	2 SWS	Practice (Ü)	Wouters, Mickovic
Exams					
WS 18/19	79-2579902-00	Management Accounting 2		Prüfung (PR)	Wouters
SS 2019	79-2579902-00	Management Accounting 2		Prüfung (PR)	Wouters

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation) at the end of each semester.

Prerequisites

None

Recommendation

It is recommended to take part in the course "Management Accounting 1" before this course.

Below you will find excerpts from events related to this course:

V

Management Accounting 2

2579902, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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 and customer value propositions.

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.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

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.

T

7.136 Course: Management and Strategy [T-WIWI-102629]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101425 - Strategie und Organisation](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each summer term	1

Events					
SS 2019	2577900	Management and Strategy	2 SWS	Lecture (V)	Lindstädt
Exams					
WS 18/19	7900199	Management and Strategy		Prüfung (PR)	Lindstädt

Competence Certificate

The assessment consists of a written exam (60 min) taking place at the beginning 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

Below you will find excerpts from events related to this course:

V

Management and Strategy

2577900, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

- Corporate management principles
- Strategic management principles
- Strategic analysis
- Competitive strategy: modelling and selection on a divisional level
- Strategies for oligopolies and networks: anticipation of dependencies
- Corporate strategy: modelling and evaluation on a corporate level
- Strategy implementation

Learning Content

The participants learn about central concepts of strategic management along the ideal-typical strategy process: internal and external strategic analysis, concept and sources of competitive advantages, their importance when establishing competitive and corporate strategies as well as strategy assessment and implementation. This aims in particular to provide a summary of the basic concepts and models of strategic management, i.e. to provide in particular an action-oriented integration. Thereby a focus is on imparting knowledge about how price developments in oligopolistic markets can be understood, modeled and forecasted based on game theory.

Annotation

The credits for the course "Management and Strategy" have been changed from 4 to 3,5 from summer term 2015 on.

Workload

The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature

- Grant, R.M.: *Contemporary Strategy Analysis*. Blackwell, 5. Aufl. Massachusetts 2005.
- Lindstädt, H.; Hauser, R.: *Strategische Wirkungsbereiche von Unternehmen*. Gabler, Wiesbaden 2004.

The relevant excerpts and additional sources are made known during the course.

T

7.137 Course: Managing Organizations [T-WIWI-102630]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101425 - Strategie und Organisation](#)
[M-WIWI-101513 - Personal und Organisation](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	3

Events					
WS 18/19	2577902	Managing Organizations	2 SWS	Lecture (V)	Lindstädt, Burkardt, Jung
Exams					
WS 18/19	7900049	Managing Organizations		Prüfung (PR)	Lindstädt

Competence Certificate

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

Below you will find excerpts from events related to this course:

V

Managing Organizations

2577902, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

- Principles of organisational management
- Managing organisational structures and processes: the selection of design parameters
- Ideal-typical organisational structures: choice and effect of parameter combinations
- Managing organisational changes

Learning Content

The course should enable the participants to assess the strengths and weaknesses of existing organisational structures and rules using systematic criteria. Here concepts and models for designing organisation structures, regulating organizational processes and managing organisational changes are presented and discussed using case studies. The course is structured to relate to actions and aims to give students a realistic view of the opportunities and limits of rational design approaches.

Annotation

The credits for the course "Managing Organizations" have been changed from 4 to 3,5 from summer term 2015 on.

Workload

The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature

- Laux, H.; Liermann, F.: *Grundlagen der Organisation*, Springer. 6. Aufl. Berlin 2005.
- Lindstädt, H.: *Organisation*, in Scholz, C. (Hrsg.): *Vahlens Großes Personalexikon*, Verlag Franz Vahlen. 1. Aufl. München, 2009.
- Schreyögg, G.: *Organisation. Grundlagen moderner Organisationsgestaltung*, Gabler. 4. Aufl. Wiesbaden 2003.

The relevant excerpts and additional sources are made known during the course.

T

7.138 Course: Managing the Marketing Mix [T-WIWI-102805]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101424 - Grundlagen des Marketing](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2571152	Managing the Marketing Mix	2 SWS	Lecture (V)	Klarmann
SS 2019	2571153	Übung zu Marketing Mix (Bachelor)	1 SWS	Practice (Ü)	Moosbrugger, Pade

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Annotation

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Below you will find excerpts from events related to this course:

V

Managing the Marketing Mix

2571152, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)**Learning Content**

The content of this course concentrates on the four elements of the marketing mix. Therefore the four main chapters are:

- Product management
- Pricing
- Promotion
- Sales management

Annotation

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

T

7.139 Course: Manufacturing Technology [T-MACH-102105]

Responsible: Prof. Dr.-Ing. Volker Schulze
Dr.-Ing. Frederik Zanger

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101276 - Fertigungstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each winter term	3

Events					
WS 18/19	2149657	Manufacturing Technology	6 SWS	Lecture / Practice (VÜ)	Schulze, Zanger
Exams					
WS 18/19	76-T-MACH-102105	Manufacturing Technology		Prüfung (PR)	Schulze
WS 18/19	76-T-MACH-102105-Mündl.	Manufacturing Technology		Prüfung (PR)	Schulze
SS 2019	76-T-MACH-102105	Manufacturing Technology		Prüfung (PR)	Schulze

Competence Certificate

Written Exam (180 min)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Manufacturing Technology

2149657, WS 18/19, 6 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Description**Media:**

Lecture notes will be provided in ilias (<https://ilias.studium.kit.edu/>).

Learning Content

The objective of the lecture is to look at manufacturing technology within the wider context of production engineering, to provide an overview of the different manufacturing processes and to impart detailed process knowledge of the common processes. The lecture covers the basic principles of manufacturing technology and deals with the manufacturing processes according to their classification into main groups regarding technical and economic aspects. The lecture is completed with topics such as process chains in manufacturing.

The following topics will be covered:

- Quality control
- Primary processing (casting, plastics engineering, sintering, additive manufacturing processes)
- Forming (sheet-metal forming, massive forming, plastics engineering)
- Cutting (machining with geometrically defined and geometrically undefined cutting edges, separating, abrading)
- Joining
- Coating
- Heat treatment and surface treatment
- Process chains in manufacturing

This lecture provides an excursion to an industry company.

Annotation

None

Workload

regular attendance: 63 hours

self-study: 177 hours

Literature

Lecture Notes

T

7.140 Course: Material Flow in Logistic Systems [T-MACH-102151]

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

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	6	Each winter term	2

Events					
WS 18/19	2117051	Material flow in logistic systems	4 SWS	Others (sonst.)	Furmans
Exams					
WS 18/19	76-T-MACH-102151	Material Flow in Logistic Systems		Prüfung (PR)	Furmans
SS 2019	76-T-MACH-102151	Material Flow in Logistic Systems		Prüfung (PR)	Furmans

Competence Certificate

The assessment (Prüfungsleistung anderer Art) consists of the following assignments:

- 40% assessment of the final case study as individual performance,
- 60% semester evaluation which includes working on 5 case studies and defending those (For both assessment types, the best 4 of 5 tries count for the final grade.):
 - 40% assessment of the result of the case studies as group work,
 - 20% assessment of the oral examination during the case study colloquiums as individual performance.

A detailed description of the learning control can be found under Annotations.

Prerequisites

none

Recommendation

Recommended elective subject: Probability Theory and Statistics

Annotation

Students are divided into groups for this course. Five case studies are carried out in these groups. The results of the group work during the lecture period are presented and evaluated in writing. In the oral examination during the case study colloquiums, the understanding of the result of the group work and the models dealt with in the course is tested. The participation in the oral defenses is compulsory and will be controlled. For the written submission the group receives a common grade, in the oral defense each group member is evaluated individually.

After the lecture period, there is the final case study. This case study contains the curriculum of the whole semester. The students work individually on this case study which takes place at a predefined place and time (duration: 4h).

Below you will find excerpts from events related to this course:

V

Material flow in logistic systems

2117051, WS 18/19, 4 SWS, [Open in study portal](#)

Others (sonst.)

Description

Students are divided into groups for this course. Five case studies are carried out in these groups. The results of the group work during the lecture period are presented and evaluated in writing. In the oral examination during the case study colloquiums, the understanding of the result of the group work and the models dealt with in the course is tested. The participation in the oral defenses is compulsory and will be controlled. For the written submission the group receives a common grade, in the oral defense each group member is evaluated individually.

After the lecture period, there is the final case study. This case study contains the curriculum of the whole semester. The students work individually on this case study which takes place at a predefined place and time (duration: 4h).

Media: Presentations, black board, book, video recordings

Learning Content

- Elements of material flow systems (conveyor elements, fork, join elements)
- Models of material flow networks using graph theory and matrices
- Queueing theory, calculation of waiting time, utilization
- Warehouseing and order-picking
- Shuttle systems
- Sorting systems
- Simulation
- Calculation of availability and reliability
- Value stream analysis

Annotation

none

Workload

Regular attendance: 30 h

Self-study: 100 h

Group work: 50 h

Literature

Arnold, Dieter; Furmans, Kai : Materialfluss in Logistiksystemen; Springer-Verlag Berlin Heidelberg, 2009

T

7.141 Course: Material Science II for Business Engineers [T-MACH-102079]

Responsible: Prof. Dr. Michael Hoffmann
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101261 - Vertiefung ingenieurwissenschaftlicher Grundlagen](#)
[M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-101839 - Weiterführende ingenieurwissenschaftliche Grundlagen](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2126782	Materials Science II for Business Engineers	2 SWS	Lecture (V)	Hoffmann
Exams					
WS 18/19	76-T-MACH-102079	Material Science II		Prüfung (PR)	Hoffmann, Wagner, Schell, Bucharsky
SS 2019	76-T-MACH-102079	Material Science II for Business Engineers		Prüfung (PR)	Hoffmann, Wagner, Bucharsky, Rheinheimer, Schell

Competence Certificate

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

The module *Material Science* has to be completed beforehand.

Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-MACH-101260 - Materials Science](#) must have been passed.

Below you will find excerpts from events related to this course:

V

Materials Science II for Business Engineers

2126782, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course gives an overview of different heat treatments for steels to obtain defined microstructures such as martensite or pearlite and discusses their impact on the mechanical properties. Different thermally activated processes, such as diffusion, creep, recovery and recrystallization are introduced and analyzed and terms of their relevance for materials engineering. Heat treatments and thermally activated processes are also related to aluminium and copper alloys. The second part of the course covers structure, processing and applications of polymers, nonmetallic inorganic glasses and ceramics. Finally an overview is given of the most important materials testing methods.

Workload

regular attendance: 32 hours

self-study: 118 hours

Literature**Elective literature:**

- 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

7.142 Course: Materials and Processes for Body Lightweight Construction in the Automotive Industry [T-MACH-105166]

Responsible: Dr. Stefan Kienzle
Dr. Dieter Steegmüller

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101284 - Vertiefung der Produktionstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2149669	Materials and Processes for Body Lightweight Construction in the Automotive Industry	2 SWS	Lecture (V)	Steegmüller, Kienzle
Exams					
WS 18/19	76-T-MACH-105166	Materials and Processes for Body Lightweight Construction in the Automotive Industry		Prüfung (PR)	Schulze

Competence Certificate

Oral Exam (20 min)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Materials and Processes for Body Lightweight Construction in the Automotive Industry

Lecture (V)

2149669, WS 18/19, 2 SWS, [Open in study portal](#)

Description

Media:

Lecture notes will be provided in Ilias (<https://ilias.studium.kit.edu/>)

Notes

The lecture is a block course. An application in Ilias is mandatory.

Learning Content

The objective of the lecture is to build up an overview of the relevant materials and processes for the production of a lightweight body. This includes both the actual production and the joining for the body. The lecture covers the different lightweight approaches and possible fields of application in the automotive industry. The methods are discussed with practical examples from the automotive industry.

The following topics will be covered:

- lightweight designs
- aluminium and steel for lightweight construction
- fiber-reinforced plastics by the RTM and SMC process
- joining of steel and aluminium (clinching, riveting, welding)
- bonding
- coating
- finishing
- quality assurance
- virtual factory

Workload

regular attendance: 21 hours

self-study: 99 hours

T

7.143 Course: Materials Science I [T-MACH-102078]

Responsible: Prof. Dr. Michael Hoffmann
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101260 - Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2125760	Materials Science I	2 SWS	Lecture (V)	Hoffmann
Exams					
WS 18/19	76-T-MACH-102078	Materials Science I		Prüfung (PR)	Hoffmann, Wagner, Schell
SS 2019	76-T-MACH-102078	Materials Science I		Prüfung (PR)	Hoffmann, Bucharsky, Schell, Wagner

Competence Certificate

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 summer term is carried out by a written or oral exam.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Materials Science I

2125760, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

- Atomic structure and interatomic bonding
- Structure of crystalline solids
- Imperfections in solids
- Mechanical behaviour
- Physical properties
- Solidification
- Thermodynamics of heterogeneous systems
- Phase diagrams
- Ferrous alloys

Workload

The total workload for this course is approximately 75.0 hours. For further information see German version.

Literature**Elective literature:**

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

7.144 Course: Mathematics I - Final Exam [T-MATH-102261]

Responsible: Dr. Martin Folkers
 Prof. Dr. Daniel Hug
 Prof. Dr. Günter Last
 PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: [M-MATH-101676 - Mathematik 1](#)
[M-WIWI-104905 - Mathematik](#)

Type	Credits	Version
Prüfungsleistung schriftlich	3,5	1

Exams				
WS 18/19	6700013	Mathematics I - Final Exam	Prüfung (PR)	Folkers, Last, Winter
WS 18/19	6700014	Mathematics I - Final Exam	Prüfung (PR)	Winter, Last, Folkers

T

7.145 Course: Mathematics I - Midterm Exam [T-MATH-102260]

Responsible: Dr. Martin Folkers
 Prof. Dr. Daniel Hug
 Prof. Dr. Günter Last
 PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: [M-MATH-101676 - Mathematik 1](#)
[M-WIWI-104905 - Mathematik](#)

Type	Credits	Version
Prüfungsleistung schriftlich	3,5	1

Events					
WS 18/19	0135000	Mathematik 1 für die Fachrichtung Wirtschaftswissenschaften	4 SWS	Lecture (V)	Folkers
WS 18/19	0135100	Übungen zu 0135000	2 SWS	Practice (Ü)	Folkers
Exams					
WS 18/19	6700040	Mathematics I - Midterm Exam		Prüfung (PR)	Winter, Last, Folkers
WS 18/19	6700065	Mathematics I - Midterm Exam		Prüfung (PR)	Winter, Last, Folkers

T**7.146 Course: Mathematics II - Final Exam [T-MATH-102263]**

Responsible: Dr. Martin Folkers
Prof. Dr. Daniel Hug
Prof. Dr. Günter Last
PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: [M-MATH-101677 - Mathematik 2](#)
[M-WIWI-104905 - Mathematik](#)

Type	Credits	Version
Prüfungsleistung schriftlich	3,5	1

T

7.147 Course: Mathematics II - Midterm Exam [T-MATH-102262]

Responsible: Dr. Martin Folkers
 Prof. Dr. Daniel Hug
 Prof. Dr. Günter Last
 PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: [M-MATH-101677 - Mathematik 2](#)
[M-WIWI-104905 - Mathematik](#)

Type	Credits	Version
Prüfungsleistung schriftlich	3,5	1

Events					
SS 2019	0183000	Mathematik 2 für die Fachrichtung Wirtschaftswissenschaft	4 SWS	Lecture (V)	Folkers
SS 2019	0183100	Übungen zu 0183000	2 SWS	Practice (Ü)	Folkers

T

7.148 Course: Mathematics III - Final Exam [T-MATH-102264]

Responsible: Dr. Martin Folkers
 Prof. Dr. Daniel Hug
 Prof. Dr. Günter Last
 PD Dr. Steffen Winter

Organisation: KIT Department of Mathematics

Part of: [M-MATH-101679 - Mathematik 3](#)
[M-WIWI-104905 - Mathematik](#)

Type	Credits	Version
Prüfungsleistung schriftlich	7	1

Events					
WS 18/19	0135200	Mathematik 3 für die Fachrichtung Wirtschaftswissenschaften	4 SWS	Lecture (V)	Winter
WS 18/19	0135300	Übungen zu 0135200	2 SWS	Practice (Ü)	Winter
Exams					
WS 18/19	6700031	Mathematics III - Final Exam		Prüfung (PR)	Winter, Last
WS 18/19	6700051	Mathematics III - Final Exam		Prüfung (PR)	Winter

T

7.149 Course: Mechanical Design I and II - CIW [T-MACH-104739]

Responsible: Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101299 - Maschinenkonstruktionslehre](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	7	Each winter term	2

Events					
WS 18/19	2145179	Mechanical Design I (CIW/VT/MIT/IP-M)	2 SWS	Lecture (V)	Albers, Matthiesen, Behrendt
SS 2019	2146195	Mechanical Design II (CIW/VT/MIT/IP-M)	2 SWS	Lecture (V)	Albers
Exams					
WS 18/19	76-T-MACH-104739	Mechanical Design I and II		Prüfung (PR)	Albers, Matthiesen

Competence Certificate

Written Exam (90min) on the topics of MKLI and MKLII for CIW.

Prerequisites

The bricks "T-MACH-102132 - Maschinenkonstruktionslehre I, Vorleistung" and "T-MACH-102133 - Maschinenkonstruktionslehre II, Vorleistung" must be passed successfully.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-MACH-102133 - Mechanical Design II, Tutorial](#) must have been passed.
2. The course [T-MACH-102132 - Mechanical Design I, Tutorial](#) must have been passed.

Below you will find excerpts from events related to this course:

V

Mechanical Design I (CIW/VT/MIT/IP-M)

2145179, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Beamer

Visualizer

Mechanical components

Learning Content

Introduction in product engineering

Tools of visualization (technical drawing)

Product manufacturing as problem solving

Product manufacturing of technical systems:

- system theory
- Contact and Channel C&C²-A

Basics of chosen design- and machining elements

- springs
- bearings
- sealings

Concomitant to the lectures tutorials take place with the following contents:

Gear workshop

Tutorial "tools of visualization (technical drawing)"

Tutorial "technical systems product development, sytem theory, Contact and Chanel C&C²-A"

Tutorial "springs"

Tutorial "bearing and bearing arrangements"

Annotation**Lecture notes:**

The Productdevelopment knowledge base PKB will be provided in digital form for registered students. All lecture notes and additional slides will be provided in Ilias.

Workload

regular attendance: 42 h

self-study: 80 h

Literature**Lecture notes:**

The lecture notes can be downloaded via the eLearning platform Ilias.

Literature:

Konstruktionselemente des Maschinenbaus - 1 und 2

Grundlagen der Berechnung und Gestaltung von Maschinenelementen;

Steinhilper, Sauer, Springer Verlag, ISBN 3-540-22033-X

or per full text access provided by university library

Grundlagen von Maschinenelementen für Antriebsaufgaben;

Steinhilper, Sauer, Springer Verlag, ISBN 3-540-29629-8

V

Mechanical Design II (CIW/VT/MIT/IP-M)

2146195, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Beamer

Visualizer

Mechanical components

Learning Content

Sealings

Design

Dimensioning

Component connections

Bolt connection

Tutorials take place in concomitant to the lectures.

Annotation**Lecture notes:**

The Productdevelopment knowledge base PKB will be provided in digital form for registered students. All lecture notes and additional slides will be provided in Ilias.

