

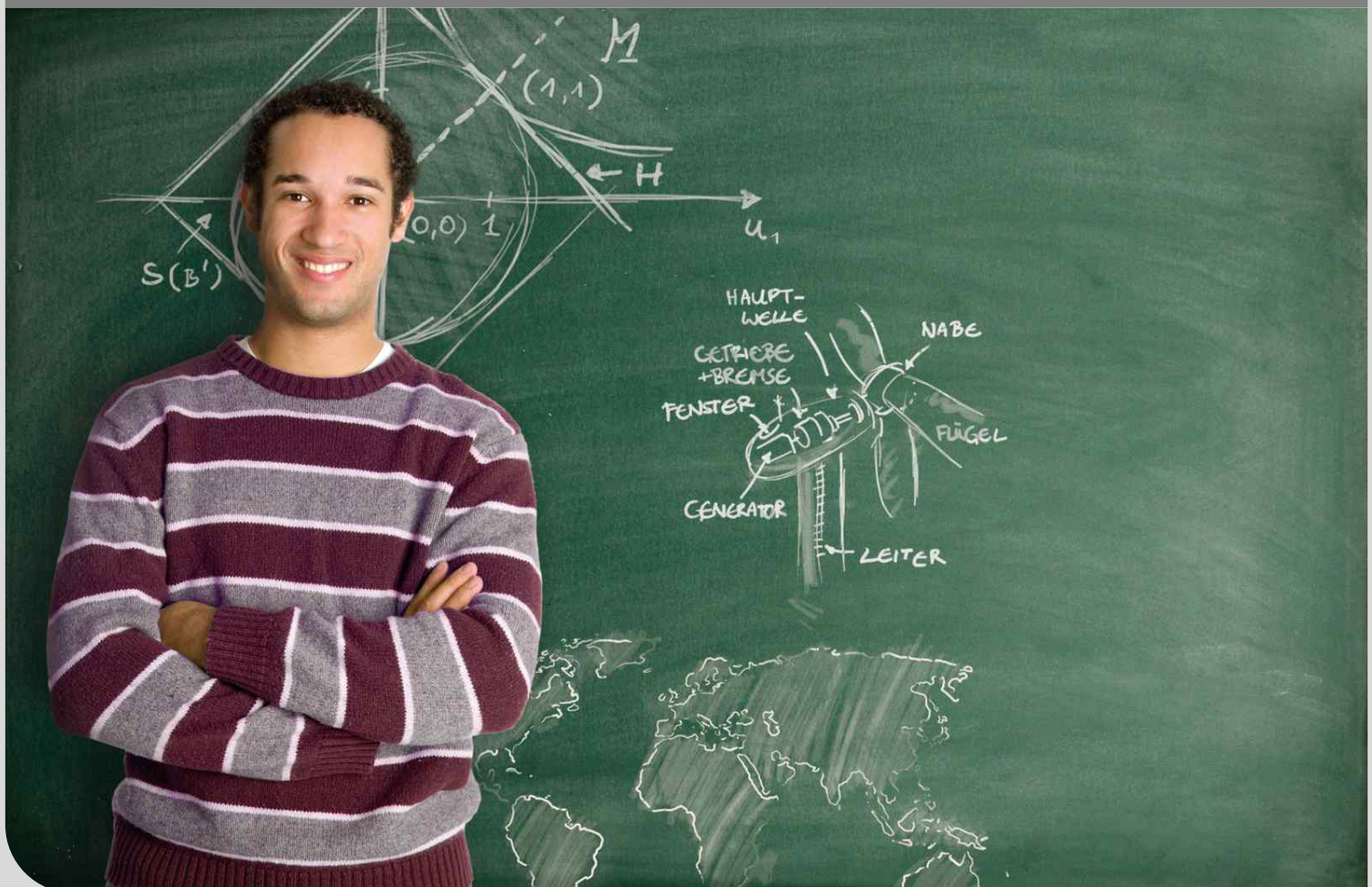
# Module Handbook Economics Engineering M.Sc.