Workload

regular attendance: 42 h

self-study: 80 h

Literature

Konstruktionselemente des Maschinenbaus - 1 und 2

Grundlagen der Berechnung und Gestaltung von
Maschinenelementen;

Steinhilper, Sauer, Springer Verlag, ISBN 3-540-22033-X,

also available as electronic paper at the KIT catalogue.

Grundlagen von Maschinenelementen für Antriebsaufgaben;

Steinhilper, Sauer, Springer Verlag, ISBN 3-540-29629-8)

T

7.150 Course: Mechanical Design I, Tutorial [T-MACH-102132]

Responsible: Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101299 - Maschinenkonstruktionslehre](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung	1	Each winter term	2

Events					
WS 18/19	2145195	Tutorials Mechanical Design I (CIW/VT/MIT/IP-M)	1 SWS	Practice (Ü)	Albers, Matthiesen, Behrendt, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102132	Mechanical Design I, Tutorial		Prüfung (PR)	Matthiesen, Albers

Competence Certificate

To pass the preliminary work, attendance at 3 workshop sessions of the MKL1 transmission workshop and the passing of a colloquium at the beginning of each workshop are prerequisites. In addition, participation in an online test is a prerequisite

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Tutorials Mechanical Design I (CIW/VT/MIT/IP-M)

2145195, WS 18/19, 1 SWS, [Open in study portal](#)

Practice (Ü)

Description**Media:**

Beamer
 Visualizer
 Gear box (Workshop)

Learning Content

Gear workshop
 Tutorial "tools of visualization (technical drawing)"
 Tutorial "technical systems product development, system theory, element model C&CM"
 Tutorial "springs"
 Tutorial "bearing and bearing arrangements"

Literature

Konstruktionselemente des Maschinenbaus - 1 und 2
 Grundlagen der Berechnung und Gestaltung von Maschinenelementen;
 Steinhilper, Sauer, Springer Verlag, ISBN 3-540-22033-X

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

CAD:

3D-Konstruktion mit Pro/Engineer - Wildfire, Paul Wyndorps, Europa Lehrmittel, ISBN: 978-3-8085-8948-9
 Pro/Engineer Tipps und Techniken, Wolfgang Berg, Hanser Verlag, ISBN: 3-446-22711-3 (für Fortgeschrittene)

T

7.151 Course: Mechanical Design II, Tutorial [T-MACH-102133]

Responsible: Prof. Dr.-Ing. Sven Matthiesen
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101299 - Maschinenkonstruktionslehre](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung	1	Each summer term	2

Events					
SS 2019	2146196	Tutorials Mechanical Design II (CIW/VT/MIT/IP-M)	2 SWS	Practice (Ü)	Matthiesen, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102133	Mechanical Design II, Tutorial		Prüfung (PR)	Matthiesen
SS 2019	76-T-MACH-102133	Mechanical Design II, Tutorial		Prüfung (PR)	Albers, Matthiesen

Competence Certificate

IP-MATH-CIW-NWT: For passing the prerequisite it is necessary that a design task is successfully completed as a technical hand drawing

MIT: To pass the preliminary examination, attendance at workshop sessions and a colloquium at the beginning of each workshop are required.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Tutorials Mechanical Design II (CIW/VT/MIT/IP-M)

2146196, SS 2019, 2 SWS, [Open in study portal](#)

Practice (Ü)

Description**Media:**

Beamer
 Visualizer

Learning Content

Bearings
 Sealings
 Design
 Tolerances and fittings
 Shaft-hub connections

Literature**Konstruktionselemente des Maschinenbaus - 1 und 2**

Grundlagen der Berechnung und Gestaltung von
Maschinenelementen;

Steinhilper, Sauer, Springer Verlag, ISBN 3-540-22033-X

Grundlagen von Maschinenelementen für Antriebsaufgaben;

Steinhilper, Sauer, Springer Verlag, ISBN 3-540-29629-8

CAD:

3D-Konstruktion mit Pro/Engineer - Wildfire, Paul Wyndorps, Europa Lehrmittel, ISBN: 978-3-8085-8948-9

Pro/Engineer Tipps und Techniken, Wolfgang Berg, Hanser Verlag, ISBN: 3-446-22711-3 (für Fortgeschrittene)

T

7.152 Course: Metal Forming [T-MACH-105177]

Responsible: Dr.-Ing. Thomas Herlan
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101284 - Vertiefung der Produktionstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2150681	Metal Forming	2 SWS	Lecture (V)	Herlan
Exams					
WS 18/19	76-T-MACH-105177	Metal Forming		Prüfung (PR)	Schulze

Competence Certificate

Oral Exam (20 min)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Metal Forming

2150681, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Lecture notes will be provided in Ilias (<https://ilias.studium.kit.edu/>)

Learning 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

Annotation

None

Workload

regular attendance: 21 hours

self-study: 99 hours

T

7.153 Course: Microactuators [T-MACH-101910]

Responsible: Prof. Dr. Manfred Kohl
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2142881	Microactuators	2 SWS	Lecture (V)	Kohl
Exams					
WS 18/19	76-T-MACH-101910	Microactuators		Prüfung (PR)	Kohl

Competence Certificate

oral exam

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Microactuators2142881, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)****Description****Media:**

Script of ppt-slides

Learning 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:

- Microelectromechanical 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

Workload

lecture time 1.5 h/week

self preparation: 8.5 h/week

Literature

- Lecture notes
- 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, Cambridge University Press 2010

T

7.154 Course: Mobile Machines [T-MACH-105168]

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

Part of: [M-MACH-101267 - Mobile Arbeitsmaschinen](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	9	Each summer term	1

Events					
SS 2019	2114073	Mobile Machines	4 SWS	Lecture (V)	Geimer, Geiger
Exams					
WS 18/19	76T-MACH-105168	Mobile Machines		Prüfung (PR)	Geimer
SS 2019	76T-MACH-105168	Mobile Machines		Prüfung (PR)	Geimer
SS 2019	76-T-MACH-105168	Mobile Machines		Prüfung (PR)	Geimer

Competence Certificate

The assessment consists of an oral exam (45 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

Recommendation

Knowledge in Fluid Power Systems is required. It is recommended to attend the course *Fluid Power Systems* [2114093] beforehand.

Annotation

After completion of the course the students have knowledge of:

- a wide range of mobile machines
- operation modes and working cycles of important mobile machines
- selected subsystems and components

Content:

- Introduction of the required components and machines
- Basics and structure of mobile machines
- Practical insight in the development techniques

Below you will find excerpts from events related to this course:

V

Mobile Machines

2114073, SS 2019, 4 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Lecture notes.

Learning Content

- Introduction of the required components and machines
- Basics of the structure of the whole system
- Practical insight in the development techniques

Workload

- regular attendance: 42 hours
- self-study: 184 hours

T

7.155 Course: Mobility and Infrastructure [T-BGU-101791]

Responsible: Prof. Dr.-Ing. Ralf Roos
Prof. Dr.-Ing. Peter Vortisch

Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences

Part of: [M-BGU-101067 - Mobilität und Infrastruktur](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each term	2

Events					
SS 2019	6200404	Spatial Planning and Planning Law	2 SWS	Lecture (V)	Wilske
SS 2019	6200405	Exercises to Spatial Planning and Planning Law	1 SWS	Practice (Ü)	Wilske, Mitarbeiter/innen
SS 2019	6200406	Transportation Systems	2 SWS	Lecture (V)	Vortisch
SS 2019	6200407	Exercises to Transportation Systems	SWS	Practice (Ü)	Vortisch, Mitarbeiter/innen
SS 2019	6200408	Design Basics in Highway Engineering	2 SWS	Lecture (V)	Roos, Zimmermann
SS 2019	6200409	Exercises to Design Basics in Highway Engineering	SWS	Practice (Ü)	Plachkova-Dzhurova, Zimmermann
Exams					
WS 18/19	8234101791	Mobility and Infrastructure		Prüfung (PR)	Roos

Competence Certificate

written exam, 150 min.

Prerequisites

None

Recommendation

None

Annotation

None

T

7.156 Course: Model Based Application Methods [T-MACH-102199]

Responsible: Dr. Frank Kirschbaum
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101303 - Verbrennungsmotoren II](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Competence Certificate

take-home exam, short presentation with oral examination

Prerequisites

none

T

7.157 Course: Modeling and OR-Software: Introduction [T-WIWI-106199]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Anwendungen des Operations Research](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each summer term	1

Events					
SS 2019	2550490	Modellieren und OR-Software: Einführung	3 SWS	Practical course (P)	Nickel, Bakker

Competence Certificate

The assessment is a 120 minutes examination, including a written and a practical part (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the software laboratory and the following term.

Prerequisites

None

Recommendation

Firm knowledge of the contents from the lecture *Introduction to Operations Research I* [2550040] of the module *Operations Research* [WW10R].

Annotation

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is offered in every term. The planned lectures and courses for the next three years are announced online.

Below you will find excerpts from events related to this course:

V

Modellieren und OR-Software: Einführung

2550490, SS 2019, 3 SWS, [Open in study portal](#)

Practical course (P)**Learning Content**

The task of solving combinatorial and nonlinear optimization problems imposes much higher requirements on suggested solution approaches as in linear programming.

During the course of this software laboratory, students get to know important methods from combinatorial optimization, e.g. Branch & Cut- or Column Generation methods and are enabled to solve problems with the software system IBM ILOG CPLEX Optimization Studio and the corresponding modeling language OPL. In addition, issues of nonlinear optimization, e.g. quadratic optimization, are addressed. As an important part of the software laboratory, students get the possibility to model combinatorial and nonlinear problems and implement solution approaches in the software system.

The software laboratory also introduces some of the most frequently used modelling and programming languages that are used in practice to solve optimization problems.

Annotation

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is held irregularly. The planned lectures and courses for the next three years are announced online.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

T

7.158 Course: Modelling and Identification [T-ETIT-100699]

Responsible: Prof. Dr.-Ing. Sören Hohmann
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: [M-ETIT-101156 - Regelungstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2303166	Modellbildung und Identifikation	2 SWS	Lecture (V)	Hohmann
WS 18/19	2303168	Übungen zu 2303166 Modellbildung und Identifikation	1 SWS	Practice (Ü)	Strehle
Exams					
WS 18/19	7303166	Modelling and Identification		Prüfung (PR)	Hohmann

Prerequisites

none

T

7.159 Course: Nanotechnology with Clusterbeams [T-MACH-102080]

Responsible: Dr. Jürgen Gspann
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Competence Certificate

written examination
 presence in more that 70% of the lectures
 Duration: 1 h

aids: none

Prerequisites

none

T

7.160 Course: Nonlinear Optimization I [T-WIWI-102724]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101414 - Methodische Grundlagen des OR](#)
[M-WIWI-103278 - Optimierung unter Unsicherheit](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	3

Events					
WS 18/19	2550111	Nichtlineare Optimierung I	2 SWS	Lecture (V)	Stein
WS 18/19	2550112	Übungen zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550142	Rechnerübung zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
Exams					
WS 18/19	7900002_HK_WS1819	Nonlinear Optimization I		Prüfung (PR)	Stein

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

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.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-103637 - Nonlinear Optimization I and II](#) must not have been started.

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

Below you will find excerpts from events related to this course:

V

Nichtlineare Optimierung I

2550111, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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, we derive optimality conditions that form the basis for numerical solution methods. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality conditions for unconstrained problems
- Optimality conditions for unconstrained convex problems
- Numerical methods for unconstrained problems (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

Constrained problems are the contents of part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation

Part I and II of the lecture are held consecutively in the same semester.

Literature**Elective 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

7.161 Course: Nonlinear Optimization I and II [T-WIWI-103637]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101414 - Methodische Grundlagen des OR](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each winter term	5

Events					
WS 18/19	2550111	Nichtlineare Optimierung I	2 SWS	Lecture (V)	Stein
WS 18/19	2550112	Übungen zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550113	Nichtlineare Optimierung II	2 SWS	Lecture (V)	Stein
WS 18/19	2550142	Rechnerübung zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
Exams					
WS 18/19	7900151_HK_WS1819	Nonlinear Optimization I and II		Prüfung (PR)	Stein

Competence Certificate

The assessment consists of a written exam (120 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The exam takes place in the semester of the lecture and in the following semester.

Prerequisites

None.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102724 - Nonlinear Optimization I](#) must not have been started.
2. The course [T-WIWI-102725 - Nonlinear Optimization II](#) must not have been started.

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from events related to this course:

V

Nichtlineare Optimierung I

2550111, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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, we derive optimality conditions that form the basis for numerical solution methods. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality conditions for unconstrained problems
- Optimality conditions for unconstrained convex problems
- Numerical methods for unconstrained problems (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

Constrained problems are the contents of part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation

Part I and II of the lecture are held consecutively in *thesamesemester*.

Literature**Elective 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**Nichtlineare Optimierung II**2550113, WS 18/19, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning 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, we derive optimality conditions that form the basis for numerical solution methods. Part I of the lecture treats unconstrained optimization problems. Part II of 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 for constrained problems
- Optimality conditions for constrained convex problems
- Numerical methods for constrained problems (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation

Part I and II of the lecture are held consecutively in *thesamesemester*.

Literature**Elective 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

7.162 Course: Nonlinear Optimization II [T-WIWI-102725]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101414 - Methodische Grundlagen des OR](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	2

Events					
WS 18/19	2550112	Übungen zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550113	Nichtlineare Optimierung II	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900050_HK_WS1819	Nonlinear Optimization II		Prüfung (PR)	Stein

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

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 Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-103637 - Nonlinear Optimization I and II](#) must not have been started.

Annotation

Part I and II of the lecture are held consecutively in the same semester.

Below you will find excerpts from events related to this course:

V

Nichtlineare Optimierung II

2550113, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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, we derive optimality conditions that form the basis for numerical solution methods. Part I of the lecture treats unconstrained optimization problems. Part II of 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 for constrained problems
- Optimality conditions for constrained convex problems
- Numerical methods for constrained problems (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation

Part I and II of the lecture are held consecutively in the same semester.

Literature**Elective 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

7.163 Course: Novel Actuators and Sensors [T-MACH-102152]

Responsible: Prof. Dr. Manfred Kohl
Dr. Martin Sommer

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	2

Events					
WS 18/19	2141865	Novel actuators and sensors	2 SWS	Lecture (V)	Kohl, Sommer
Exams					
WS 18/19	76-T-MACH-102152	Novel Actuators and Sensors		Prüfung (PR)	Kohl, Sommer

Competence Certificate

oral exam (30 Min.)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Novel actuators and sensors

2141865, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Script / script of ppt foils (part 2)

Learning Content

Contents: - Basic knowledge in the material science of actuator and sensor principles

- Layout and design optimization
- Fabrication technologies
- Selected developments
- Applications

Index: The lecture includes amongst others the following topics:

- Piezo actuators
- Magnetostrictive actuators
- Shape memory actuators
- Electro-/magnetorheological actuators
- Sensors: Concepts, materials, fabrication
- Micromechanical sensors: Pressure, force, inertia sensors
- Temperature sensors
- Micro sensors for bio analytics
- Mechano-magnetic sensors

The lecture addresses students in the fields of mechanical engineering, mechatronics and information technology, materials science and engineering, electrical engineering and economic sciences. A comprehensive introduction is given in the basics and current developments on the macroscopic length scale.

The lecture is core subject of the major course "Actuators and Sensors" of the specialization "Mechatronics and Microsystems Technology" in Mechanical Engineering.

Workload

Work Lecture:

time of attendance: 21 hours

Self-study: 99 hours

Literature

- Lecture notes

- 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

7.164 Course: Operative CRM [T-WIWI-102597]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101422 - Vertiefung im Customer Relationship Management](#)
[M-WIWI-101460 - CRM und Servicemanagement](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2540522	Operative CRM	2 SWS	Lecture (V)	Geyer-Schulz
WS 18/19	2540523	Übung Operatives CRM	1 SWS	Practice (Ü)	Schweigert
Exams					
WS 18/19	7900145	Operative CRM		Prüfung (PR)	Geyer-Schulz

Competence Certificate

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.

A bonus can be acquired through successful participation in the practice. 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

Recommendation

The attendance of courses Customer Relationship Management and Analytical CRM is advised.

Below you will find excerpts from events related to this course:

V

Operative CRM

2540522, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The Student should be able to understand and implement methods and applications within the operative CRM. This includes, but is not limited to the analysis of business processes, as a basis for improvements in CRM, and applications like call centers.

Workload

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Literature

Jill Dyché. The CRM Handbook: A Business Guide to Customer Relationship Management. Addison-Wesley, Boston, 2 edition, 2002.

Ronald S. Swift. Accelerating Customer Relationships: Using CRM and Relationship Technologies. Prentice Hall, Upper Saddle River, 2001.

Elective literature:

Alex Berson, Kurt Thearling, and Stephen J. Smith. Building Data Mining Applications for CRM. Mc Graw-Hill, New York, 2000.

Stanley A. Brown. Customer Relationship Management: A Strategic Imperative in the World of E-Business. John Wiley, Toronto, 2000.

Dimitris N. Chorafas. Integrating ERP, CRM, Supply Chain Management, and Smart Materials. Auerbach Publications, Boca Raton, Florida, 2001.

Keith Dawson. Call Center Handbook: The Complete Guide to Starting, Running, and Improving Your Call Center. CMP Books, Gilroy, CA, 4 edition, 2001.

Andreas Eggert and Georg Fassot. eCRM – Electronic Customer Relationship Management: Anbieter von CRM-Software im Vergleich. Schäffer-Poeschel, Stuttgart, 2001.

Seth Godin. Permission Marketing. Kunden wollen wählen können. FinanzBuch Verlag, München, 1999.

Paul Greenberg. CRM at the Speed of Light: Capturing and Keeping Customers in Internet Real Time. Osborne/McGraw-Hill, 3rd ed. edition, Aug 2004.

Philip Kotler. Marketing Management: Millennium Edition. Prentice Hall, Upper Saddle River, 10 edition, 2000.

Don Peppers and Martha Rogers. The One To One Future. Currency Doubleday, New York, 1997.

Duane E. Sharp. Customer Relationship Management Systems Handbook. Auerbach, 2002.

Len Silverston. The Data Model Resource Book: A Library of Universal Data Models for All Enterprises, volume 1. John Wiley & Sons, 2001.

Toby J. Teorey. Database Modeling and Design. Morgan Kaufmann, San Francisco, 3 edition, 1999.

Chris Todman. Designing a Data Warehouse : Supporting Customer Relationship Management. Prentice Hall, Upper Saddle River, 1 edition, 2001.

T

7.165 Course: Optimization under Uncertainty [T-WIWI-106545]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Anwendungen des Operations Research](#)
[M-WIWI-103278 - Optimierung unter Unsicherheit](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Irregular	1

Events					
WS 18/19	2550464	Optimierungsansätze unter Unsicherheit	SWS	Lecture (V)	Sinske
WS 18/19	2550465	Übungen zu Optimierungsansätze unter Unsicherheit	SWS	Practice (Ü)	Füllner
WS 18/19	2550466	Rechnerübungen zu Optimierungsansätze unter Unsicherheit	2 SWS	Practice (Ü)	Füllner
Exams					
WS 18/19	7900158	Optimization under uncertainty		Prüfung (PR)	Rebennack

Competence Certificate

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.

T

7.166 Course: Optoelectronic Components [T-ETIT-101907]

Responsible: Prof. Dr. Wolfgang Freude
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2309486	Optoelectronic Components	2 SWS	Lecture (V)	Freude
SS 2019	2309487	Optoelectronic Components (Tutorial)	1 SWS	Practice (Ü)	Freude
Exams					
WS 18/19	7309486	Optoelectronic Components		Prüfung (PR)	Freude
SS 2019	7309486	Optoelectronic Components		Prüfung (PR)	Freude

Prerequisites
none

T

7.167 Course: Personnel Policies and Labor Market Institutions [T-WIWI-102908]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101513 - Personal und Organisation](#)
[M-WIWI-101668 - Wirtschaftspolitik I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2573001	Personnel Policies and Labor Market Institutions	2 SWS	Lecture (V)	Nieken
SS 2019	2573002	Übungen zu Personalpolitik und Arbeitsmarktinstitutionen	1 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
WS 18/19	7900202	Personnel Policies and Labor Market Institutions		Prüfung (PR)	Nieken

Competence Certificate

The assessment of this course is a written examination (60 min) 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. In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites

None

Recommendation

Completion of module Business Administration is recommended.
 Basic knowledge of microeconomics, game theory, and statistics is recommended.

Below you will find excerpts from events related to this course:

V

Personnel Policies and Labor Market Institutions

2573001, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The students acquire knowledge about the process and the strategic aspects of collective bargaining about wages. They analyze selected aspects of corporate governance and co-determination in Germany. The lecture also addresses questions of personnel politics and issue of labor market discrimination. Microeconomic and behavioral approaches as well as empirical data is used and evaluated critically.

Annotation

Is carried out routinely in summer.

Workload

The total workload for this course is approximately 135 hours.

Lecture 32h

Preparation of lecture 52h

Exam preparation 51h

Literature

Arbeitsmarktökonomik, W. Franz, Springer, 2013

T**7.168 Course: PH APL-ING-TL01 [T-WIWI-106291]****Organisation:** University**Part of:** [M-WIWI-101404 - Außerplanmäßiges Ingenieurmodul](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Once	1

T**7.169 Course: PH APL-ING-TL02 [T-WIWI-106292]****Organisation:** University**Part of:** [M-WIWI-101404 - Außerplanmäßiges Ingenieurmodul](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Once	1

T**7.170 Course: PH APL-ING-TL03 [T-WIWI-106293]****Organisation:** University**Part of:** [M-WIWI-101404 - Außerplanmäßiges Ingenieurmodul](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Once	1

T**7.171 Course: PH APL-ING-TL04 ub [T-WIWI-106294]****Organisation:** University**Part of:** [M-WIWI-101404 - Außerplanmäßiges Ingenieurmodul](#)

Type	Credits	Recurrence	Version
Studienleistung	0	Once	1

T**7.172 Course: PH APL-ING-TL05 ub [T-WIWI-106295]****Organisation:** University**Part of:** [M-WIWI-101404 - Außerplanmäßiges Ingenieurmodul](#)

Type	Credits	Recurrence	Version
Studienleistung	0	Once	1

T**7.173 Course: PH APL-ING-TL06 ub [T-WIWI-106296]****Organisation:** University**Part of:** [M-WIWI-101404 - Außerplanmäßiges Ingenieurmodul](#)

Type	Credits	Recurrence	Version
Studienleistung	0	Once	1

T**7.174 Course: PH APL-ING-TL07 [T-WIWI-108384]****Organisation:** University**Part of:** [M-WIWI-101404 - Außerplanmäßiges Ingenieurmodul](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Once	1

T

7.175 Course: Physical Basics of Laser Technology [T-MACH-102102]

Responsible: Dr.-Ing. Johannes Schneider
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each winter term	3

Events					
WS 18/19	2181612	Physical basics of laser technology	3 SWS	Lecture / Practice (VÜ)	Schneider
Exams					
WS 18/19	76-T-MACH-102102	Physical Basics of Laser Technology		Prüfung (PR)	Schneider
SS 2019	76-T-MACH-102102	Physical Basics of Laser Technology		Prüfung (PR)	Schneider

Competence Certificate

oral examination (30 min)

no tools or reference materials

Prerequisites

It is not possible, to combine this brick with brick Laser Application in Automotive Engineering [T-MACH-105164] and brick Physical Basics of Laser Technology [T-MACH-109084]

Recommendation

Basic knowledge of physics, chemistry and material science

Below you will find excerpts from events related to this course:

V

Physical basics of laser technology

2181612, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

Description**Media:**

lecture notes via ILIAS

Learning 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. An excursion to the laser laboratory of the Institute for Applied Materials (IAM) will be offered.

- 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
- safety aspects

The lecture is complemented by a tutorial.

Annotation

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.

Workload

regular attendance: 33,5 hours

self-study: 146,5 hours

Literature

W. T. Silfvast: Laser Fundamentals, 2008, Cambridge University Press

W. M. Steen: Laser Material Processing, 2010, Springer

T

7.176 Course: Physics for Engineers [T-MACH-100530]

Responsible: Prof. Dr. Martin Dienwiebel
 Prof. Dr. Peter Gumbsch
 Prof. Dr. Alexander Nesterov-Müller
 Dr. Daniel Weygand

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events					
SS 2019	2142890	Physics for Engineers	2 SWS	Lecture (V)	Weygand, Dienwiebel, Nesterov-Müller, Gumbsch
Exams					
WS 18/19	76-T-MACH-100530	Physics for Engineers		Prüfung (PR)	Gumbsch, Dienwiebel, Nesterov-Müller, Weygand

Competence Certificate

written exam 90 min

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Physics for Engineers2142890, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning 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 (2142891, 2 SWS) 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.

Workload

regular attendance: 22,5 hours (lecture) and 22,5 hours (exercises 2142891)

self-study: 97,5 hours and 49 hours (exercises 2142891)

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

7.177 Course: Platform Economy [T-WIWI-107506]

Responsible: Tim Straub
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101421 - Supply Chain Management](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Exams				
WS 18/19	7900213	Platform Economy	Prüfung (PR)	Weinhardt
WS 18/19	7900214	Platform Economy	Prüfung (PR)	Weinhardt

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. Details of the grades will be announced at the beginning of the course.

Prerequisites

None

Recommendation

None

Annotation

New course starting winter term 2017/2018.

T

7.178 Course: Platform Economy [T-WIWI-109936]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101434 - eBusiness und Service Management](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)
[M-WIWI-104911 - Information Systems & Digital Business: Interaction](#)
[M-WIWI-104912 - Information Systems & Digital Business: Platforms](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	3

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. Details of the grades will be announced at the beginning of the course.

Prerequisites

see below

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-107506 - Platform Economy](#) must not have been started.

Recommendation

None

T

7.179 Course: PLM for Product Development in Mechatronics [T-MACH-102181]

Responsible: Prof. Dr.-Ing. Martin Eigner
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2122376	PLM for product development in mechatronics	SWS	Lecture (V)	Eigner
Exams					
WS 18/19	76-T-MACH-102181	PLM for Product Development in Mechatronics		Prüfung (PR)	Eigner

Competence Certificate

Oral examination 20 min.

Prerequisites

none

Below you will find excerpts from events related to this course:

V

PLM for product development in mechatronics

2122376, SS 2019, SWS, [Open in study portal](#)

Lecture (V)**Workload**

The total workload for this course is approximately 120 hours. For further information see German version.

T

7.180 Course: PLM-CAD Workshop [T-MACH-102153]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	2

Events					
WS 18/19	2121357	PLM-CAD Workshop	4 SWS	Seminar / Practical course (S/P)	Ovtcharova, Mitarbeiter
SS 2019	2121357	PLM-CAD Workshop	4 SWS	Practical course (P)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102153	PLM-CAD Workshop		Prüfung (PR)	Ovtcharova

Competence Certificate

Alternative exam assessment (graded)

Prerequisites

None

Annotation

Number of participants is limited, compulsory attendance

T

7.181 Course: Polymer Engineering I [T-MACH-102137]

Responsible: Prof. Dr.-Ing. Peter Elsner
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2173590	Polymer Engineering I	2 SWS	Lecture (V)	Elsner, Weidenmann
Exams					
WS 18/19	76-T-MACH-102137	Polymer Engineering I		Prüfung (PR)	Elsner
SS 2019	76-T-MACH-102137	Polymer Engineering I		Prüfung (PR)	Elsner

Competence Certificate

Oral exam, about 25 minutes

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Polymer Engineering I

2173590, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)**Learning Content**

1. Economical aspects of polymers
2. Introduction of mechanical, chemical and electrical properties
3. Processing of polymers (introduction)
4. Material science of polymers
5. Synthesis

Workload

regular attendance: 21 hours
 self-study: 99 hours

Literature

Recommended literature and selected official lecture notes are provided in the lecture

T

7.182 Course: Polymer Engineering II [T-MACH-102138]

Responsible: Prof. Dr.-Ing. Peter Elsner
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2174596	Polymer Engineering II	2 SWS	Lecture (V)	Elsner
Exams					
WS 18/19	76-T-MACH-102138	Polymerengineering II		Prüfung (PR)	Elsner
SS 2019	76-T-MACH-102138	Polymerengineering II		Prüfung (PR)	Elsner

Competence Certificate

Oral exam, about 25 minutes

Prerequisites

none

Recommendation

Knowledge in Polymerengineering I

Below you will find excerpts from events related to this course:

V

Polymer Engineering II

2174596, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

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

Recommended literature and selected official lecture notes are provided in the lecture.

T

7.183 Course: Power Generation [T-ETIT-101924]

Responsible: Dr.-Ing. Bernd Hoferer
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: [M-ETIT-101165 - Energieerzeugung und Netzkomponenten](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	2

Events					
WS 18/19	2307356	Erzeugung elektrischer Energie	2 SWS	Lecture (V)	Hoferer
Exams					
WS 18/19	7307356	Power Generation		Prüfung (PR)	Hoferer
SS 2019	7307356	Power Generation		Prüfung (PR)	Hoferer

Prerequisites

none

T

7.184 Course: Power Network [T-ETIT-100830]

Responsible: Prof. Dr.-Ing. Thomas Leibfried
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: [M-ETIT-102379 - Elektrische Energienetze](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each winter term	1

Events					
WS 18/19	2307371	Elektrische Energienetze	2 SWS	Lecture (V)	Leibfried
WS 18/19	2307373	Übungen zu 2307371 Elektrische Energienetze	2 SWS	Practice (Ü)	
Exams					
WS 18/19	7307371	Power Network		Prüfung (PR)	Leibfried
SS 2019	7307371	Power Network		Prüfung (PR)	Leibfried

T

7.185 Course: Practical Seminar Digital Services [T-WIWI-105711]

Responsible: Prof. Dr. Wolf Fichtner
 Prof. Dr. Alexander Mädche
 Prof. Dr. Stefan Nickel
 Prof. Dr. Gerhard Satzger
 Prof. Dr. York Sure-Vetter
 Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-102752 - Fundamentals of Digital Service Systems](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each summer term	1

Competence Certificate

The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

Prerequisites

None

Recommendation

None

Annotation

The current range of seminar topics is announced on the KSRI website www.ksri.kit.edu.

T

7.186 Course: Practical Seminar Interaction [T-WIWI-109935]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-104900 - Betriebswirtschaftslehre](#)
[M-WIWI-104911 - Information Systems & Digital Business: Interaction](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	2

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO 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). In the winter terms, the course is only offered as a seminar.

Prerequisites

None.

T

7.187 Course: Practical Seminar Platforms [T-WIWI-109937]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-104900 - Betriebswirtschaftslehre](#)
[M-WIWI-104912 - Information Systems & Digital Business: Platforms](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	2

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO 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). In the winter terms, the course is only offered as a seminar.

Prerequisites

None.

T

7.188 Course: Practical Seminar Servitization [T-WIWI-109939]

- Responsible:** Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger
- Organisation:** KIT Department of Economics and Management
- Part of:** [M-WIWI-104900 - Betriebswirtschaftslehre](#)
[M-WIWI-104913 - Information Systems & Digital Business: Servitization](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	1

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO 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). In the winter terms, the course is only offered as a seminar.

Prerequisites

None.

T

7.189 Course: Practical Training in Basics of Microsystem Technology [T-MACH-102164]

Responsible: Dr. Arndt Last
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2143875	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course (P)	Last
WS 18/19	2143877	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course (P)	Last
SS 2019	2143875	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course (P)	Last
SS 2019	2143877	Introduction to Microsystem Technology - Practical Course	2 SWS	Practical course (P)	Last
Exams					
WS 18/19	76-T-MACH-102164	Practical Training in Basics of Microsystem Technology		Prüfung (PR)	Last
SS 2019	76-T-MACH-102164	Practical Training in Basics of Microsystem Technology		Prüfung (PR)	Last

Competence Certificate

The assessment consists of a written exam

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Introduction to Microsystem Technology - Practical Course

2143875, WS 18/19, 2 SWS, [Open in study portal](#)

Practical course (P)

Learning Content

In the practical training includes nine experiments:

1. Hot embossing of plastics micro structures
2. Micro electroforming
3. Mikro optics: "LIGA-micro spectrometer"
4. UV-lithography
5. Optical waveguides
6. Capillary electrophoresis on a chip
7. SAW gas sensor
8. Metrology
9. Atomic force microscopy

Each student takes part in only five experiments.

The experiments are carried out at real workstations at the IMT and coached by IMT-staff.

Workload

Time of attendance: 21 h + 2 h exam

Privat studies: 5 h preparing experiments + 10 h preparing the exam

**Introduction to Microsystem Technology - Practical Course**2143877, WS 18/19, 2 SWS, [Open in study portal](#)**Practical course (P)****Learning Content**

In the practical training includes nine experiments:

1. Hot embossing of plastics micro structures
2. Micro electroforming
3. Mikro optics: "LIGA-micro spectrometer"
4. UV-lithography
5. Optical waveguides
6. Capillary electrophoresis on a chip
7. SAW gas sensor
8. Metrology
9. Atomic force microscopy

Each student takes part in only five experiments.

The experiments are carried out at real workstations at the IMT and coached by IMT-staff.

Workload

Time of attendance: 21 h + 2 h exam

Privat studies: 5 h preparing experiments + 10 h preparing the exam

**Introduction to Microsystem Technology - Practical Course**2143875, SS 2019, 2 SWS, [Open in study portal](#)**Practical course (P)****Learning Content**

In the practical training includes nine experiments:

1. Hot embossing of plastics micro structures
2. Micro electroforming
3. Mikro optics: "LIGA-micro spectrometer"
4. UV-lithography
5. Optical waveguides
6. Capillary electrophoresis on a chip
7. SAW gas sensor
8. Metrology
9. Atomic force microscopy

Each student takes part in only five experiments.

The experiments are carried out at real workstations at the IMT and coached by IMT-staff.

Workload

Time of attendance: 21 h + 2 h exam

Privat studies: 5 h preparing experiments + 10 h preparing the exam

**Introduction to Microsystem Technology - Practical Course**2143877, SS 2019, 2 SWS, [Open in study portal](#)**Practical course (P)****Learning Content**

In the practical training includes nine experiments:

1. Hot embossing of plastics micro structures
2. Micro electroforming
3. Mikro optics: "LIGA-micro spectrometer"
4. UV-lithography
5. Optical waveguides
6. Capillary electrophoresis on a chip
7. SAW gas sensor
8. Metrology
9. Atomic force microscopy

Each student takes part in only five experiments.

The experiments are carried out at real workstations at the IMT and coached by IMT-staff.

Workload

Time of attendance: 21 h + 2 h exam

Privat studies: 5 h preparing experiments + 10 h preparing the exam

T

7.190 Course: Principles of Insurance Management [T-WIWI-102603]

Responsible: Prof. Dr. Ute Werner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101436 - Risk and Insurance Management](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	Each summer term	1

Competence Certificate

The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).

The overall grade consists of the assessment of the oral presentations incl. papers (50 percent) and the assessment of the oral exam (50 percent).

The examination will be offered latest until summer term 2017 (beginners only).

Prerequisites

None

Recommendation

None

T

7.191 Course: Problem Solving, Communication and Leadership [T-WIWI-102871]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101425 - Strategie und Organisation](#)
[M-WIWI-101513 - Personal und Organisation](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	2	Each summer term	1

Events					
SS 2019	2577910	Problem solving, communication and leadership	1 SWS	Lecture (V)	Lindstädt
Exams					
WS 18/19	7900069	Problem Solving, Communication and Leadership		Prüfung (PR)	Lindstädt

Competence Certificate

The assessment consists of a written exam (30 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

Below you will find excerpts from events related to this course:

V

Problem solving, communication and leadership

2577910, SS 2019, 1 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course deals with various aspects of problem solving and communication processes and is divided into two parts. The first part of the course addresses the fundamental steps in the problem-solving process; namely, problem identification, problem structuring, problem analysis and communication of solution. Ideas for structuring problem solving processes will be discussed and the prerequisites for and principles of structured communication based on charts and presentations will be explained. The second part of the course addresses important concepts in leadership, including the context-specificity of influence, the choice of leader and the characteristics of employees. The course content reflects current issues in management and communication practice and is oriented toward the practical application of theoretical insights to these issues. In this respect, the course aims to develop interdisciplinary skills.

Workload

The total workload for this course is approximately 60 hours. For further information see German version.

Literature

The relevant excerpts and additional sources are made known during the course.

T

7.192 Course: Procedures of Remote Sensing [T-BGU-103542]

Responsible: Dr.-Ing. Uwe Weidner
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung mündlich	3	1

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-BGU-101638 - Procedures of Remote Sensing, Prerequisite](#) must have been passed.

T

7.193 Course: Procedures of Remote Sensing, Prerequisite [T-BGU-101638]

Responsible: Dr.-Ing. Uwe Weidner
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung	1	Each summer term	1

Events					
SS 2019	6020244	Fernerkundungsverfahren, Übung	1 SWS	Practice (Ü)	Weidner
Exams					
SS 2019	8284101638	Procedures of Remote Sensing, Prerequisite		Prüfung (PR)	Weidner

Prerequisites

None

Recommendation

None

Annotation

None

T

7.194 Course: Process fundamentals by the example of food production [T-CIWVT-106058]

Responsible: Dr. Volker Gaukel

Organisation: KIT Department of Chemical and Process Engineering

Part of: [M-WIWI-101839 - Weiterführende ingenieurwissenschaftliche Grundlagen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung schriftlich	3	1

Events					
WS 18/19	22213	Verfahrenstechnische Grundlagen am Beispiel der Lebensmittelverarbeitung (für LmCh, WiWi)	2 SWS	Lecture (V)	Gaukel
Exams					
WS 18/19	7220007	Process fundamentals by the example of food production		Prüfung (PR)	Gaukel

Prerequisites

none

T

7.195 Course: Product Lifecycle Management [T-MACH-105147]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	2

Events					
WS 18/19	2121350	Product Lifecycle Management	2 SWS	Lecture (V)	Ovtcharova
Exams					
WS 18/19	76-T-MACH-105147	Product Lifecycle Management		Prüfung (PR)	Ovtcharova

Competence Certificate
 Written examination 90 min.

Prerequisites
 None

Below you will find excerpts from events related to this course:

V

Product Lifecycle Management

2121350, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Product Lifecycle Management (PLM) is an approach to the holistic and cross-company management and control of all product-related processes and data throughout the life cycle along the extended supply chain - from design and production to sales, to the dismantling and recycling.