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.



**Ralf Hilser, Anabela Relvas**  
Examination Office

+49 721 608-43768  
pruefungssekretariat@wiwi.kit.edu



**Dr. André Wiesner**  
Editorial responsibility

+49 721 608-44061  
modul@wiwi.kit.edu

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](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:

Ralf Hilser  
Anabela Relvas  
Telefon +49 721 608-43768  
E-Mail: [pruefungssekretariat@wiwi.kit.edu](mailto:pruefungssekretariat@wiwi.kit.edu)

Editorial responsibility:

Dr. André Wiesner  
Telefon: +49 721 608-44061  
Email: [modul@wiwi.kit.edu](mailto:modul@wiwi.kit.edu) \

### 3 The Master's degree program in Economics Engineering

#### 3.1 Qualification objectives of the Master's program in Economics Engineering

Graduates of the interdisciplinary Master's program in Economics Engineering have advanced and in-depth knowledge in economics, business administration, computer science and operations research. This mainly has its focus on business administration. Here, the students analyze how macroeconomic variables (e.g., the national product, the inflation rate or unemployment) are affected by interaction of individual decisions in alternative institutional arrangements and what roles the state and the increasing internationalization have to take up. Formal-theoretical models are analytically derived and simulated using quantitative methods. The objective here is a theoretically based derivation of economic policy recommendations. Other areas of specialization can be chosen based on individual interests. Depending on one's wishes, courses on statistics, engineering sciences and law or sociology can be taken up and specialized in.

They have generalized or specialized expertise in the different disciplines.

The graduates are in a position to define and interpret the specifics, limits, terminologies and doctrines in the selected areas of these subjects, reproduce the current state of research and selectively use this as a basis for further development. Their extensive know-how enables them to think across the various disciplines as well as identify trends and macroeconomic developments at an early stage. They are able to evaluate, select and combine appropriate courses of action for research-related topics. They can then transfer and apply these to solve specific problems.

They can separately analyze extensive problems such as information and current challenges and analyze, compare and evaluate these using appropriate methods and concepts. They evaluate the complexity and risks, identify the improvement potentials and choose sustainable solution processes and improvement methods. This puts them in a position where they are able to make responsible and science-based decisions. They are able to come up with innovative ideas and apply them accordingly. They can oversee these approaches either independently or in teams. They are able to explain and discuss their decisions. They can independently interpret, validate and illustrate the obtained results.

The interdisciplinary use of knowledge also takes account of social, scientific and ethical insights.

The graduates can communicate with expert representatives on a scientific level and assume prominent responsibility both in local and international teams. Karlsruhe's economic engineers are characterized by their interdisciplinary thinking as well as their innovation and management capability. They are particularly qualified for industrial occupations, the service sector or in public administration as well as a downstream scientific career (PhD).

#### 3.2 Structure of the Master's degree program in Economics Engineering (M.Sc.) SPO 2015

The Master's degree program in Economics Engineering (M.Sc.) has 4 terms and consists of 120 credits (CP) including Master's thesis. The Master's degree program further deepens or complements the scientific qualifications acquired in the Bachelor program. The students should be made capable of independently applying scientific knowledge and methods and evaluate their implications and scope concerning solutions of complex scientific and social problems.

Furthermore, the student has to attend two seminars with a minimum of six CP within the seminar module. In addition to the key skills gained in the seminars (3 CP), the student has to acquire additional key skills totalling at least 3 credits.