Product Lifecycle Management is a comprehensive approach for effective and efficient design of the product life cycle. Based on all product information, which comes up across the entire value chain and across multiple partners, processes, methods and tools are made available to provide the right information at the right time, quality and the right place.

The course covers:

- A consistent description of all business processes that occur during the product life cycle (development, production, sales, dismantling, ...)
- the presentation of methods for the performance of the PLM business processes,
- explaining the most important corporate information systems to support the life cycle (PDM, ERP, SCM, CRM systems) to sample the software manufacturer SAP

Workload

regular attendance: 42 hours
 self-study: 128 hours

Literature

Lecture slides.

V. Arnold et al: Product Lifecycle Management beherrschen, Springer-Verlag, Heidelberg, 2005.

J. Stark: Product Lifecycle Management, 21st Century Paradigm for Product Realisation, Springer-Verlag, London, 2006.

A. W. Scheer et al: Prozessorientiertes Product Lifecycle Management, Springer-Verlag, Berlin, 2006.

J. Schöttner: Produktdatenmanagement in der Fertigungsindustrie, Hanser-Verlag, München, 1999.

M.Eigner, R. Stelzer: Produktdaten Management-Systeme, Springer-Verlag, Berlin, 2001.

G. Hartmann: Product Lifecycle Management with SAP, Galileo press, 2007.

K. Obermann: CAD/CAM/PLM-Handbuch, 2004.

T

7.196 Course: Product, Process and Resource Integration in the Automotive Industry [T-MACH-102155]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	2

Events					
SS 2019	2123364	Product, Process and Resource Integration in the Automotive Industry	2 SWS	Lecture (V)	Mbang

Competence Certificate

Oral examination 20 min.

Prerequisites

None

Annotation

Limited number of participants.

Below you will find excerpts from events related to this course:

V

Product, Process and Resource Integration in the Automotive Industry

2123364, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The lecture

- Overview of product development in the automotive sector (process- and work cycle, IT-Systems)
- Integrated product models in the automotive industry (product, process and resource)
- New CAx modeling methods (intelligent feature technology, templates & functional modeling)
- Automation and knowledge-based mechanism for product design and production planning
- Product development in accordance with defined process and requirement (3D-master principle, tolerance models)
- Concurrent Engineering, shared working
- Enhanced concepts: the digital and virtual factory (application of virtual technologies and methods in the product development)
- Systems: Siemens NX .

Additionally, A practical industrial project study is offered, which is based on an integrated application scenario (from design of production resources, over testing and validation method planning to the manufacturing and implementation of the production resources).

Since the student will be divided in small teams, this study will also teach the students about team work and distributed development.

Annotation

Max. 20 students, registration necessary (ILIAS)

Workload

regular attendance: 32 hours

self-study: 72 hours

Literature

Lecture slides

T

7.197 Course: Production and Logistics Controlling [T-WIWI-103091]

Responsible: Alexander Rausch
Organisation: KIT Department of Economics and Management
Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2500005	Produktions- und Logistikcontrolling	2 SWS	Lecture (V)	Rausch
Exams					
WS 18/19	79-T-WIWI-103091	Production and Logistics Controlling		Prüfung (PR)	Furmans
SS 2019	79-T-WIWI-103091	Production and Logistics Controlling		Prüfung (PR)	Furmans, Mittwollen

Competence Certificate

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

Below you will find excerpts from events related to this course:

V

Produktions- und Logistikcontrolling

2500005, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

1. Overview of Controlling
2. Performance Measurement
3. Planning
4. Reporting
5. Deviation Analysis

T

7.198 Course: Production Economics and Sustainability [T-WIWI-102820]

Responsible: Dr. Jérémy Rimbon
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101437 - Industrielle Produktion I](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581960	Production Economics and Sustainability	2 SWS	Lecture (V)	Rimbon
Exams					
WS 18/19	7981960	Production Economics and Sustainability		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 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 events related to this course:

V

Production Economics and Sustainability

2581960, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)**Learning Content**

The analysis and management of material flows on the company level and above will be the focus of this lecture. Herein, the discussion will be about cost-effective and environmentally acceptable steps to avoid, abate and recycle emissions and waste as well as ways of efficient resources handling. As methods material flow analysis (MFA), life cycle assessment (LCA) and OR methods, e.g. for decision support, are introduced.

Topics:

- regulations related to materials and substances
- raw materials, reserves and their availabilities/lifetimes
- material and substance flow analysis (MFA/SFA)
- material related ecoprofiles, e.g. Carbon Footprint
- LCA
- resource efficiency
- emission abatement
- waste management and closed-loop recycling
- raw material oriented production systems
- environmental management (EMAS, ISO 14001, Ecoprofit), eco-controlling

Workload

Total effort required will account for approximately 105h (3.5 credits).

Literature

will be announced in the course

T

7.199 Course: Project in Applied Remote Sensing [T-BGU-101814]

Responsible: Prof. Dr.-Ing. Stefan Hinz
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Studienleistung	1	1

Events					
SS 2019	6020245	Projektübung angewandte Fernerkundung	2 SWS	Practice (Ü)	Assistenten, Hinz
Exams					
SS 2019	8284101814	Project in Applied Remote Sensing		Prüfung (PR)	Weidner

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-BGU-101638 - Procedures of Remote Sensing, Prerequisite](#) must have been passed.

T

7.200 Course: Project Management [T-BGU-101675]

Responsible: Prof. Dr.-Ing. Shervin Haghsheno
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-BGU-101004 - Grundlagen des Baubetriebs](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	6200106	Projektmanagement [bauibGP12-PMANG]	2 SWS	Lecture / Practice (VÜ)	Haghsheno, Schneider
Exams					
WS 18/19	8230101675	Project Management		Prüfung (PR)	Haghsheno, Schneider

Competence Certificate
written exam with 60 minutes

Prerequisites
None

Recommendation
None

Annotation
None

T

7.201 Course: Project Workshop: Automotive Engineering [T-MACH-102156]

Responsible: Dr.-Ing. Michael Frey
Prof. Dr. Frank Gauterin
Dr.-Ing. Martin Gießler

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101264 - Fahrzeugeigenschaften](#)
[M-MACH-101265 - Fahrzeugentwicklung](#)
[M-MACH-101266 - Fahrzeugtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	Each term	1

Events					
WS 18/19	2115817	Project Workshop: Automotive Engineering	3 SWS	Lecture (V)	Gauterin, Gießler, Frey
SS 2019	2115817	Project Workshop: Automotive Engineering	3 SWS	Lecture (V)	Gauterin, Gießler, Frey
Exams					
WS 18/19	76-T-MACH-102156	Project Workshop: Automotive Engineering		Prüfung (PR)	Gauterin

Competence Certificate

Oral examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Project Workshop: Automotive Engineering

2115817, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture (V)

Notes

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.

Learning 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.

Annotation

Selection procedure, applications are to submit in the end of the preceding semester.

Workload

regular attendance: 49 hours

self-study: 131 hours

Literature

Steinle, Claus; Bruch, Heike; Lawa, Dieter (Hrsg.), Projektmanagement, Instrument moderner Innovation, FAZ Verlag, Frankfurt a. M., 2001, ISBN 978-3929368277

The scripts will be supplied in the start-up meeting.

V**Project Workshop: Automotive Engineering**

2115817, SS 2019, 3 SWS, [Open in study portal](#)

Lecture (V)**Learning 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.

Annotation

Selection procedure, applications are to submit in the end of the preceding semester.

Workload

regular attendance: 49 hours

self-study:131 hours

Literature

Steinle, Claus; Bruch, Heike; Lawa, Dieter (Hrsg.), Projektmanagement, Instrument moderner Innovation, FAZ Verlag, Frankfurt a. M., 2001, ISBN 978-3929368277

The scripts will be supplied in the start-up meeting.

T

7.202 Course: Public Law I - Basic Principles [T-INFO-101963]

Responsible: Prof. Dr. Nikolaus Marsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101187 - Recht Wahlpflicht](#)
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	2

Events					
WS 18/19	24016	Öffentliches Recht I - Grundlagen	2 SWS	Lecture (V)	Marsch
Exams					
WS 18/19	7500051	Public Law I - Basic Principles		Prüfung (PR)	Marsch
SS 2019	7500100	Public Law I - Basic Principles		Prüfung (PR)	Marsch

T

7.203 Course: Public Law II [T-INFO-102042]

Responsible: Prof. Dr. Nikolaus Marsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101187 - Recht Wahlpflicht](#)
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	24520	Öffentliches Recht II - Öffentliches Wirtschaftsrecht	2 SWS	Lecture (V)	Marsch
Exams					
WS 18/19	7500052	Public Law II		Prüfung (PR)	Marsch
SS 2019	7500081	Public Law II		Prüfung (PR)	Marsch

T 7.204 Course: Public Revenues [T-WIWI-102739]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101403 - Finanzwissenschaft](#)
[M-WIWI-101499 - Angewandte Mikroökonomik](#)
[M-WIWI-101668 - Wirtschaftspolitik I](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2560120	Public Revenues	2 SWS	Lecture (V)	Wigger
SS 2019	2560121	Übung zu Öffentliche Einnahmen	1 SWS	Practice (Ü)	Wigger
Exams					
WS 18/19	790oeff	Public Revenues		Prüfung (PR)	Wigger
SS 2019	790oeff	Public Revenues		Prüfung (PR)	Wigger

Competence Certificate

The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Prerequisites

None

Recommendation

Basic knowledge of Public Finance is required.

Below you will find excerpts from events related to this course:

V

Public Revenues

2560120, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

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 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.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature**Elective literature:**

- Homburg, S.(2000): *Allgemeine Steuerlehre*, Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4th ed., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* and *Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2nd ed., Springer

T

7.205 Course: Public Sector Finance [T-WIWI-109590]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101403 - Finanzwissenschaft](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2560120	Öffentliches Finanzwesen	3 SWS	Lecture (V)	Wigger, Groh
Exams					
WS 18/19	790oefi	Public Sector Finance		Prüfung (PR)	Wigger
SS 2019	790oefi	Public Sector Finance		Prüfung (PR)	Wigger

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation SPO 2015.

Prerequisites

T-WIWI-107763 "Municipal Finance" must not be selected.

Annotation

Previous title until winter semester 2018/19 "Municipal Finance".

Below you will find excerpts from events related to this course:

V

Öffentliches Finanzwesen

2560120, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course *Municipal Finance* addresses the theory and policy of municipal revenues and spending including grants, municipal revenue equalisation, taxation as well as municipal and public enterprises.

At the beginning of the course, fundamental concepts of taxation theory as well as key elements of the German taxation system are introduced. The allocative and distributive effects of different taxation methods are examined thereafter and are combined within the theory of optimal taxation. The following chapter is concerned with municipal borrowing and illustrates ways to acquire additional funding. After addressing the extent, structure and variety of municipal borrowing, macroeconomic theories are introduced and applied to the municipal sector. In the course of this final chapter, special attention will be paid to the long term consequences and the sustainability of municipal borrowing as a means of budgeting.

Literature

- Ade, K., Notheis, K. & Schmid, H. (2011). *Kommunales Wirtschaftsrecht in Baden Württemberg*. Boorberg-Verlag.
- Aker, B., Hafner, W. & Notheis, K. (2012). *Gemeindeordnung Baden-Württemberg* (Kommentar). Boorberg-Verlag.
- Groh, M. (1994). Kommunalleasing und Investorenfinanzierung als Private Public Partnership. *Stadt und Gemeinde*, 49. Jahrgang, 09/94.
- Wigger, B. U. (2006). *Grundzüge der Finanzwissenschaft*. Springer-Verlag.
- Several publications of the Ministry of Interior and the Ministry of Finance Baden-Württemberg.

T

7.206 Course: Quality Management [T-MACH-102107]

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

Part of: [M-MACH-101284 - Vertiefung der Produktionstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	1

Events					
WS 18/19	2149667	Quality Management	2 SWS	Lecture (V)	Lanza
Exams					
WS 18/19	76-T-MACH-102107	Quality Management		Prüfung (PR)	Lanza

Competence Certificate

Written Exam (60 min)

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Quality Management

2149667, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

Lecture notes will be provided in Ilias (<https://ilias.studium.kit.edu/>)

Learning 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 definition
- 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

Annotation

None

Workload

regular attendance: 21 hours

self-study: 99 hours

T

7.207 Course: Rail System Technology [T-MACH-102143]

Responsible: Prof. Dr.-Ing. Peter Gratzfeld
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101274 - Bahnsystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	9	Each term	3

Events					
WS 18/19	2115919	Rail System Technology	2 SWS	Lecture (V)	Gratzfeld
WS 18/19	2115996	Rail Vehicle Technology	2 SWS	Lecture (V)	Gratzfeld
SS 2019	2115919	Rail System Technology	2 SWS	Lecture (V)	Gratzfeld
SS 2019	2115996	Rail Vehicle Technology	2 SWS	Lecture (V)	Gratzfeld
Exams					
WS 18/19	76-T-MACH-102143	Rail System Technology		Prüfung (PR)	Gratzfeld
SS 2019	76-T-MACH-102143	Rail System Technology		Prüfung (PR)	Gratzfeld

Competence Certificate

Oral examination

Duration: 45 minutes

No tools or reference materials may be used during the exam.

Prerequisites

Successful completion of the corresponding modules of the basic program.

Below you will find excerpts from events related to this course:

V

Rail System Technology

2115919, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

All slides are available for download (Ilias-platform).

Learning Content

1. Railway System: railway as system, subsystems and interdependencies, definitions, laws, rules, railway and environment, economic impact
2. Operation: Transportation, public transport, regional transport, long-distance transport, freight service, scheduling
3. Infrastructure: rail facilities, track alignment, railway stations, clearance diagram
4. Wheel-rail-contact: carrying of vehicle mass, adhesion, wheel guidance, current return
5. Vehicle dynamics: tractive and brake effort, driving resistance, inertial force, load cycles
6. Signalling and Control: operating procedure, succession of trains, European Train Control System, blocking period, automatic train control
7. Traction power supply: power supply of rail vehicles, power networks, filling stations
8. History (optional)

Workload

Regular attendance: 21 hours

Self-study: 21 hours

Exam and preparation: 78 hours

Literature

A bibliography is available for download (Ilias-platform).

**Rail Vehicle Technology**2115996, WS 18/19, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning Content**

1. System structure of rail vehicles: tasks and classification of rail vehicles, main systems, vehicle system technology
2. Drives: Electric and non-electric traction drives
3. Brakes: Tasks, basics, principles, brake control
4. Bogies: forces, running gears, axle configuration
5. Vehicle concepts: trams, metros, regional trains, high speed trains, double deck coaches, locomotives.
Examples of existing rail vehicles were discussed.

Workload

Regular attendance: 21 hours

Self-study: 21 hours

Exam and preparation: 78 hours

Literature

A bibliography is available for download (Ilias-platform).

**Rail System Technology**2115919, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)****Description****Media:**

All slides are available for download (Ilias-platform).

Learning Content

1. Railway System: railway as system, subsystems and interdependencies, definitions, laws, rules, railway and environment, economic impact
2. Operation: Transportation, public transport, regional transport, long-distance transport, freight service, scheduling
3. Infrastructure: rail facilities, track alignment, railway stations, clearance diagram
4. Wheel-rail-contact: carrying of vehicle mass, adhesion, wheel guidance, current return
5. Vehicle dynamics: tractive and brake effort, driving resistance, inertial force, load cycles
6. Signaling and Control: operating procedure, succession of trains, European Train Control System, blocking period, automatic train control
7. Traction power supply: power supply of rail vehicles, power networks, filling stations
8. History (optional)

Workload

Regular attendance: 21 hours

Self-study: 21 hours

Exam and preparation: 78 hours

Literature

A bibliography is available for download (Ilias-platform).

**Rail Vehicle Technology**2115996, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)**

Description**Media:**

All slides are available for download (Ilias-platform).

Learning Content

1. Vehicle system technology: structure and main systems of rail vehicles
2. Car body: functions, requirements, design principles, crash elements, interfaces
3. Bogies: forces, running gears, axle configuration
4. Drives: vehicle with/without contact wire, dual-mode vehicle
5. Brakes: tasks, basics, principles, blending, brake control
6. Train control management system: definitions, networks, bus systems, components, examples
7. Vehicle concepts: trams, metros, regional trains, intercity trains, high speed trains, double deck coaches, locomotives, freight wagons

Workload

Regular attendance: 21 hours

Self-study: 21 hours

Exam and preparation: 78 hours

Literature

A bibliography is available for download (Ilias-platform).

T

7.208 Course: Real Estate Management I [T-WIWI-102744]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101466 - Real Estate Management](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2586400	Real Estate Management I	2 SWS	Lecture (V)	Lützkendorf
WS 18/19	2586401	Übungen zu Real Estate Management I	2 SWS	Practice (Ü)	Worschech
Exams					
WS 18/19	7900249	Real Estate Management I		Prüfung (PR)	Lützkendorf
WS 18/19	7900250	Real Estate Management I		Prüfung (PR)	Lützkendorf

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Annotation

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

Below you will find excerpts from events related to this course:

V

Real Estate Management I

2586400, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The course Real Estate Management I deals with questions concerning the economy of a single building throughout its lifecycle. Among other topics this includes project development, location and market studies, german federal building codes as well as finance and assessment of economic efficiency.

The tutorial recesses the contents of the course by means of practical examples and, in addition to that, goes into the possible use of software tools.

Learning Content

The course Real Estate Management I deals with questions concerning the economy of a single building throughout its lifecycle. Among other topics this includes project development, location and market studies, german federal building codes as well as finance and assessment of economic efficiency.

The tutorial recesses the contents of the course by means of practical examples and, in addition to that, goes into the possible use of software tools.

Annotation

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature**Elective literature:**

- Gondring (Hrsg.): "Immobilienwirtschaft: Handbuch für Studium und Praxis". ISBN 3-8006-2989-5. Vahlen 2004
- Kühne-Büning (Hrsg.): "Grundlagen der Wohnungs- und Immobilienwirtschaft". ISBN 3-8314-0706-1. Knapp & Hammonia-Verlag 2005
- Schulte (Hrsg.): "Immobilienökonomie Bd. I". ISBN 3-486-25430-8. Oldenbourg 2000

T

7.209 Course: Real Estate Management II [T-WIWI-102745]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101466 - Real Estate Management](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	1

Events					
SS 2019	2585400	Real Estate Management II	2 SWS	Lecture (V)	Lützkendorf, Worschech
SS 2019	2585401	Übung zu Real Estate Management II	2 SWS	Practice (Ü)	Worschech

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Reexaminations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

A combination with the module *Design Construction and Assessment of Green Buildings* is recommended. Furthermore it is recommended to choose courses of the following fields

- Finance and Banking
- Insurance
- Civil Engineering and Architecture (building physics, structural design, facility management)

Annotation

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

Below you will find excerpts from events related to this course:

V

Real Estate Management II

2585400, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

The course Real Estate Management II gives special attention to topics in connection to the management of large real estate portfolios. This especially includes property valuation, market and object rating, maintenance and modernization, as well as real estate portfolio and risk management. The tutorial provides examples in order to practice the application of theoretical knowledge to practical problems.

Notes

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

Learning Content

The course Real Estate Management II gives special attention to topics in connection to the management of large real estate portfolios. This especially includes property valuation, market and object rating, maintenance and modernization, as well as real estate portfolio and risk management. The tutorial provides examples in order to practice the application of theoretical knowledge to practical problems.

Annotation

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Elective literature:

See german version.

T

7.210 Course: Remote Sensing, Exam [T-BGU-101636]

Responsible: Prof. Dr.-Ing. Stefan Hinz
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	6020241	Fernerkundungssysteme	1 SWS	Lecture (V)	Hinz
SS 2019	6020242	Fernerkundungssysteme, Übung	1 SWS	Practice (Ü)	Weidner
SS 2019	6020243	Fernerkundungsverfahren	2 SWS	Lecture (V)	Weidner
SS 2019	6020244	Fernerkundungsverfahren, Übung	1 SWS	Practice (Ü)	Weidner
Exams					
SS 2019	8284101636	Remote Sensing, exam		Prüfung (PR)	Weidner, Hinz

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-BGU-101637 - Systems of Remote Sensing, Prerequisite](#) must have been passed.
2. The course [T-BGU-101638 - Procedures of Remote Sensing, Prerequisite](#) must have been passed.

Recommendation

None

T

7.211 Course: Renewable Energy-Resources, Technologies and Economics [T-WIWI-100806]

Responsible: PD Dr. Patrick Jochem
Prof. Dr. Russell McKenna

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101464 - Energiewirtschaft](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	2

Events					
WS 18/19	2581012	Renewable Energy – Resources, Technologies and Economics	2 SWS	Lecture (V)	McKenna, Jochem
Exams					
WS 18/19	7981012	Renewable Energy-Resources, Technologies and Economics		Prüfung (PR)	Fichtner

Competence Certificate

The assessment consists of a written exam (60 min., in English, answers in English or German) according to § 4 paragraph 2 Nr. 1 of the examination regulation SPO2015.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Renewable Energy – Resources, Technologies and Economics

2581012, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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

Workload

The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature**Elective literature:**

- Kaltschmitt, M., 2006, Erneuerbare Energien : Systemtechnik, Wirtschaftlichkeit, Umweltaspekte, aktualisierte, korrigierte und ergänzte Auflage Berlin, Heidelberg : Springer-Verlag Berlin Heidelberg.
- Kaltschmitt, M., Streicher, W., Wiese, A. (eds.), 2007, Renewable Energy: Technology, Economics and Environment, Springer, Heidelberg.
- Quaschnig, V., 2010, Erneuerbare Energien und Klimaschutz : Hintergründe - Techniken - Anlagenplanung – Wirtschaftlichkeit München : Hanser, Ill.2., aktualis. Aufl.
- Harvey, D., 2010, Energy and the New Reality 2: Carbon-Free Energy Supply, Eathscan, London/Washington.
- Boyle, G. (ed.), 2004, Renewable Energy: Power for a Sustainable Future, 2nd Edition, Open University Press, Oxford.

T

7.212 Course: Selected Applications of Technical Logistics [T-MACH-102160]

Responsible: Viktor Milushev
Dr.-Ing. Martin Mittwollen

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2118087	Selected Applications of Technical Logistics	3 SWS	Lecture (V)	Mittwollen, Milushev
Exams					
WS 18/19	76-T-MACH-102160	Selected Applications of Technical Logistics		Prüfung (PR)	Mittwollen
SS 2019	76-T-MACH-102160	Selected Applications of Technical Logistics		Prüfung (PR)	Mittwollen

Competence Certificate

The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Prerequisites

none

Recommendation

Knowledge out of Basics of Technical Logistics (T-MACH-102163) / Elements and Systems of Technical Logistics (T-MACH-102159) preconditioned

Below you will find excerpts from events related to this course:

V

Selected Applications of Technical Logistics

2118087, SS 2019, 3 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

supplementary sheets, projector, blackboard

Notes

Details according schedule will be published

Learning Content

- design and dimension of machines from intralogistics
- static and dynamic behaviour
- operation properties and specifics
- Inside practical lectures: sample applications and calculations in addition to the lectures

Annotation

Knowledge out of **Basics of Technical Logistics** preconditioned

Workload

presence: 36h

rework: 84h

Literature

Recommendations during lessons

T

7.213 Course: Selected Applications of Technical Logistics - Project [T-MACH-108945]

Responsible: Viktor Milushev
Dr.-Ing. Martin Mittwollen

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	2	Each summer term	1

Competence Certificate

presentation of performed project and defense (30min) according to §4 (2), No. 3 of the examination regulation

Prerequisites

T-MACH-102160 (selected applications of technical logistics) must have been started

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-MACH-102160 - Selected Applications of Technical Logistics](#) must have been started.

Recommendation

Knowledge out of Basics of Technical Logistics (T-MACH-102163) / Elements and Systems of Technical Logistics (T-MACH-102159) preconditioned

T**7.214 Course: Selected Topics on Optics and Microoptics for Mechanical Engineers [T-MACH-102165]**

Responsible: Dr.-Ing. Timo Mappes
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101287 - Mikrosystemtechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each term	1

Competence Certificate

Oral examination

Prerequisites

none

T

7.215 Course: Seminar Data-Mining in Production [T-MACH-108737]

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

Part of: [M-WIWI-101816 - Seminarmodul](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2151643	Seminar Data Mining in Production	2 SWS	Seminar (S)	Lanza
SS 2019	2151643	Seminar Data Mining in Production	2 SWS	Seminar (S)	Lanza
Exams					
WS 18/19	76-T-MACH-108737	Seminar Data-Mining in Production		Prüfung (PR)	Lanza

Competence Certificate

alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

Prerequisites

none

Annotation

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at <https://www.wbk.kit.edu/studium-und-lehre.php>.

Below you will find excerpts from events related to this course:

V

Seminar Data Mining in Production

2151643, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)

Description**Media:**

KNIME Analytics Platform

Notes

The dates and deadlines for the seminar will be announced at <https://www.wbk.kit.edu/studium-und-lehre.php>. The number of students is limited to twelve.

Learning Content

In the age of Industry 4.0, large amounts of production data are generated by the global production networks and value chains. Their analysis enables valuable conclusions about production and lead to an increasing process efficiency. The aim of the seminar is to get to know production data analysis as an important component of future industrial projects. The students get to know the data mining tool KNIME and use it for analyses. A specific industrial use case with real production data enables practical work and offers direct references to industrial applications. The participants learn selected methods of data mining and apply them to the production data. The work within the seminar takes place in small groups on the computer. Subsequently, presentations on specific data mining methods have to be prepared.

Annotation

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at <https://www.wbk.kit.edu/studium-und-lehre.php>.

Workload

regular attendance: 10 hours

self-study: 80 hours

**Seminar Data Mining in Production**

2151643, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)**Description****Media:**

KNIME Analytics Platform

Learning Content

In the age of Industry 4.0, large amounts of production data are generated by the global production networks and value chains. Their analysis enables valuable conclusions about production and lead to an increasing process efficiency. The aim of the seminar is to get to know production data analysis as an important component of future industrial projects. The students get to know the data mining tool KNIME and use it for analyses. A specific industrial use case with real production data enables practical work and offers direct references to industrial applications. The participants learn selected methods of data mining and apply them to the production data. The work within the seminar takes place in small groups on the computer. Subsequently, presentations on specific data mining methods have to be prepared.

Annotation

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at <https://www.wbk.kit.edu/studium-und-lehre.php>.

Workload

regular attendance: 10 hours

self-study: 80 hours

T 7.216 Course: Seminar in Business Administration (Bachelor) [T-WIWI-103486]

Responsible: Professorenschaft des Fachbereichs Betriebswirtschaftslehre

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101816 - Seminarmodul
M-WIWI-104900 - Betriebswirtschaftslehre

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2530372	Investment Case Studies	2 SWS	Seminar (S)	Ulrich
WS 18/19	2530580	Seminar in Finance	2 SWS	Seminar (S)	Uhrig-Homburg, Mitarbeiter
WS 18/19	2540524	Bachelor Seminar in CRM	2 SWS	Seminar (S)	Geyer-Schulz, Ball, Schweigert, Schweizer
WS 18/19	2540557	Literature Review Seminar: Information Systems and Service Design	SWS	Seminar (S)	Mädche, Augenstein
WS 18/19	2545010	Entrepreneurship Basics (Track 1)	2 SWS	Seminar (S)	Schwarzkopf, Terzidis
WS 18/19	2545011	Entrepreneurship Basics (Track 2)	2 SWS	Seminar (S)	Böhrer, Terzidis
WS 18/19	2545012	Entrepreneurship Basics (Track 3)	2 SWS	Seminar (S)	Ziegler, Ntagiakou, Terzidis
WS 18/19	2572173	Seminar in Marketing & Innovation (Bachelor)	SWS	Seminar (S)	Feurer
WS 18/19	2573010	Seminar Human Resources and Organizations	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 18/19	2573011	Seminar Human Resource Management	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 18/19	2579905	Special Topics in Management Accounting	2 SWS	Seminar (S)	Riar
WS 18/19	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar (S)	Glöser-Chahoud, Schultmann
WS 18/19	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar (S)	Volk, Schultmann
WS 18/19	2581978	Seminar in Production and Operations Management III	2 SWS	Seminar (S)	Wiens, Schultmann
WS 18/19	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar (S)	Keles
WS 18/19	2581981	Seminar Energiewirtschaft III	2 SWS	Seminar (S)	Ardone
SS 2019	2530293	Seminar in Finance (Bachelor, Prof. Ruckes)	2 SWS	Seminar (S)	Ruckes, Luedecke, Hoang, Scholz-Daneshgari, Strych, Schubert, Benz
SS 2019	2530580	Seminar in Finance (Master, Prof. Uhrig-Homburg)	2 SWS	Seminar (S)	Uhrig-Homburg, Hofmann, Reichenbacher, Eska
SS 2019	2540524	Bachelor Seminar aus CRM (nur Bachelor)	2 SWS	Seminar (S)	Geyer-Schulz, Schweigert, Schweizer
SS 2019	2571180	Seminar in Marketing und Vertrieb (Bachelor)	2 SWS	Seminar (S)	Klarmann, Assistenten
SS 2019	2573010	Seminar Human Resources and Organizations (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2573011	Seminar Human Resource Management (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2579904	Seminar Management Accounting	2 SWS	Seminar (S)	Hammann, Disch

SS 2019	2579905	Special Topics in Management Accounting	2 SWS	Seminar (S)	Mickovic, Riar
SS 2019	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar (S)	Schultmann
Exams					
WS 18/19	7500175	Seminar: Energy Informatics		Prüfung (PR)	Wagner
WS 18/19	7900001	Investment Case Studies		Prüfung (PR)	Ulrich
WS 18/19	7900009	Alternative and Big Data in Finance		Prüfung (PR)	Ulrich
WS 18/19	7900017	Seminar Smart Grid and Energy Markets		Prüfung (PR)	Weinhardt
WS 18/19	7900085	Entrepreneurship Basics (Track 1)		Prüfung (PR)	Terzidis
WS 18/19	7900087	Entrepreneurship Basics (Track 2)		Prüfung (PR)	Terzidis
WS 18/19	7900088	Entrepreneurship Basics (Track 3)		Prüfung (PR)	Terzidis
WS 18/19	7900157	Seminar Human Resources and Organizations (Bachelor)		Prüfung (PR)	Nieken
WS 18/19	7900160	Seminar in Marketing und Innovation (Bachelor)		Prüfung (PR)	Feurer
WS 18/19	7900161	Seminar Human Resource Management (Bachelor)		Prüfung (PR)	Nieken
WS 18/19	7900165	Seminar Digital Experience and Participation		Prüfung (PR)	Weinhardt
WS 18/19	7900168	Bachelor Seminar in CRM		Prüfung (PR)	Geyer-Schulz
WS 18/19	7900175	Seminar in Finance (Bachelor)		Prüfung (PR)	Uhrig-Homburg
WS 18/19	7900203	Seminar in Finance		Prüfung (PR)	Uhrig-Homburg
WS 18/19	7900233	Literature Review Seminar: Information Systems and Service Design (Seminar)		Prüfung (PR)	Mädche
WS 18/19	7900265	Seminar in Business Administration (Bachelor)		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900283	Seminar Electronic Markets and User Behavior		Prüfung (PR)	Weinhardt
WS 18/19	7900285	Seminar in Business Administration (Bachelor)		Prüfung (PR)	Lützkendorf
WS 18/19	79-2579905-01	Special Topics in Management Accounting (Bachelor)		Prüfung (PR)	Wouters
WS 18/19	7981976	Seminar in Production and Operations Management I		Prüfung (PR)	Schultmann
WS 18/19	7981977	Seminar in Production and Operations Management II		Prüfung (PR)	Schultmann
WS 18/19	7981978	Seminar in Production and Operations Management III		Prüfung (PR)	Schultmann
WS 18/19	7981979	Seminar in Business Administration A (Master)		Prüfung (PR)	Fichtner
WS 18/19	7981980	Seminar in Business Administration A (Master)		Prüfung (PR)	Fichtner
WS 18/19	7981981	Seminar in Business Administration (Bachelor)		Prüfung (PR)	Fichtner
SS 2019	7900021	Seminar in Marketing and Sales (Bachelor)		Prüfung (PR)	Klarmann
SS 2019	7900056	Entrepreneurship Basics (Track 1)		Prüfung (PR)	Terzidis
SS 2019	7900057	Entrepreneurship Basics (Track 2)		Prüfung (PR)	Terzidis
SS 2019	7900093	Seminar in Business Administration A		Prüfung (PR)	Weinhardt
SS 2019	79-2579904-01	Seminar Management Accounting (Bachelor)		Prüfung (PR)	Wouters
SS 2019	79-2579905-01	Seminar Special Topics in Management Accounting (Bachelor)		Prüfung (PR)	Wouters

Competence Certificate

The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

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>.

Below you will find excerpts from events related to this course:

**Bachelor Seminar in CRM**

2540524, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

This seminar serves as an introduction into the process of scientific work. As a consequence, four (mandatory) introductory lessons are given that will give insight to philosophy of science, researching literature, typesetting with LaTeX and writing/presenting of content.

The seminar roughly treats questions of Customer Relationship Management. Exact topics are announced with the beginning of the application period.

Workload

The total workload for this course is approximately 90 hours (3 credits):

Time of attendance

- Introductory lessons: 4 x 90min = 6h 00m
- Presentations: 4 x 90min = 6h 00m

Selbststudium

- Preparing the presentation: 8h
- Literature research: 40h
- Writing the seminar paper: 30h

Summe: 90h 00m

Literature

Elective literature:

- W. Thomson. A Guide for the Young Economist. The MIT Press, 2001
- D.J. Brauner, H.-U. Vollmer. Erfolgreiches wissenschaftliches Arbeiten. Verlag Wissenschaft & Praxis, 2004
- University of Chicago Press. The Chicago Manual of Style. University of Chicago Press, 13th ed., 1982
- American Psychological Association. Concise of Rules of APA Style. American Psychological Association, 2005
- American Psychological Association. Publication Manual of the American Psychological Association. American Psychological Association, 2001

**Entrepreneurship Basics (Track 2)**

2545011, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)

Annotation

Please register on the seminar website.

**Seminar in Marketing & Innovation (Bachelor)**

2572173, WS 18/19, SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

The seminary teaches students to gain a systematic overview of a field of literature in Marketing - an important prerequisite for a successful thesis. Central aspects are identification of relevant literature sources, systematization of the field, working out central insights, and writing comprehensively.

Annotation

Students interested in thesis positions at the chair of marketing should participate in the marketing seminar. For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu)

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

will be announced in the seminary

**Seminar Human Resources and Organizations**

2573010, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

Workload

The total workload for this course is approximately 90 hours.

Lecture 30h

Preparation of lecture 45h

Exam preparation 15h

**Seminar Human Resource Management**

2573011, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)**Workload**

The total workload for this course is approximately 90 hours.

Lecture 30h

Preparation of lecture 45h

Exam preparation 15h

**Special Topics in Management Accounting**

2579905, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscbed. The seminar course is concentrated in four meetings that are spread throughout the semester.

Meeting 1: Introductory lecture. You need to conduct a first literature search and at the end of the first week you should identify (provisionally) the topic for your paper.

Meeting 2 and 3: The purpose of the second week is to define the topics and research questions in much more detail. Different types of papers may be selected: literature review, research paper, descriptive case study, or teaching case. Students will present their ideas and all participants should ask questions, help each other focus, offer ideas, etc.

Meeting 4: In the third week we are going to present and discuss the final papers.

Annotation

Maximum of 24 students.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Will be announced in the course.

**Seminar in Finance (Master, Prof. Uhrig-Homburg)**

2530580, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

Within this seminar different topics of current concern are treated. These topics have their foundations in the contents of certain lectures.

The topics of the seminar are published on the website of the involved finance chairs at the end of the foregoing semester.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Will be announced at the end of the foregoing semester.

**Seminar Human Resources and Organizations (Bachelor)**

2573010, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

Workload

The total workload for this course is approximately 90 hours.

Lecture 30h

Preparation of lecture 45h

Exam preparation 15h

**Seminar Human Resource Management (Bachelor)**

2573011, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

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.

**Seminar Management Accounting**

2579904, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)

Learning Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. You are to a large extent free to select your own topic. The seminar course is concentrated in four meetings that are spread throughout the semester.

Meeting 1: Introductory lecture. You need to conduct a first literature search and at the end of the first week you should identify (provisionally) the topic for your paper.

Meeting 2 and 3: The purpose of the second week is to define the topics and research questions in much more detail. Different types of papers may be selected: literature review, research paper, descriptive case study, or teaching case. Students will present their ideas and all participants should ask questions, help each other focus, offer ideas, etc.

Meeting 4: In the third week we are going to present and discuss the final papers.

Annotation

Maximum of 24 students.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Will be announced in the course.

**Special Topics in Management Accounting**

2579905, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscbed. The seminar course is concentrated in four meetings that are spread throughout the semester.

Meeting 1: Introductory lecture. You need to conduct a first literature search and at the end of the first week you should identify (provisionally) the topic for your paper.

Meeting 2 and 3: The purpose of the second week is to define the topics and research questions in much more detail. Different types of papers may be selected: literature review, research paper, descriptive case study, or teaching case. Students will present their ideas and all participants should ask questions, help each other focus, offer ideas, etc.

Meeting 4: In the third week we are going to present and discuss the final papers.

Annotation

Maximum of 24 students.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Will be announced in the course.