Term	Credits	Business Administration	Economics	Informatics	Operations Research	Electives 1	Electives 2	Master Thesis
1	28,5	BUS 9 CP	ECON 9 CP	INFO 9 CP	OR 9 CP	Seminar Module 9 CP	Elect. Module 3 9 CP	
2	30					Elect. Module 1 9 CP		
3	31,5	ECON 9 CP	Elect. Module 2 9 CP	Elect. Module 4 9 CP				
4	30			Master Thesis 30 CP				
	120							

Figure 2: Structure of the Master's degree program SPO 2015 (Recommendation)

Figure 2 shows the structure of the subjects and the credits allocated to the subjects. The student has to choose four elective modules of the mentioned disciplines. Thereby it is only possible to select a maximum of two modules from the same discipline and it is only allowed to choose either one module in law or in sociology.

It is left to the student's individual curriculum (taking into account the examination and module regulations), in which terms the chosen modules will be started and completed. However, it is highly recommended to complete all courses and seminars before beginning the Master's thesis.

### 3.3 Key Skills

The master program Economics Engineering (M.Sc.) at the KIT 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. Furthermore, the seminar courses in the master degree programme contribute significantly to the development of key skills by practicing to elaborate and write scientifically sound papers and presentations about special topics. 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 systematical 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

#### Oriental 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 obligatory courses during the master programme, namely

- Seminar module
- Mentoring of the Master's thesis
- Business science, economics and informatics modules

Besides the integrated key skills, the additive acquisition of key skills, which are totalling at least three credits within the seminar module, is scheduled. Students may choose freely among the offered courses of HoC, ZAK and Sprachenzentrum.

## 4 Field of study structure

<b>Mandatory</b>	
Master Thesis	30 CR
Economics	18 CR
Business Administration	9 CR
Informatics	9 CR
Operations Research	9 CR
Compulsory Elective Modules 1	27 CR
Compulsory Elective Modules 2	18 CR

### 4.1 Master Thesis

**Credits**  
30

<b>Mandatory</b>		
M-WIWI-101659	Module Masterarbeit	30 CR

#### Modelled Conditions

The following conditions have to be fulfilled:

- You need to earn at least 60 credits in the following fields:
  - Business Administration
  - Informatics
  - Operations Research
  - Economics
  - Compulsory Elective Modules 1
  - Compulsory Elective Modules 2

### 4.2 Economics

**Credits**  
18

<b>Election block: Volkswirtschaftslehre (2 items)</b>		
M-WIWI-101497	Agglomeration and Innovation	9 CR
M-WIWI-101453	Applied Strategic Decisions	9 CR
M-WIWI-101504	Collective Decision Making	9 CR
M-WIWI-101505	Experimental Economics	9 CR
M-WIWI-101514	Innovation Economics	9 CR
M-WIWI-101478	Innovation and Growth	9 CR
M-WIWI-101500	Microeconomic Theory	9 CR
M-WIWI-101406	Network Economics	9 CR
M-WIWI-101502	Economic Theory and its Application in Finance	9 CR
M-WIWI-101468	Environmental Economics	9 CR
M-WIWI-101485	Transport Infrastructure Policy and Regional Development	9 CR
M-WIWI-101511	Advanced Topics in Public Finance	9 CR
M-WIWI-101496	Growth and Agglomeration	9 CR



### 4.3 Business Administration

Credits

9

Election block: Betriebswirtschaftslehre (1 item)		
M-WIWI-101410	Business & Service Engineering	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101510	Cross-Functional Management Accounting	9 CR
M-WIWI-101470	Data Science: Advanced CRM	9 CR
M-WIWI-101647	Data Science: Evidence-based Marketing	9 CR
M-WIWI-104080	Designing Interactive Information Systems	9 CR
M-WIWI-103261	Disruptive FinTech Innovations	9 CR
M-WIWI-103720	eEnergy: Markets, Services and Systems	9 CR
M-WIWI-101409	Electronic Markets	9 CR
M-WIWI-101451	Energy Economics and Energy Markets	9 CR
M-WIWI-101452	Energy Economics and Technology	9 CR
M-WIWI-101488	Entrepreneurship (EnTechnon)	9 CR
M-WIWI-101482	Finance 1	9 CR
M-WIWI-101483	Finance 2	9 CR
M-WIWI-101480	Finance 3	9 CR
M-WIWI-101508	Real Estate Economics and Sustainability	9 CR
M-WIWI-101471	Industrial Production II	9 CR
M-WIWI-101412	Industrial Production III	9 CR
M-WIWI-101411	Information Engineering	9 CR
M-WIWI-104068	Information Systems in Organizations	9 CR
M-WIWI-101507	Innovation Management	9 CR
M-WIWI-103247	Intelligent Risk and Investment Advisory	9 CR
M-WIWI-101446	Market Engineering	9 CR
M-WIWI-101490	Marketing Management	9 CR
M-WIWI-101487	Sales Management	9 CR
M-WIWI-101506	Service Analytics	9 CR
M-WIWI-101448	Service Management	9 CR
M-WIWI-101503	Service Design Thinking	9 CR
M-WIWI-102754	Service Economics and Management	9 CR
M-WIWI-102806	Service Innovation, Design & Engineering	9 CR
M-WIWI-103119	Advanced Topics in Strategy and Management	9 CR

### 4.4 Informatics

Credits

9

Election block: Informatik (1 item)		
M-WIWI-101472	Informatics	9 CR

**4.5 Operations Research****Credits**

9

<b>Election block: Operations Research (1 item)</b>		
M-WIWI-101473	<a href="#">Mathematical Programming</a>	9 CR
M-WIWI-102832	<a href="#">Operations Research in Supply Chain Management</a>	9 CR
M-WIWI-102805	<a href="#">Service Operations</a>	9 CR
M-WIWI-103289	<a href="#">Stochastic Optimization</a>	9 CR

## 4.6 Compulsory Elective Modules 1

Credits

27

### Election notes

In the field "Compulsory Elective Modules 1", the **seminar module** (independent of subject) is to be attended over two seminars and further key qualification courses. In addition, **two elective modules** from the subjects of Economics, Business Administration, Informatics, Operations Research, Engineering sciences / Natural Sciences and Statistics are to be chosen in each of the two elective areas. Within a compulsory elective area, the modules must come from different subjects.

Mandatory		
M-WIWI-101808	Seminar Module	9 CR
<b>Election block: Volkswirtschaftslehre (at most 9 credits)</b>		
M-WIWI-101497	Agglomeration and Innovation	9 CR
M-WIWI-101453	Applied Strategic Decisions	9 CR
M-WIWI-101504	Collective Decision Making	9 CR
M-WIWI-101505	Experimental Economics	9 CR
M-WIWI-101478	Innovation and Growth	9 CR
M-WIWI-101514	Innovation Economics	9 CR
M-WIWI-101500	Microeconomic Theory	9 CR
M-WIWI-101406	Network Economics	9 CR
M-WIWI-101502	Economic Theory and its Application in Finance	9 CR
M-WIWI-101468	Environmental Economics	9 CR
M-WIWI-101485	Transport Infrastructure Policy and Regional Development	9 CR
M-WIWI-101511	Advanced Topics in Public Finance	9 CR
M-WIWI-101496	Growth and Agglomeration	9 CR
<b>Election block: Betriebswirtschaftslehre (at most 9 credits)</b>		
M-WIWI-101410	Business & Service Engineering	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101510	Cross-Functional Management Accounting	9 CR
M-WIWI-101470	Data Science: Advanced CRM	9 CR
M-WIWI-101647	Data Science: Evidence-based Marketing	9 CR
M-WIWI-104080	Designing Interactive Information Systems	9 CR
M-WIWI-102808	Digital Service Systems in Industry	9 CR
M-WIWI-103261	Disruptive FinTech Innovations	9 CR
M-WIWI-103720	eEnergy: Markets, Services and Systems	9 CR
M-WIWI-101409	Electronic Markets	9 CR
M-WIWI-101451	Energy Economics and Energy Markets	9 CR
M-WIWI-101452	Energy Economics and Technology	9 CR
M-WIWI-101488	Entrepreneurship (EnTechnon)	9 CR
M-WIWI-101482	Finance 1	9 CR
M-WIWI-101483	Finance 2	9 CR
M-WIWI-101480	Finance 3	9 CR
M-WIWI-101508	Real Estate Economics and Sustainability	9 CR
M-WIWI-101471	Industrial Production II	9 CR
M-WIWI-101412	Industrial Production III	9 CR
M-WIWI-101411	Information Engineering	9 CR
M-WIWI-104068	Information Systems in Organizations	9 CR
M-WIWI-101507	Innovation Management	9 CR
M-WIWI-103247	Intelligent Risk and Investment Advisory	9 CR
M-WIWI-101446	Market Engineering	9 CR
M-WIWI-101490	Marketing Management	9 CR