T 7.217 Course: Seminar in Economics (Bachelor) [T-WIWI-103487]

Responsible: Professorenschaft des Fachbereichs Volkswirtschaftslehre

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101816 - Seminarmodul
M-WIWI-104908 - Volkswirtschaftslehre

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2512312	Cooperation seminar: Innovative applications on single board computers as well as their economic relevance	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Ott, Weller, Bälz
WS 18/19	2520405	Topics in Experimental Economics	SWS	Seminar (S)	Reiß, Hofmann, Mitarbeiter
WS 18/19	2521310	Topics in Econometrics	2 SWS	Seminar (S)	Buse, Görden
WS 18/19	2560140	Topics on Political Economics	2 SWS	Seminar (S)	Szech, Engel
WS 18/19	2560141	Morals & Social Behavior	2 SWS	Seminar (S)	Szech, Huber
WS 18/19	2560400	Seminar in Macroeconomics	2 SWS	Seminar (S)	Brumm, Krause, Pegorari
WS 18/19	2561208	Ausgewählte Aspekte der europäischen Verkehrsplanung und -modellierung	1 SWS	Seminar (S)	Szimba
SS 2019	2560553	Topics in Political Economics (Bachelor)	2 SWS	Seminar (S)	Szech, Maus
SS 2019	2560555	Morals and Social Behavior (Bachelor)	2 SWS	Seminar (S)	Szech, Huber
Exams					
WS 18/19	7900094	Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON		Prüfung (PR)	Sure-Vetter, Ott
WS 18/19	7900132	Seminar in Economics A (Master)		Prüfung (PR)	Fuchs-Seliger
WS 18/19	7900139	Seminar in Economics (Bachelor/Master)		Prüfung (PR)	Mitusch
WS 18/19	7900141	Seminar on Voting Theory		Prüfung (PR)	Puppe
WS 18/19	7900216	Seminar in Macroeconomics		Prüfung (PR)	Brumm
WS 18/19	7900254	Topics in Econometrics. Seminar in Economics (Bachelor)		Prüfung (PR)	Schienze
WS 18/19	7900257	Date Mining		Prüfung (PR)	Nakhaeizadeh
WS 18/19	7900278	Seminar on Morals and Social Behavior		Prüfung (PR)	Szech
WS 18/19	7900282	Seminar in Political Economics (Bachelor)		Prüfung (PR)	Szech
WS 18/19	79191ee	Seminar Topics in Experimental Economics		Prüfung (PR)	Reiß
WS 18/19	79sefi1	Seminar in Economics (Bachelor)		Prüfung (PR)	Wigger
SS 2019	7900130	Seminar in Economics (Bachelor)		Prüfung (PR)	Szech
SS 2019	7900131	Seminar in Economics (Bachelor)		Prüfung (PR)	Szech
SS 2019	79sefi1	Seminar in Economics (Bachelor)		Prüfung (PR)	Wigger

Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

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>.

Below you will find excerpts from events related to this course:

V

Cooperation seminar: Innovative applications on single board computers as well as their economic relevance

Seminar / Practical course (S/P)

2512312, WS 18/19, 3 SWS, [Open in study portal](#)

Description

This seminar is offered cooperatively by the Chair of Web Science (AIFB) and the Chair of Economic Policy (ECON).

The cooperation seminar deals with the technical realization of innovative applications using single board computers such as Arduino (<https://www.arduino.cc>) or Raspberry Pi (<https://www.raspberrypi.org>). These single board computers can be extended by various sensors and modules, thus fulfilling a wide range of tasks. Thus, the addition of a camera allows for example gesture and face detection, or the equipment with different sensors enables the measurement of temperature and perception of moving objects.

At the same time, the implications of cost-effective availability of these basic technologies are analyzed from an economic-scientific perspective. The spread and use of these single-board computers, as well as the concepts associated with their success, can have a decisive impact on innovation processes. The reasons and obstacles as well as their relevance to innovation are therefore also addressed from an economic perspective.

Microcomputers such as the Raspberry Pi, for example, are increasingly being used and expanded in the private environment, with numerous applications being possible in the household sector. They can be used as a monitoring system, as a home server or as an electronic function opener. Likewise, due to their low cost, size and ease of use, they can also significantly support the development of innovative processes, for example in the development of prototypes.

Within the scope of this seminar, the possibilities of a single board computer are investigated using the Raspberry Pi. The students are to conceive, realize and present innovative applications in two-teams. Each team is provided with a Raspberry Pi. In addition to the realization of an innovative application, each team has to deal with and discuss an economic science issue. The use of the Raspberry Pi or the underlying concepts from an innovation-economic perspective are to be analyzed.

In addition to the Raspberry Pis, various sensors and expansion modules are also provided and can be purchased after consultation with the supervisors. Furthermore, it may be necessary to develop extensions in Python during the seminar. Previous knowledge in Python and Semantic Web technologies are therefore an advantage but not an imperative requirement.

Notes

The exact dates and information for registration will be announced at the event page.

Learning Content

Topics of interest include, but are not limited to:

- Smart Home Applications
- Environmental measurements
- Gesture control
- Security systems

**Topics in Experimental Economics**2520405, WS 18/19, SWS, [Open in study portal](#)**Seminar (S)****Learning Content**

The course covers selected topics in experimental economics and deepens the understanding of the experimental method. In particular, topics of current research into experimental and behavioral economics are discussed, along with a treatment of advanced methodic issues.

Annotation

The course is offered in summer 2016 for the first time. The course is not offered in every academic year.

Workload

The total workload for this course is approximately 90.0 hours. For further information see German version.

Literature

A selection of published papers is compulsory reading for the course. The course syllabus provides references and is announced at the beginning of the course.

**Topics in Econometrics**2521310, WS 18/19, 2 SWS, [Open in study portal](#)**Seminar (S)****Annotation**

In the winter semester 2018/19 the course will be held in English.

**Topics on Political Economics**2560140, WS 18/19, 2 SWS, [Open in study portal](#)**Seminar (S)****Workload**

About 90 hours.

**Topics in Political Economics (Bachelor)**2560553, SS 2019, 2 SWS, [Open in study portal](#)**Seminar (S)**

Description

In many companies relative reward schemes are used whereby employees earn a bonus if they perform better than their colleagues. Moreover, hierarchical structures mean that in many organizations, employees find themselves in constant competition for promotions. This is meant to provide incentives for higher performance. However, competitive remuneration schemes could also have detrimental effects such that individual workers may view their colleagues as direct competitors generating more selfish and/or less helpful behavior in the workplace. Furthermore, age, gender and culture seem to have impacts on willingness to compete. For example, in western cultures, adult men sometimes enter competition even though their performance level is way too low for success, i.e., they harm themselves by over-competitiveness. In contrast, adult females sometimes compete less than they could do successfully.

Another challenge in contest design, e.g. in sports, is that when competition takes place among workers with mixed abilities it may lead to a discouragement effect, which establishes that lower ability individuals often reduce effort competing against an individual they do not feel up to (e.g. it has been found that average golf players performed significantly worse when competing against a superstar like Tiger Woods). One solution suggested by the economic literature is to level the playing field between advantaged and disadvantaged individuals by favoring weaker individuals through bid-caps, asymmetric tie-breaking rules, or advances. In sports, asymmetric tie-breaking is already common, for instance, in the Champions League soccer playoffs "away goals" become the decisive factor in determining the winning team in case of a tie.

Contests are not only a well-established mechanism for incentivizing workers but also for encouraging innovation and advancing R&D. Elements of research and innovation contests can be found in the procurement of various goods and services. For instance, the construction of new buildings, proposals in a venture capital firm or TV shows for entertainment companies all flow through a similar innovation process that involves the solicitation of bids from multiple potential suppliers and the preparation of a pilot or a proposal. In other cases, e.g., in lobbying contests, it is often discussed whether investments are beneficial or not. Some authors have argued that investments into lobbying should be capped in order to soften competition among asymmetrically strong interest groups (e.g. the lobbying industry versus consumers' interest groups). Of course, then the question arises whether such caps achieve the respective design goal or not.

In this seminar, we discuss questions like: How can we design workplaces and labor contracts to increase motivation and productivity? How can contests be used to foster innovation? Which role should social preferences play and how could they inspire specific contest designs? How should sport contests be engineered depending on the respective goals? How should we design lobbying contests?

Also related topics are very welcome!

Notes

Participation will be limited to 12 students.

Annotation

For further questions, please contact Patrick Maus (Patrick.Maus@kit.edu).

Workload

About 90 hours

Literature

Charness, G., Kuhn, P. (2011) Lab labor: What can labor economists learn from the lab? *Handbook of labor economics*, 4, 229-330.

Cassar, A., Friedman, D. (2004) *Economics lab: an intensive course in experimental economics*. Routledge.

Croson, R., Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic literature*, 47(2), 448-474.

Dechenaux, Emmanuel, Dan Kovenock, and Roman M. Sheremeta. "A survey of experimental research on contests, all-pay auctions and tournaments." *Experimental Economics* 18.4 (2015): 609-669.



Morals and Social Behavior (Bachelor)

2560555, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)

Description

For a long time, economists studied given markets and mechanisms to predict outcomes, future developments or generally the participants' behavior. In contrast, Market Design uses theory, empirical and experimental work to design markets which incentivize their participants in a way that leads to a "desirable" outcome. In this, the designer can have different objectives, for example: Maximizing efficiency, welfare or minimizing negative externalities.

Prominent applications of Market Design include, quite topical, Germany's auction of 5G mobile licenses and matching markets, where there are two large populations that need to be matched to one another (think of hospitals and interns, students and dorm rooms or kidney donors and receivers). In this seminar, we think about ways to either design new markets or how we could alter existing ones in a socially beneficial way. Alternatively, research ideas could focus on finding failures or shortcomings of ineffectively designed markets.

Notes

Participation will be limited to 12 students.

Annotation

For further questions, please contact David Huber (david.huber@kit.edu).

Workload

About 90 hours.

T

7.218 Course: Seminar in Engineering Science Master (approval) [T-WIWI-108763]

Responsible: Fachvertreter ingenieurwissenschaftlicher Fakultäten

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101816 - Seminarmodul](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Exams				
WS 18/19	7311633	Seminar Creating a Patent Specification	Prüfung (PR)	Stork
WS 18/19	8245100014	Seminar in Transportation	Prüfung (PR)	Vortisch, Chlond
SS 2019	76-T-MACH-00002	Seminar for Rail System Technology	Prüfung (PR)	Gratzfeld

Competence Certificate

See German version.

Prerequisites

See module description.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-103147 - Seminar in Engineering Science \(Master\)](#) must not have been started.
2. The course [T-WIWI-102755 - Seminar in Engineering Science \(Bachelor\)](#) must not have been started.

Recommendation

None

T 7.219 Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]

Responsible: Professorenschaft des Fachbereichs Informatik

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101816 - Seminarmodul

M-WIWI-104901 - Informatik (KIT-Fakultät für Wirtschaftswissenschaften)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2512301	Linked Data and the Semantic Web	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Acosta Deibe, Käfer, Heling, Weller
WS 18/19	2512311	Real-World Challenges in Data Science and Analytics	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Nickel, Weinhardt, Zehnder, Brandt
WS 18/19	2512312	Cooperation seminar: Innovative applications on single board computers as well as their economic relevance	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Ott, Weller, Bälz
WS 18/19	2513200	Seminar Betriebliche Informationssysteme: Programmieren 3 (Bachelor)	2 SWS	Seminar (S)	Oberweis, Zöllner, Drescher, Fritsch, Struppek
WS 18/19	2513400	Emerging Trends in Critical Information Infrastructures	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
WS 18/19	2595470	Seminar Service Science, Management & Engineering	2 SWS	Seminar (S)	Weinhardt, Satzger, Nickel, Fromm, Fichtner, Sure-Vetter
SS 2019	2512300	Knowledge Discovery and Data Mining	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Färber, Nguyen, Weller
SS 2019	2513200	Seminar Betriebliche Informationssysteme: Datenschutz und IT-Sicherheit (Bachelor)	2 SWS	Seminar (S)	Oberweis, Raabe, Volkamer, Aldag, Alpers, Fritsch, Mucha, Wagner, Schiefer, Landesberger von Antburg
SS 2019	2513306	Data Science & Real-time Big Data Analytics	2 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Riemer, Zehnder
SS 2019	2513400	Emerging Trends in Critical Information Infrastructures	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
SS 2019	2595470	Seminar Service Science, Management & Engineering	2 SWS	Seminar (S)	Weinhardt, Nickel, Fichtner, Satzger, Sure-Vetter, Fromm
Exams					
WS 18/19	7500175	Seminar: Energy Informatics		Prüfung (PR)	Wagner
WS 18/19	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
WS 18/19	7900042	Seminar Betriebliche Informationssysteme: Programmieren 3		Prüfung (PR)	Oberweis
WS 18/19	7900044	Seminar Service Science, Management & Engineering		Prüfung (PR)	Sure-Vetter
WS 18/19	7900094	Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON		Prüfung (PR)	Sure-Vetter, Ott
WS 18/19	7900114	Emerging Trends in Critical Information Infrastructures		Prüfung (PR)	Sunyaev
WS 18/19	7900121	Seminar "Privacy Awareness"		Prüfung (PR)	Volkamer

WS 18/19	7900192	Data Science with Open Data	Prüfung (PR)	Sure-Vetter
SS 2019	7900087	Seminar Business Information Systems: Privacy and IT Security (Bachelor)	Prüfung (PR)	Oberweis
SS 2019	7900090	Data Science & Real-time Big Data Analytics	Prüfung (PR)	Sure-Vetter
SS 2019	7900092	Seminar Service Science, Management & Engineering	Prüfung (PR)	Sure-Vetter
SS 2019	7900094	Knowledge Discovery and Data Mining	Prüfung (PR)	Sure-Vetter

Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

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>.

Below you will find excerpts from events related to this course:

V

Linked Data and the Semantic Web

2512301, WS 18/19, 3 SWS, [Open in study portal](#)

Seminar / Practical course (S/P)

Description

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'.

Notes

The exact dates and information for registration will be announced at the event page.

Learning Content

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

**Real-World Challenges in Data Science and Analytics**2512311, WS 18/19, 3 SWS, [Open in study portal](#)**Seminar / Practical course (S/P)****Notes**

The exact dates and information for registration will be announced at the event page.

**Cooperation seminar: Innovative applications on single board computers as well as their economic relevance**2512312, WS 18/19, 3 SWS, [Open in study portal](#)**Seminar / Practical course (S/P)****Description**

This seminar is offered cooperatively by the Chair of Web Science (AIFB) and the Chair of Economic Policy (ECON).

The cooperation seminar deals with the technical realization of innovative applications using single board computers such as Arduino (<https://www.arduino.cc>) or Raspberry Pi (<https://www.raspberrypi.org>). These single board computers can be extended by various sensors and modules, thus fulfilling a wide range of tasks. Thus, the addition of a camera allows for example gesture and face detection, or the equipment with different sensors enables the measurement of temperature and perception of moving objects.

At the same time, the implications of cost-effective availability of these basic technologies are analyzed from an economic-scientific perspective. The spread and use of these single-board computers, as well as the concepts associated with their success, can have a decisive impact on innovation processes. The reasons and obstacles as well as their relevance to innovation are therefore also addressed from an economic perspective.

Microcomputers such as the Raspberry Pi, for example, are increasingly being used and expanded in the private environment, with numerous applications being possible in the household sector. They can be used as a monitoring system, as a home server or as an electronic function opener. Likewise, due to their low cost, size and ease of use, they can also significantly support the development of innovative processes, for example in the development of prototypes.

Within the scope of this seminar, the possibilities of a single board computer are investigated using the Raspberry Pi. The students are to conceive, realize and present innovative applications in two-teams. Each team is provided with a Raspberry Pi. In addition to the realization of an innovative application, each team has to deal with and discuss an economic science issue. The use of the Raspberry Pi or the underlying concepts from an innovation-economic perspective are to be analyzed.

In addition to the Raspberry Pis, various sensors and expansion modules are also provided and can be purchased after consultation with the supervisors. Furthermore, it may be necessary to develop extensions in Python during the seminar. Previous knowledge in Python and Semantic Web technologies are therefore an advantage but not an imperative requirement.

Notes

The exact dates and information for registration will be announced at the event page.

Learning Content

Topics of interest include, but are not limited to:

- Smart Home Applications
- Environmental measurements
- Gesture control
- Security systems

**Emerging Trends in Critical Information Infrastructures**2513400, WS 18/19, 2 SWS, [Open in study portal](#)**Seminar (S)****Description**

The block seminar Emerging Trends in Critical Information Infrastructures aims to provide insights into emerging topics in the field of information systems and to offer students an opportunity to write their first academic paper alone or in a group of students. Each semester, different topics are offered around the lectures and research domains of Prof. Sunyaev's chair, especially Trusted Engineering, Digital Health, Internet Technologies as well as Auditing and Certifications. Students can also submit their own topic suggestions within the framework of the main topics specified in the respective semester.

**Seminar Service Science, Management & Engineering**2595470, WS 18/19, 2 SWS, [Open in study portal](#)**Seminar (S)**

Learning Content

Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.

See the KSRI website for more information about this seminar: www.ksri.kit.edu

Workload

The total workload for this course is approximately 120 hours. For further information see German version.

Literature

The student will receive the necessary literature for his research topic.

**Knowledge Discovery and Data Mining**

2512300, SS 2019, 3 SWS, [Open in study portal](#)

Seminar / Practical course (S/P)

Description

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.

Notes

The exact dates and information for registration will be announced at the event page.

Learning Content

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

Literature

Detailed references are indicated together with the respective subjects. For general background information look up the following textbooks:

- 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.

**Data Science & Real-time Big Data Analytics**

2513306, SS 2019, 2 SWS, [Open in study portal](#)

Seminar / Practical course (S/P)

Description

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.

**Seminar Service Science, Management & Engineering**

2595470, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)

Learning Content

Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.

See the KSRI website for more information about this seminar: www.ksri.kit.edu

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

The student will receive the necessary literature for his research topic.

T**7.220 Course: Seminar in Mathematics (Bachelor) [T-MATH-102265]**

Responsible: Dr. Martin Folkers
Prof. Dr. Günter Last

Organisation: KIT Department of Mathematics

Part of: [M-WIWI-101816 - Seminarmodul](#)
[M-WIWI-104905 - Mathematik](#)

Type	Credits	Version
Prüfungsleistung anderer Art	3	1

T

7.221 Course: Seminar in Operations Research (Bachelor) [T-WIWI-103488]

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

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101816 - Seminarmodul](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2550131	Seminar zu Methodische Grundlagen des Operations Research (BA)	SWS	Seminar (S)	Stein, Mohr, Neumann
WS 18/19	2550491	Seminar: Recent Topics in OR	SWS	Seminar (S)	Nickel, Mitarbeiter
SS 2019	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar (S)	Stein, Mohr, Neumann
SS 2019	2550472	Seminar on Power Systems Optimization (Bachelor)	2 SWS	Seminar (S)	Rebennack, Assistenten
SS 2019	2550491	Seminar zur diskreten Optimierung	SWS	Block (B)	Nickel, Mitarbeiter
Exams					
WS 18/19	7900216_WS1819	Seminar in Operations Research (Bachelor)	Prüfung (PR)		Stein
WS 18/19	7900262	Seminar in Operations Research (Bachelor)	Prüfung (PR)		Nickel
SS 2019	7900017_SS2019	Seminar in Operations Research (Bachelor)	Prüfung (PR)		Stein

Competence Certificate

The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015)consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

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>.

Below you will find excerpts from events related to this course:

V

Seminar zu Methodische Grundlagen des Operations Research (BA)

2550131, WS 18/19, SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

The current seminar topics are announced under <http://kop.ior.kit.edu> at the end of the preceding semester.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

References and relevant sources are announced at the beginning of the seminar.

V**Seminar: Recent Topics in OR**

2550491, WS 18/19, SWS, [Open in study portal](#)

Seminar (S)**Learning Content**

The topics of the seminar will be announced at the beginning of the term in a preliminary meeting. Dates will be announced on the internet.

Annotation

The seminar is offered in each term.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Literature and relevant sources will be announced at the beginning of the seminar.

V**Seminar zur diskreten Optimierung**

2550491, SS 2019, SWS, [Open in study portal](#)

Block (B)**Learning Content**

The topics of the seminar will be announced at the beginning of the term in a preliminary meeting. Dates will be announced on the internet.

Annotation

The seminar is offered in each term.