M-WIWI-101487	Sales Management	9 CR
M-WIWI-101506	Service Analytics	9 CR
M-WIWI-101503	Service Design Thinking	9 CR
M-WIWI-102754	Service Economics and Management	9 CR
M-WIWI-102806	Service Innovation, Design & Engineering	9 CR
M-WIWI-101448	Service Management	9 CR
M-WIWI-103119	Advanced Topics in Strategy and Management	9 CR
<b>Election block: Informatik (at most 9 credits)</b>		
M-WIWI-101628	Emphasis in Informatics	9 CR
M-WIWI-101630	Electives in Informatics	9 CR
<b>Election block: Operations Research (at most 9 credits)</b>		
M-WIWI-101473	Mathematical Programming	9 CR
M-WIWI-102832	Operations Research in Supply Chain Management	9 CR
M-WIWI-102805	Service Operations	9 CR
M-WIWI-103289	Stochastic Optimization	9 CR
<b>Election block: Natur- und Ingenieurwissenschaften (at most 9 credits)</b>		
M-MACH-101298	Automated Manufacturing Systems	9 CR
M-WIWI-101404	Extracurricular Module in Engineering	9 CR
M-MACH-101274	Rail System Technology	9 CR
M-MACH-101290	BioMEMS	9 CR
M-MACH-101263	Introduction to Logistics	9 CR
M-MACH-101296	Energy and Process Technology I	9 CR
M-MACH-101297	Energy and Process Technology II	9 CR
M-ETIT-101164	Generation and transmission of renewable power	9 CR
M-MACH-101276	Manufacturing Technology	9 CR
M-MACH-101282	Global Production and Logistics	9 CR
M-BGU-101064	Fundamentals of Transportation	9 CR
M-ETIT-101163	High-Voltage Technology	9 CR
M-MACH-101272	Integrated Production Planning	9 CR
M-MACH-102626	Major Field: Integrated Product Development	16 CR
M-BGU-101884	Lean Management in Construction	9 CR
M-MACH-101280	Logistics in Value Chain Networks	9 CR
M-MACH-101277	Material Flow in Logistic Systems	9 CR
M-MACH-101278	Material Flow in Networked Logistic Systems	9 CR
M-MACH-101291	Microfabrication	9 CR
M-MACH-101292	Microoptics	9 CR
M-MACH-101293	Microsystem Technology	9 CR
M-MACH-101294	Nanotechnology	9 CR
M-WIWI-104837	Natural Hazards and Risk Management	9 CR
M-MACH-101295	Optoelectronics and Optical Communication	9 CR
M-BGU-101888	Project Management in Construction	9 CR
M-ETIT-101157	Control Engineering II	9 CR
M-MACH-101279	Technical Logistics	9 CR
M-MACH-101275	Combustion Engines I	9 CR
M-MACH-101303	Combustion Engines II	9 CR
M-BGU-101110	Process Engineering in Construction	9 CR
M-BGU-101065	Transportation Modelling and Traffic Management	9 CR
M-MACH-101284	Specialization in Production Engineering	9 CR
M-CIWVT-101119	Specialization in Food Process Engineering	9 CR
M-MACH-101283	Virtual Engineering A	9 CR
M-MACH-101281	Virtual Engineering B	9 CR