Workload

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Literature and relevant sources will be announced at the beginning of the seminar.

T

7.222 Course: Seminar in Statistics (Bachelor) [T-WIWI-103489]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101816 - Seminarmodul](#)
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2521310	Topics in Econometrics	2 SWS	Seminar (S)	Buse, Görgen

Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

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>.

Below you will find excerpts from events related to this course:

V

Topics in Econometrics

2521310, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)**Annotation**

In the winter semester 2018/19 the course will be held in English.

T

7.223 Course: Seminar Production Technology [T-MACH-109062]

Responsible: 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-101816 - Seminarmodul](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
SS 2019	2149665	Seminar Production Technology	1 SWS	Seminar (S)	Fleischer, Lanza, Schulze, Zanger
Exams					
WS 18/19	76-T-MACH-109062	Seminar Production Technology		Prüfung (PR)	Fleischer, Lanza, Schulze

Competence Certificate

alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

Prerequisites

none

Annotation

The specific topics are published on the homepage of the wbk Institute of Production Science.

Below you will find excerpts from events related to this course:

V

Seminar Production Technology

2149665, SS 2019, 1 SWS, [Open in study portal](#)

Seminar (S)**Description**

The specific topics are published on the homepage of the wbk Institute of Production Science.

Learning 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

Workload

regular attendance: 10 hours

self-study: 80 hours

T

7.224 Course: Seminar: Legal Studies I [T-INFO-101997]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-WIWI-101816 - Seminarmodul](#)
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	24389	IT-Sicherheit und Recht	2 SWS	Seminar (S)	Schallbruch
SS 2019	2400041	Governance, Risk & Compliance	2 SWS	Seminar (S)	Herzig
SS 2019	2400061	Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung	2 SWS	Seminar (S)	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart
SS 2019	24820	Current Issues in Patent Law	2 SWS	Seminar (S)	Melullis
Exams					
WS 18/19	7500035	Seminar: Legal Studies II		Prüfung (PR)	Marsch
WS 18/19	7500182	Seminar: Legal Studies II		Prüfung (PR)	Raabe, Dreier, Boehm
SS 2019	7500159	Seminar: Legal Studies I		Prüfung (PR)	Marsch

Below you will find excerpts from events related to this course:

V

Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung

Seminar (S)

2400061, SS 2019, 2 SWS, [Open in study portal](#)**Notes**Registration via <https://portal.wiwi.kit.edu/ys/2708>

T

7.225 Course: Services Marketing and B2B Marketing [T-WIWI-102806]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101424 - Grundlagen des Marketing](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2572158	Services Marketing and B2B Marketing	2 SWS	Lecture (V)	Klarmann
Exams					
WS 18/19	7900081	Services Marketing and B2B Marketing		Prüfung (PR)	Klarmann, Kim
WS 18/19	7900126	Services Marketing and B2B Marketing		Prüfung (PR)	Klarmann

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Annotation

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Below you will find excerpts from events related to this course:

V

Services Marketing and B2B Marketing

2572158, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The aim of this course is to prepare students for two certain marketing perspectives. The service marketing is concentrated on the particularities coming up when a company sells services instead of products. Subjects in this section are for example:

- Measuring service quality
- Pricing services
- Management of service staff

The second part of the course contains a business-to-business marketing perspective. Topics are below others:

- Management of buying centers
- Competitive Bidding
- B2B-Branding

Annotation

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Workload

The total workload for this course is approximately 90 hours.

Literature

Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T

7.226 Course: Simulation of Coupled Systems [T-MACH-105172]

Responsible: Prof. Dr.-Ing. Marcus Geimer
Yusheng Xiang

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101265 - Fahrzeugentwicklung](#)
[M-MACH-101267 - Mobile Arbeitsmaschinen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	2

Events					
SS 2019	2114095	Simulation of Coupled Systems	2 SWS	Lecture (V)	Geimer, Xiang
Exams					
WS 18/19	76T-MACH-105172	Simulation of Coupled Systems		Prüfung (PR)	Geimer
SS 2019	76T-MACH-102172	Simulation of Coupled Systems		Prüfung (PR)	Geimer
SS 2019	76T-MACH-105172	Simulation of Coupled Systems		Prüfung (PR)	Geimer

Competence Certificate

The assessment consists of an oral exam (20 min) taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at very 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.

Prerequisites

Required for the participation in the examination is the preparation of a report during the semester. The partial service with the code T-MACH-108888 must have been passed.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-MACH-108888 - Simulation of Coupled Systems - Advance](#) must have been passed.

Recommendation

- Knowledge of ProE (ideally in actual version)
- Basic knowledge of Matlab/Simulink
- Basic knowledge of dynamics of machines
- Basic knowledge of hydraulics

Annotation

After completion of course, students are able to:

- build a coupled simulation
- parametrize models
- perform simulations
- conduct troubleshooting
- check results for plausibility

The number of participants is limited.

Content:

- Basics of multi-body and hydraulics simulation programs
- Possibilities of coupled simulations
- Modelling and Simulation of Mobile Machines using a wheel loader
- Documentation of the result in a short report

Literature:

Software guide books (PDFs)

Information about wheel-type loader specifications

Below you will find excerpts from events related to this course:

V**Simulation of Coupled Systems**

2114095, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)**Learning Content**

- Knowledge of the basics of multi-body and hydraulic simulation programs
- Possibilities of coupled simulations
- Development of a simulation model by using the example of a wheel loader
- Documentation of the result in a short report

Workload

- regular attendance: 21 hours
- total self-study: 92 hours

Literature**Elective literature:**

- miscellaneous guides according the software-tools pdf-shaped
- information to the wheel-type loader

T

7.227 Course: Simulation of Coupled Systems - Advance [T-MACH-108888]

Responsible: Prof. Dr.-Ing. Marcus Geimer
Yusheng Xiang

Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101265 - Fahrzeugentwicklung](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung	0	Each summer term	1

Exams				
WS 18/19	76-T-MACH-108888	Simulation of Coupled Systems - Advance	Prüfung (PR)	Geimer

Competence Certificate

Preparation of semester report

Prerequisites

none

T

7.228 Course: Social Science A (WiWi) [T-GEISTSOZ-109048]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: [M-GEISTSOZ-101167 - Soziologie/Empirische Sozialforschung](#)
[M-WIWI-104906 - Geistes- und Sozialwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	5011011	Sozialforschung: Ökonomische Ungleichheit	2 SWS	Seminar (S)	Binder
WS 18/19	5011014	Sozialforschung: Schöne neue Arbeitswelt?" Erwerbstätigkeit in Deutschland: früher, heute und in Zukunft	SWS	Seminar (S)	Ebner
SS 2019	5011003	Sozialforschung: What does the minimum wage do?	2 SWS	Seminar (S)	Binder
SS 2019	5011008	Sozialforschung: Reflexive Wissenssoziologie	2 SWS	Seminar (S)	Kauppert
SS 2019	5011013	Sozialforschung: Ökonomische Ungleichheit	2 SWS	Seminar (S)	Binder
SS 2019	5011019	Sozialforschung: Theorien der Moderne	2 SWS	Seminar (S)	Kauppert
Exams					
WS 18/19	7400041	Social Science A (WiWi)		Prüfung (PR)	Nollmann

T

7.229 Course: Social Science B (WiWi) [T-GEISTSOZ-109049]

Responsible: Prof. Dr. Gerd Nollmann
Organisation: KIT Department of Humanities and Social Sciences
Part of: [M-GEISTSOZ-101167 - Soziologie/Empirische Sozialforschung](#)
[M-WIWI-104906 - Geistes- und Sozialwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	5011011	Sozialforschung: Ökonomische Ungleichheit	2 SWS	Seminar (S)	Binder
WS 18/19	5011014	Sozialforschung: Schöne neue Arbeitswelt?" Erwerbstätigkeit in Deutschland: früher, heute und in Zukunft	SWS	Seminar (S)	Ebner
Exams					
WS 18/19	7400046	Social Science B (WiWi)		Prüfung (PR)	Nollmann

T

7.230 Course: Software Engineering [T-WIWI-100809]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	2

Events					
SS 2019	2511206	Software Engineering	2 SWS	Lecture (V)	Oberweis
SS 2019	2511207	Übungen zu Software Engineering	1 SWS	Practice (Ü)	Oberweis, Fritsch
Exams					
WS 18/19	7900026	Software Engineering		Prüfung (PR)	Oberweis
SS 2019	7900027	Software Engineering		Prüfung (PR)	Oberweis

Competence Certificate

The assessment consists of an 1h written exam in the first week after lecture period.

Prerequisites

None

Modeled Conditions

You have to fulfill one of 2 conditions:

1. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.
2. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.

Below you will find excerpts from events related to this course:

V

Software Engineering

2511206, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course deals with fundamental aspects of the systematic development of huge software systems. The course covers topics such as:

- software developing process models
- methods and tools for the development phases: requirements analysis, system specification, system design, programming and testing.

Workload

Lecture 30h

Exercise 15h

Review und Preparation of lectures 30h

Review and Preparation of exercises 15h

Exam preparation 29h

Exam 1h

Total: 120h

Literature

- H. Balzert. Lehrbuch der Software-Technik. Spektrum Verlag 2008.
- I. Sommerville. Software Engineering. Pearson Studium 2012.

Further literature is given in the course.

T

7.231 Course: Special Topics in Information Systems [T-WIWI-109940]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101434 - eBusiness und Service Management](#)
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	1

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO 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 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

see below

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102706 - Special Topics in Information Engineering & Management](#) must not have been started.

Recommendation

None

Annotation

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 Management and Engineering" 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

7.232 Course: Special Topics of Applied Informatics [T-WIWI-102910]

Responsible: Prof. Dr. Andreas Oberweis
 Prof. Dr. Harald Sack
 Prof. Dr. Ali Sunyaev
 Prof. Dr. York Sure-Vetter
 Prof. Dr. Melanie Volkamer
 Prof. Dr.-Ing. Johann Marius Zöllner

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each term	4

Exams				
WS 18/19	7900066	Interdisciplinary Approach to Verifiable E-Voting	Prüfung (PR)	Volkamer

Competence Certificate

The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.
 Depending on the particular course associated with this placeholder a bonus on the examination grade is possible.

Prerequisites

None

Modeled Conditions

You have to fulfill one of 2 conditions:

1. The module [M-WIWI-101417 - Foundations of Informatics](#) must have been passed.
2. The module [M-WIWI-101581 - Introduction to Programming](#) must have been passed.

Annotation

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.

T

7.233 Course: Statistical Modeling of Generalized Regression Models [T-WIWI-103065]

Responsible: Dr. Wolf-Dieter Heller
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101599 - Statistik und Ökonometrie](#)
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2521350	Statistische Modellierung von Allgemeinen Regressionsmodellen	2 SWS	Lecture (V)	Heller
Exams					
WS 18/19	7900146	Statistical Modeling of generalized regression models		Prüfung (PR)	Heller

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

Below you will find excerpts from events related to this course:

V

Statistische Modellierung von Allgemeinen Regressionsmodellen

2521350, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Annotation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

Workload

The total workload for this course is approximately 135 hours (4.5 credits).

regular attendance: 30 hours

self-study: 65 hours

exam preparation: 40 hours

T

7.234 Course: Statistics I [T-WIWI-102737]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101432 - Einführung in die Statistik](#)
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2600008	Statistics I	4 SWS	Lecture (V)	Schienle
SS 2019	2600009	Tutorien zu Statistik I	2 SWS	Practice (Ü)	Schienle, Rüter, Bitzer
Exams					
WS 18/19	7900140	Statistics I		Prüfung (PR)	Grothe

Competence Certificate

The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.

The exam takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Statistics I

2600008, SS 2019, 4 SWS, [Open in study portal](#)

Lecture (V)**Learning 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

150 hours (5.0 Credits).

Literature

Skriptum: Kurzfassung Statistik I

Elective literature:

- Bamberg, G., Baur, F. und Krapp, M.: Statistik, 15. überarb. Auflage. Oldenbourg, München 2009, ISBN 978-3486590883.
- Fahrmeir, L., Heumann, C., Künstler, R., Pigeot, I. und Tutz, G.: Statistik - Der Weg zur Datenanalyse, 8. Auflage. Springer Spektrum. Berlin 2016, ISBN 978-3-662-50371-3.
- Mosler, K. und Schmid, F.: Beschreibende Statistik und Wirtschaftsstatistik, 4. akt. und verb. Auflage, Springer, Berlin 2009, ISBN 978-3642015564.
- Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2011, ISBN 978-3642150098.
- Stock, J.H. und Watson M.W.: Introduction to Econometrics, 3. Auflage, Prentice Hall 2014, ISBN 978-1292071312
- Stocker, T.C. und Steinke I.: Statistik: Grundlagen und Methodik. De Gruyter Oldenbourg, Berlin 2016 ISBN-13: 978-3110353884.

T 7.235 Course: Statistics II [T-WIWI-102738]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101432 - Einführung in die Statistik](#)
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2610020	Statistics II	4 SWS	Lecture (V)	Grothe
WS 18/19	2610021	Tutorien zu Statistik II	2 SWS	Tutorial (Tu)	Grothe, Rüter, Bitzer
WS 18/19	2610022	PC-Praktikum zu Statistik II	2 SWS	Practice (PÜ)	Grothe, Rüter, Bitzer
Exams					
WS 18/19	7900217	Statistics II		Prüfung (PR)	Grothe
SS 2019	7900029	Statistics II		Prüfung (PR)	Grothe

Competence Certificate

The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.

The exam takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

Prerequisites

None

Recommendation

It is recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2610020].

Below you will find excerpts from events related to this course:

V

Statistics II

2610020, WS 18/19, 4 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

D. Sampling and Estimation Theory: Sampling distributions, estimators, point and interval estimation

E. Test Theory: General Principles of Hypothesis Testing, Concrete 1- and 2-Sampling Tests

F. Regression analysis: Simple and multiple linear regression, statistical inference

Workload

150 hours (5.0 Credits).

Literature

Script: Kurzfassung Statistik II

Elective literature:

Bamberg, G., Baur, F. und Krapp, M.: Statistik, 15. überarb. Auflage. Oldenbourg, München 2009, ISBN 978-3486590883.

Fahrmeir, L., Heumann, C., Künstler, R., Pigeot, I. und Tutz, G.: Statistik - Der Weg zur Datenanalyse, 8. Auflage. Springer Spektrum. Berlin 2016, ISBN 978-3-662-50371-3.

Mosler, K. und Schmid, F.: Beschreibende Statistik und Wirtschaftsstatistik, 4. akt. und verb. Auflage, Springer, Berlin 2009, ISBN 978-3642015564.

Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2011, ISBN 978-3642150098.

Stock, J.H. und Watson M.W.: Introduction to Econometrics, 3. Auflage, Prentice Hall 2014, ISBN 978-1292071312

Stocker, T.C. und Steinke I.: Statistik: Grundlagen und Methodik. De Gruyter Oldenbourg, Berlin 2016 ISBN-13: 978-3110353884.

T

7.236 Course: Structural and Phase Analysis [T-MACH-102170]

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

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2125763	Structural and phase analysis	2 SWS	Lecture (V)	Wagner, Hinterstein
Exams					
WS 18/19	76-T-MACH-102170	Structural and Phase Analysis		Prüfung (PR)	Wagner
SS 2019	76-T-MACH-102170	Structural and Phase Analysis		Prüfung (PR)	Wagner

Competence Certificate

Oral examination

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Structural and phase analysis

2125763, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The course gives an overview to generation and detection of x-rays as well as their interaction with matter. It provides an introduction to crystallography and describes modern measurement and analysis methods of x-ray diffraction.

It is arranged in the following units:

- Generation and properties of X-Ray's
- Crystallography
- Fundamentals and application of different measuring methods
- Qualitative and quantitative phase analysis
- Texture analysis (pole figures)
- Residual stress measurements

Workload

regular attendance: 30 hours

self-study: 90 hours

Literature

1. Moderne Röntgenbeugung - Röntgendiffraktometrie für Materialwissenschaftler, Physiker und Chemiker, Spieß, Lothar / Schwarzer, Robert / Behnken, Herfried / Teichert, Gerd B.G. Teubner Verlag 2005
2. H. Krischner: Einführung in die Röntgenfeinstrukturanalyse. Vieweg 1990.
3. B.D. Cullity and S.R. Stock: Elements of X-ray diffraction. Prentice Hall New Jersey, 2001.

T

7.237 Course: Structural Ceramics [T-MACH-102179]

Responsible: Prof. Dr. Michael Hoffmann
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2126775	Structural Ceramics	2 SWS	Lecture (V)	Hoffmann
Exams					
WS 18/19	76-T-MACH-102179	Structural Ceramics		Prüfung (PR)	Hoffmann, Wagner, Schell
SS 2019	76-T-MACH-102179	Structural Ceramics		Prüfung (PR)	Hoffmann, Wagner, Schell

Competence Certificate

Oral examination, 20 min

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Structural Ceramics

2126775, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)**Description****Media:**

Slides for the lecture:

available under <http://www.iam.kit.edu/km>

Learning Content

The lecture gives an overview on structure and properties of the technical relevant structural ceramics silicon nitride, silicon carbide, alumina, zirconia, boron nitride and fibre-reinforced ceramics. All types of structural ceramics will be discussed in detail in terms of preparation methods of the raw materials, shaping techniques, densification, microstructural development, mechanical properties and application fields.

Annotation

The course will not take place every year.

Workload

regular attendance: 21 hours

self-study: 99 hours

Literature

W.D. Kingery, H.K. Bowen, D.R. Uhlmann, "Introduction to Ceramics", John Wiley & Sons, New York, (1976)

E. Dörre, H. Hübner, "Alumina", Springer Verlag Berlin, (1984)

M. Barsoum, "Fundamentals of Ceramics", McGraw-Hill Series in Material Science and Engineering (2003)

T

7.238 Course: System Dynamics and Control Engineering [T-ETIT-101921]

Responsible: Prof. Dr.-Ing. Sören Hohmann
Organisation: KIT Department of Electrical Engineering and Information Technology
Part of: [M-ETIT-101156 - Regelungstechnik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events					
SS 2019	2303155	Systemdynamik und Regelungstechnik	3 SWS	Lecture (V)	Hohmann
SS 2019	2303157	Übungen zu 2303155 Systemdynamik und Regelungstechnik	1 SWS	Practice (Ü)	Kölsch
SS 2019	2303701	Tutorien zu 2303155 SRT	SWS	Tutorial (Tu)	Kölsch
Exams					
WS 18/19	7303155	System Dynamics and Control Engineering		Prüfung (PR)	Hohmann

Prerequisites

none

T

7.239 Course: Systematic Materials Selection [T-MACH-100531]

Responsible: Dr.-Ing. Stefan Dietrich
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101262 - Vertiefung Werkstoffkunde](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	3

Events					
SS 2019	2174576	Systematic Materials Selection	3 SWS	Lecture (V)	Dietrich
SS 2019	2174577	Übungen zu 'Systematische Werkstoffauswahl'	1 SWS	Practice (Ü)	Dietrich, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-100531	Systematic Materials Selection		Prüfung (PR)	Dietrich
SS 2019	76-T-MACH-100531	Systematic Materials Selection		Prüfung (PR)	Dietrich

Competence Certificate

The assessment is carried out as a written exam of 2 h.

Prerequisites

The two courses "Materials Science I" (T-MACH-102078) and "Materials Science II" (T-MACH-102079) must be passed.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-MACH-102078 - Materials Science I](#) must have been passed.
2. The course [T-MACH-102079 - Material Science II for Business Engineers](#) must have been passed.

Recommendation

Basic knowledge in materials science, mechanics and mechanical design due to the lecture Materials Science I/II.

Below you will find excerpts from events related to this course:

V

Systematic Materials Selection

2174576, SS 2019, 3 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

Important aspects and criteria of materials selection are examined and guidelines for a systematic approach to materials selection are developed. 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

Workload

The workload for the lecture is 150 h per semester and consists of the presence during the lecture (30 h) as well as preparation and rework time at home (120 h).

Literature

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

7.240 Course: Systems of Remote Sensing, Prerequisite [T-BGU-101637]

Responsible: Prof. Dr.-Ing. Stefan Hinz
Organisation: KIT Department of Civil Engineering, Geo- and Environmental Sciences
Part of: [M-WIWI-101646 - Einführung in Naturgefahren und Risikoanalysen 1](#)
[M-WIWI-101648 - Einführung in Naturgefahren und Risikoanalysen 2](#)
[M-WIWI-104838 - Einführung in Naturgefahren und Risikoanalysen](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung	1	Each summer term	1

Events					
SS 2019	6020242	Fernerkundungssysteme, Übung	1 SWS	Practice (Ü)	Weidner
Exams					
SS 2019	8284101637	Systems of Remote Sensing, Prerequisite		Prüfung (PR)	Weidner

Prerequisites

None

Recommendation

None

Annotation

None

T

7.241 Course: Tactical and Operational Supply Chain Management [T-WIWI-102714]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Anwendungen des Operations Research](#)
[M-WIWI-101421 - Supply Chain Management](#)
[M-WIWI-103278 - Optimierung unter Unsicherheit](#)
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	3

Events					
SS 2019	2550486	Taktisches und operatives SCM	2 SWS	Lecture (V)	Nickel
SS 2019	2550487	Übungen zu Taktisches und operatives SCM	1 SWS	Practice (Ü)	Pomes
Exams					
WS 18/19	7900220	Tactical and Operational Supply Chain Management		Prüfung (PR)	Nickel

Competence Certificate

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.

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.

Recommendation

None

Annotation

The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online.

Below you will find excerpts from events related to this course:

V

Taktisches und operatives SCM

2550486, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description

Since the classical work 'Theory of the Location of Industries' of Weber from 1909, the determination of an optimal location of a new facility with respect to existing customers is strongly connected to strategical logistics planning. Strategic decisions concerning the location of facilities as production plants, distribution centers or warehouses are of high importance for the rentability of supply chains. Thoroughly carried out, location planning allows an efficient flow of materials and leads to lower costs and increased customer service.

Subject of the course is an introduction to the most important terms and definitions in location planning as well as the presentation of basic quantitative location planning models. Furthermore, specialized location planning models for Supply Chain Management will be addressed as they are part in many commercial SCM tools for strategic planning tasks.

Learning Content

The lecture covers basic quantitative methods in location planning in the context of strategic Supply Chain Planning. Besides the discussion of several criteria for the evaluation of the locations of facilities, the students are acquainted with classical location planning models (planar models, network models and discrete models) and advanced location planning models designed for Supply Chain Management (single-period and multi-period models). The exercises accompanying the lecture offer the possibility to apply the considered models to practical problems.

Annotation

The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online.

Literature**Elective Literature**

- 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**7.242 Course: Technical Conditions Met [T-WIWI-106623]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101599 - Statistik und Ökonometrie](#)

Type	Credits	Recurrence	Version
Studienleistung	0	Each term	1

Competence Certificate

This module element is intended to record the Bachelor-examination "Introduction to Game Theory". In the master module M-WIWI-101453 "Applied Strategic Decisions", this means that the obligatory course "Advanced Game Theory" is not required.

Prerequisites

None

T

7.243 Course: Tires and Wheel Development for Passenger Cars [T-MACH-102207]

Responsible: Dr.-Ing. Günter Leister
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101265 - Fahrzeugentwicklung](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2114845	Tires and Wheel Development for Passenger Cars	2 SWS	Lecture (V)	Leister
Exams					
WS 18/19	76-T-MACH-102207	Tires and Wheel Development for Passenger Cars		Prüfung (PR)	Leister
SS 2019	76-T-MACH-102207	Tires and Wheel Development for Passenger Cars		Prüfung (PR)	Leister

Competence Certificate

Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Tires and Wheel Development for Passenger Cars

2114845, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning 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 including Design and manufacturing methods, Wheeltesting
7. Tire pressure: Indirect and direct measuring systems
8. Tire testing subjective and objective

Workload

regular attendance: 22,5 hours

self-study: 97,5 hours

Literature

Manuscript to the lecture

T

7.244 Course: Vehicle Comfort and Acoustics I [T-MACH-105154]

Responsible: Prof. Dr. Frank Gauterin
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101264 - Fahrzeugeigenschaften](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	2113806	Vehicle Comfort and Acoustics I	2 SWS	Lecture (V)	Gauterin
SS 2019	2114856	Vehicle Ride Comfort & Acoustics I	2 SWS	Lecture (V)	Gauterin
Exams					
WS 18/19	76-T-MACH-105154	Vehicle Comfort and Acoustics I		Prüfung (PR)	Gauterin
SS 2019	76-T-MACH-105154	Vehicle Comfort and Acoustics I		Prüfung (PR)	Gauterin

Competence Certificate

Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites

Can not be combined with lecture T-MACH-102206

Below you will find excerpts from events related to this course:

V

Vehicle Comfort and Acoustics I

2113806, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)**Learning Content**

1. Perception of noise and vibrations
3. Fundamentals of acoustics and vibrations
3. Tools and methods for measurement, computing, simulation and analysis of noise and vibrations
4. The relevance of tire and chasis for the acoustic and mechanical driving comfort: phenomena, influencing parameters, types of construction, optimization of components and systems, conflict of goals, methods of development

An excursion will give insights in the development practice of a car manufacturer or a system supplier.

Workload

regular attendance: 22,5 hours
 self-study: 97,5 hours

Literature

1. Michael Möser, Technische Akustik, Springer, Berlin, 2005
2. Russel C. Hibbeler, Technische Mechanik 3, Dynamik, Pearson Studium, München, 2006
3. Manfred Mitschke, Dynamik der Kraftfahrzeuge, Band B: Schwingungen, Springer, Berlin, 1997

The script will be supplied in the lectures

V**Vehicle Ride Comfort & Acoustics I**2114856, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning Content**

1. Perception of noise and vibrations
3. Fundamentals of acoustics and vibrations
3. Tools and methods for measurement, computing, simulation and analysis of noise and vibrations
4. The relevance of tire and chassis for the acoustic and mechanical driving comfort: phenomena, influencing parameters, types of construction, optimization of components and systems, conflict of goals, methods of development

An excursion will give insights in the development practice of a car manufacturer or a system supplier.

Workload

regular attendance: 22,5 hours

self-study: 97,5 hours

Literature

1. Michael Möser, Technische Akustik, Springer, Berlin, 2005
2. Russel C. Hibbeler, Technische Mechanik 3, Dynamik, Pearson Studium, München, 2006
3. Manfred Mitschke, Dynamik der Kraftfahrzeuge, Band B: Schwingungen, Springer, Berlin, 1997

The script will be supplied in the lectures

T

7.245 Course: Vehicle Comfort and Acoustics II [T-MACH-105155]

Responsible: Prof. Dr. Frank Gauterin
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101264 - Fahrzeugeigenschaften](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2114825	Vehicle Comfort and Acoustics II	2 SWS	Lecture (V)	Gauterin
SS 2019	2114857	Vehicle Ride Comfort & Acoustics II	2 SWS	Lecture (V)	Gauterin
Exams					
WS 18/19	76-T-MACH-105155	Vehicle Comfort and Acoustics II		Prüfung (PR)	Gauterin
SS 2019	76-T-MACH-105155	Vehicle Comfort and Acoustics II		Prüfung (PR)	Gauterin

Competence Certificate

Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Prerequisites

Can not be combined with lecture T-MACH-102205

Below you will find excerpts from events related to this course:

V

Vehicle Comfort and Acoustics II

2114825, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

1. Summary of the fundamentals of acoustics and vibrations

2. The relevance of road surface, wheel imperfections, springs, dampers, brakes, bearings and bushings, suspensions, engines and drive train for the acoustic and mechanical driving comfort:

- phenomena
- influencing parameters
- types of construction
- optimization of components and systems
- conflicts of goals
- methods of development

3. Noise emission of motor vehicles

- noise stress
- sound sources and influencing parameters
- legal restraints
- optimization of components and systems
- conflict of goals
- methods of development

Workload

regular attendance: 22,5 hours

self-study: 97,5 hours

Literature

The script will be supplied in the lectures.

V**Vehicle Ride Comfort & Acoustics II**

2114857, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)**Notes**

The lecture starts in June 2016. Exact date of beginning: see homepage of institute.

Learning Content

1. Summary of the fundamentals of acoustics and vibrations
2. The relevance of road surface, wheel imperfections, springs, dampers, brakes, bearings and bushings, suspensions, engines and drive train for the acoustic and mechanical driving comfort:
 - phenomena
 - influencing parameters
 - types of construction
 - optimization of components and systems
 - conflicts of goals
 - methods of development
3. Noise emission of motor vehicles
 - noise stress
 - sound sources and influencing parameters
 - legal restraints
 - optimization of components and systems
 - conflict of goals
 - methods of development

Workload

regular attendance: 22,5 hours

self-study: 97,5 hours

Literature

The script will be supplied in the lectures.

T

7.246 Course: Vehicle Mechatronics I [T-MACH-105156]

Responsible: Prof. Dr.-Ing. Dieter Ammon
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101264 - Fahrzeugeigenschaften](#)
[M-MACH-101265 - Fahrzeugentwicklung](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2113816	Vehicle Mechatronics I	2 SWS	Lecture (V)	Ammon
Exams					
WS 18/19	76-T-MACH-105156	Vehicle Mechatronics I		Prüfung (PR)	Ammon

Competence Certificate

Written examination

Duration: 90 minutes

Auxiliary means: none

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Vehicle Mechatronics I

2113816, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

1. Introduction: Mechatronics in vehicle technology
2. Vehicle Control systems
 Brake- and traction controls (ABS, ASR, automated power train controls)
 Active and semiactive suspension systems, active stabilizer bars
 Vehicle dynamics controls, driver assistance systems
3. Modelling technology
 Mechanics - multi body dynamics
 Electrical and electronical systems, control systems
 Hydraulics
 Interdisciplinary coupled systems
4. Computer simulation technology
 Numerical integration methods
 Quality (validation, operating areas, accuracy, performance)
 Simulator-coupling (hardware-in-the-loop, software-in-the-loop)
5. Systemdesign (example: brake control)
 Demands, requirements (funktion, safety, robustness)
 Problem setup (analysis - modelling - model reduction)
 Solution approaches
 Evaluation (quality, efficiency, validation area, concept ripeness)

Workload

regular attendance: 22,5 hours
 self-study: 97,5 hours

Literature

1. Ammon, D., Modellbildung und Systementwicklung in der Fahrzeugdynamik, Teubner, Stuttgart, 1997
2. Mitschke, M., Dynamik der Kraftfahrzeuge, Bände A-C, Springer, Berlin, 1984ff
3. Miu, D.K., Mechatronics - Electromechanics and Contromechanics, Springer, New York, 1992
4. Popp, K. u. Schiehlen, W., Fahrzeugdynamik - Eine Einführung in die Dynamik des Systems Fahrzeug-Fahrweg, Teubner, Stuttgart, 1993
5. Roddeck, W., Einführung in die Mechatronik, Teubner, Stuttgart, 1997
6. Zomotor, A., Fahrwerktechnik: Fahrverhalten, Vogel, Würzburg, 1987

T

7.247 Course: Virtual Reality Practical Course [T-MACH-102149]

Responsible: Prof. Dr.-Ing. Jivka Ovtcharova
Organisation: KIT Department of Mechanical Engineering

Part of: [M-MACH-101270 - Product Lifecycle Management](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	2

Events					
WS 18/19	2123375	Virtual Reality Practical Course	3 SWS	Project (PRO)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102149	Virtual Reality Practical Course		Prüfung (PR)	Ovtcharova

Competence Certificate

Assessment of another type (graded)

Prerequisites

None

Annotation

Number of participants is limited

Below you will find excerpts from events related to this course:

V

Virtual Reality Practical Course

2123375, WS 18/19, 3 SWS, [Open in study portal](#)

Project (PRO)**Learning Content**

The lab course consists of:

1. Introduction and basics in virtual reality (hardware, software, application)
2. Introduction in 3DVIA Virtools tool kit as an application development system
3. Implementation and practice by developing a driving simulator in small groups.

T

7.248 Course: Visual Computing [T-WIWI-110108]

Responsible: Dr. Tatiana Landesberger von Antburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101399 - Vertiefung Informatik](#)
[M-WIWI-101426 - Wahlpflicht Informatik](#)
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Once	1

Events					
SS 2019	2500005	Visual Computing	2 SWS	Lecture (V)	Landesberger von Antburg
SS 2019	2500009	Exercise Visual Computing	1 SWS	Practice (Ü)	Landesberger von Antburg
Exams					
SS 2019	7900069	Visual Computing		Prüfung (PR)	Landesberger von Antburg

Competence Certificate

The examination is offered for first writers only in the summer semester 2019. The repeat exam will take place in the winter semester 2019/2020 (only for "repeaters").

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.

Prerequisites

None.

Annotation

The lecture will be offered once in the summer semester 2019.

Below you will find excerpts from events related to this course:

V

Visual Computing

2500005, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The lecture will provide basic knowledge about various aspects of visual computing - visualization of data, and processing of visual information. Course content will have application context of business, transport and business.

Content will include data visualization of business and operational data (2D, 3D and multivariate data, time series, networks) perceptual aspects, visual design, color design, interaction, as well as basics of image processing and object recognition.

Workload

Total effort for 5 credit points: approx. 150 hours.

Literature

Literature recommendations are regularly updated and include, for example:

- R. Szeliski, "Computer Vision: Algorithms and Applications", Springer 2011
- B. Blundell, An Introduction to Computer Graphics and Creative 3D Environments, Springer 2008

V**Exercise Visual Computing**2500009, SS 2019, 1 SWS, [Open in study portal](#)**Practice (Ü)****Notes**

Please note that the exercise does not begin until the second week of lectures.

T

7.249 Course: Warehousing and Distribution Systems [T-MACH-105174]

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

Part of: [M-MACH-101269 - Einführung in die Technische Logistik](#)
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2118097	Warehousing and distribution systems	2 SWS	Lecture (V)	Furmans
Exams					
WS 18/19	76-T-MACH-105174	Warehousing and Distribution Systems		Prüfung (PR)	Furmans, Mittwollen
SS 2019	76-T-MACH-105174	Warehousing and Distribution Systems		Prüfung (PR)	Furmans

Competence Certificate

The assessment consists of a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

Prerequisites

none

Below you will find excerpts from events related to this course:

V

Warehousing and distribution systems

2118097, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

Description**Media:**

presentations, black board

Learning Content

- Introduction
- Yard management
- Receiving
- Storage and picking
- Workshop on cycle times
- Consolidation and packing
- Shipping
- Added Value
- Overhead
- Case Study: DCRM
- Planning of warehouses
- Case study: Planning of warehouses
- Distribution networks
- Lean Warehousing

Annotation

none

Workload

regular attendance: 21 hours

self-study: 99 hours

Literature**ARNOLD, Dieter, FURMANS, Kai (2005)**

Materialfluss in Logistiksystemen, 5. Auflage, Berlin: Springer-Verlag

ARNOLD, Dieter (Hrsg.) et al. (2008)

Handbuch Logistik, 3. Auflage, Berlin: Springer-Verlag

BARTHOLDI III, John J., HACKMAN, Steven T. (2008)

Warehouse Science

GUDEHUS, Timm (2005)

Logistik, 3. Auflage, Berlin: Springer-Verlag

FRAZELLE, Edward (2002)

World-class warehousing and material handling, McGraw-Hill

MARTIN, Heinrich (1999)

Praxiswissen Materialflußplanung: Transport, Hanshaben, Lagern, Kommissionieren, Braunschweig, Wiesbaden: Vieweg

WISSER, Jens (2009)

Der Prozess Lagern und Kommissionieren im Rahmen des Distribution Center Reference Model (DCRM); Karlsruhe : Universitätsverlag

A comprehensive overview of scientific papers can be found at:

ROODBERGEN, Kees Jan (2007)

Warehouse Literature

T 7.250 Course: Welfare Economics [T-WIWI-102610]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101501 - Wirtschaftstheorie](#)
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	2

Events					
SS 2019	2520517	Welfare Economics	SWS	Lecture (V)	Puppe, Rollmann
SS 2019	2520518	Übung zur Wohlfahrtstheorie	SWS	Practice (Ü)	Puppe, Rollmann

Competence Certificate

The assessment consists of a written exam at the end of the semester (according to Section 4 (2), 1 or 2 of the examination regulation).

Prerequisites

The courses *Economics I: Microeconomics* [2610012] and *Economics II: Macroeconomics* [2600014] have to be completed beforehand.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course [T-WIWI-102708 - Economics I: Microeconomics](#) must have been passed.
2. The course [T-WIWI-102709 - Economics II: Macroeconomics](#) must have been passed.

Recommendation

None

Below you will find excerpts from events related to this course:

V

Welfare Economics

2520517, SS 2019, SWS, [Open in study portal](#)

Lecture (V)

Learning Content

The lecture "Welfare economics" deals with the question of efficiency and distributional properties of economic allocations, in particular allocations of market equilibria. The lecture is based on the two welfare theorems: The first welfare theorem (under weak preconditions) says that every competitive equilibrium is efficient.

According to the second welfare theorem (under stronger preconditions), every efficient allocation can be preserved as a competitive equilibrium through adequate choices of initial endowments. Afterwards, the terms and definitions of envy-freeness and the related concept of egalitarian equivalence in the context of the general theory of equilibrium will be discussed.

The second part of the lecture deals with the principle of "social justice" (i.e. distributional justice). The fundamental principles of utilitarianism, Rawl's theory of justice as well as John Roemer's theory of equality of opportunity are explained and critically analyzed.

Annotation

The course will be held every two years in the summer.

Workload

The total workload for this course is approximately 135 hours. For further information see German version.

Literature

Elective literature:

- J. Rawls: *A Theory of Justice*. Harvard University Press (1971)
- J. Roemer: *Theories of Distributive Justice*. Harvard University Press (1996)

T**7.251 Course: Wildcard eBusiness and Service Management [T-WIWI-109808]****Organisation:** University**Part of:** [M-WIWI-101434 - eBusiness und Service Management](#)

Type	Credits	Version
Prüfungsleistung anderer Art	4,5	1

T**7.252 Course: Wildcard Supply Chain Management [T-WIWI-109803]****Organisation:** University**Part of:** [M-WIWI-101421 - Supply Chain Management](#)

Type	Credits	Version
Prüfungsleistung anderer Art	4,5	1

T**7.253 Course: Wildcard Supply Chain Management [T-WIWI-109802]****Organisation:** University**Part of:** [M-WIWI-101421 - Supply Chain Management](#)

Type	Credits	Version
Prüfungsleistung anderer Art	4,5	1