M-CIWVT-101121	Water Chemistry and Water Technology I	9 CR
M-CIWVT-101122	Water Chemistry and Water Technology II	9 CR
M-MACH-101286	Machine Tools and Industrial Handling	9 CR
<b>Election block: Statistik (at most 9 credits)</b>		
M-WIWI-101637	Analytics and Statistics	9 CR
M-WIWI-101638	Econometrics and Statistics I	9 CR
M-WIWI-101639	Econometrics and Statistics II	9 CR

## 4.7 Compulsory Elective Modules 2

Credits

18

### Election notes

In the field "Compulsory Elective Modules 2", **two elective modules** are to be chosen from the subjects Economics, Business Administration, Informatics, Operations Research, Engineering / Natural Sciences and Statistics. Within a compulsory elective area, the modules must come from different subjects. In elective area 2, the subjects Law or Sociology can also be taken in one of the two elective modules.

<b>Election block: Volkswirtschaftslehre (at most 9 credits)</b>		
M-WIWI-101497	Agglomeration and Innovation	9 CR
M-WIWI-101453	Applied Strategic Decisions	9 CR
M-WIWI-101504	Collective Decision Making	9 CR
M-WIWI-101505	Experimental Economics	9 CR
M-WIWI-101478	Innovation and Growth	9 CR
M-WIWI-101514	Innovation Economics	9 CR
M-WIWI-101500	Microeconomic Theory	9 CR
M-WIWI-101406	Network Economics	9 CR
M-WIWI-101502	Economic Theory and its Application in Finance	9 CR
M-WIWI-101468	Environmental Economics	9 CR
M-WIWI-101485	Transport Infrastructure Policy and Regional Development	9 CR
M-WIWI-101511	Advanced Topics in Public Finance	9 CR
M-WIWI-101496	Growth and Agglomeration	9 CR
<b>Election block: Betriebswirtschaftslehre (at most 9 credits)</b>		
M-WIWI-101410	Business & Service Engineering	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101510	Cross-Functional Management Accounting	9 CR
M-WIWI-101470	Data Science: Advanced CRM	9 CR
M-WIWI-101647	Data Science: Evidence-based Marketing	9 CR
M-WIWI-104080	Designing Interactive Information Systems	9 CR
M-WIWI-102808	Digital Service Systems in Industry	9 CR
M-WIWI-103261	Disruptive FinTech Innovations	9 CR
M-WIWI-103720	eEnergy: Markets, Services and Systems	9 CR
M-WIWI-101409	Electronic Markets	9 CR
M-WIWI-101451	Energy Economics and Energy Markets	9 CR
M-WIWI-101452	Energy Economics and Technology	9 CR
M-WIWI-101488	Entrepreneurship (EnTechnon)	9 CR
M-WIWI-101482	Finance 1	9 CR
M-WIWI-101483	Finance 2	9 CR
M-WIWI-101480	Finance 3	9 CR
M-WIWI-101508	Real Estate Economics and Sustainability	9 CR
M-WIWI-101411	Information Engineering	9 CR
M-WIWI-104068	Information Systems in Organizations	9 CR
M-WIWI-101471	Industrial Production II	9 CR
M-WIWI-101412	Industrial Production III	9 CR
M-WIWI-101507	Innovation Management	9 CR
M-WIWI-103247	Intelligent Risk and Investment Advisory	9 CR
M-WIWI-101446	Market Engineering	9 CR
M-WIWI-101490	Marketing Management	9 CR
M-WIWI-101487	Sales Management	9 CR
M-WIWI-101506	Service Analytics	9 CR

M-WIWI-101503	Service Design Thinking	9 CR
M-WIWI-102754	Service Economics and Management	9 CR
M-WIWI-102806	Service Innovation, Design & Engineering	9 CR
M-WIWI-101448	Service Management	9 CR
M-WIWI-103119	Advanced Topics in Strategy and Management	9 CR
<b>Election block: Informatik (at most 9 credits)</b>		
M-WIWI-101628	Emphasis in Informatics	9 CR
M-WIWI-101630	Electives in Informatics	9 CR
<b>Election block: Operations Research (at most 9 credits)</b>		
M-WIWI-101473	Mathematical Programming	9 CR
M-WIWI-102832	Operations Research in Supply Chain Management	9 CR
M-WIWI-102805	Service Operations	9 CR
M-WIWI-103289	Stochastic Optimization	9 CR
<b>Election block: Natur- und Ingenieurwissenschaften (at most 9 credits)</b>		
M-WIWI-101404	Extracurricular Module in Engineering	9 CR
M-MACH-101298	Automated Manufacturing Systems	9 CR
M-MACH-101274	Rail System Technology	9 CR
M-MACH-101290	BioMEMS	9 CR
M-MACH-101263	Introduction to Logistics	9 CR
M-MACH-101296	Energy and Process Technology I	9 CR
M-MACH-101297	Energy and Process Technology II	9 CR
M-ETIT-101164	Generation and transmission of renewable power	9 CR
M-MACH-101276	Manufacturing Technology	9 CR
M-MACH-101282	Global Production and Logistics	9 CR
M-BGU-101064	Fundamentals of Transportation	9 CR
M-ETIT-101163	High-Voltage Technology	9 CR
M-MACH-102626	Major Field: Integrated Product Development	16 CR
M-MACH-101272	Integrated Production Planning	9 CR
M-BGU-101884	Lean Management in Construction	9 CR
M-MACH-101280	Logistics in Value Chain Networks	9 CR
M-MACH-101277	Material Flow in Logistic Systems	9 CR
M-MACH-101278	Material Flow in Networked Logistic Systems	9 CR
M-MACH-101291	Microfabrication	9 CR
M-MACH-101292	Microoptics	9 CR
M-MACH-101293	Microsystem Technology	9 CR
M-MACH-101294	Nanotechnology	9 CR
M-WIWI-104837	Natural Hazards and Risk Management	9 CR
M-MACH-101295	Optoelectronics and Optical Communication	9 CR
M-BGU-101888	Project Management in Construction	9 CR
M-ETIT-101157	Control Engineering II	9 CR
M-MACH-101279	Technical Logistics	9 CR
M-MACH-101275	Combustion Engines I	9 CR
M-MACH-101303	Combustion Engines II	9 CR
M-BGU-101110	Process Engineering in Construction	9 CR
M-BGU-101065	Transportation Modelling and Traffic Management	9 CR
M-MACH-101284	Specialization in Production Engineering	9 CR
M-CIWVT-101119	Specialization in Food Process Engineering	9 CR
M-MACH-101283	Virtual Engineering A	9 CR
M-MACH-101281	Virtual Engineering B	9 CR
M-CIWVT-101121	Water Chemistry and Water Technology I	9 CR
M-CIWVT-101122	Water Chemistry and Water Technology II	9 CR

M-MACH-101286	<a href="#">Machine Tools and Industrial Handling</a>	9 CR
<b>Election block: Statistik (at most 9 credits)</b>		
M-WIWI-101637	<a href="#">Analytics and Statistics</a>	9 CR
M-WIWI-101638	<a href="#">Econometrics and Statistics I</a>	9 CR
M-WIWI-101639	<a href="#">Econometrics and Statistics II</a>	9 CR
<b>Election block: Recht und Soziologie (at most 9 credits)</b>		
M-INFO-101242	<a href="#">Governance, Risk &amp; Compliance</a>	9 CR
M-INFO-101217	<a href="#">Public Business Law</a>	9 CR
M-INFO-101216	<a href="#">Private Business Law</a>	9 CR
M-INFO-101215	<a href="#">Intellectual Property Law</a>	9 CR
M-GEISTSOZ-101169	<a href="#">Sociology</a>	9 CR



## 5 Modules

### M

## 5.1 Module: Advanced Topics in Public Finance [M-WIWI-101511]

**Responsible:** Prof. Dr. Berthold Wigger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	4	3

Mandatory			
T-WIWI-102740	Public Management	4,5 CR	Wigger
Election block: Ergänzungsangebot (between 4,5 and 5 credits)			
T-WIWI-108880	Blockchains & Cryptofinance	4,5 CR	Schuster, Uhrig-Homburg
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

### 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

- understands the theory and politics of taxation
- has knowledge in the area of public debt.
- understands efficiency problems of public organizations.
- is able to work on fiscal problems.

### Prerequisites

The course "Public Management" is compulsory and must be examined.

### 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.

In the course of the lectures within this module the students achieve knowledge in the areas of public revenues, national and international law of taxation and theory of public sector organizations.

### Recommendation

Basic knowledge in the area of public finance and public management is required.

### Annotation

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

Students who successfully passed the exam in „Public Management“ before the introduction of the module “Advanced Topics in Public Finance” in winter term 2014/15 are allowed to take both courses “Public Revenues” and “Specific Aspects in Taxation”.

**Workload**

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

## M

**5.2 Module: Advanced Topics in Strategy and Management [M-WIWI-103119]**

**Responsible:** Prof. Dr. Hagen Lindstädt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch	4	1

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-106188	<b>Workshop Current Topics in Strategy and Management</b>	3 CR	Lindstädt
T-WIWI-106189	<b>Workshop Business Wargaming – Analyzing Strategic Interactions</b>	3 CR	Lindstädt
T-WIWI-106190	<b>Strategy and Management Theory: Developments and “Classics”</b>	3 CR	Lindstädt

**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**

Students

- are able to analyze business strategies and derive recommendations using appropriate frameworks
- learn to express their position through compelling reasoning in structured discussions
- are qualified to critically examine recent research topics in the field of strategic management
- can derive own conclusions from less structured information by using interdisciplinary knowledge

**Prerequisites**

None

**Content**

The module is divided into three main topics:

The students

- analyze and discuss a wide range of business strategies on the basis of collectively selected case studies.
- participate in a business wargaming workshop and analyze strategic interactions.
- write a paper about current topics in the field of strategic management theory.

**Recommendation**

None

**Annotation**

This course is admission restricted. After being admitted to one course of this module, the participation at the other courses will be guaranteed.

Every course of this module will be at least offered every second term. Thus, it will be possible to complete the module within two terms.

This module will be offered for the first time in the winter term 2017/18.

## M

**5.3 Module: Agglomeration and Innovation [M-WIWI-101497]**

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

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

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102609	<b>Advanced Topics in Economic Theory</b>	4,5 CR	Mitusch
T-WIWI-109194	<b>Dynamic Macroeconomics</b>	4,5 CR	Brumm
T-WIWI-102840	<b>Innovationtheory and -Policy</b>	4,5 CR	Ott
T-WIWI-103107	<b>Spatial Economics</b>	4,5 CR	Ott

**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 add up to at least 9.

The overall grade for the module is the average of the grades for each course weighted by the credits.

**Competence Goal**

The student

- applies quantitative methods in the context of economic models
- learns advanced micro- and macroeconomic theories
- is able to derive policy recommendations based on theory
- can identify the importance of alternative incentive mechanisms for the development and spread of innovations
- begins to understand the connections between market form and the development of innovations
- analyzes the determinants of the spatial distribution of economic activity
- understands how processes of concentration result from the interplay of agglomeration and dispersion forces

**Prerequisites**

None

**Content**

The module comprises theories of incentives for the development of innovations as well as theories of wage-based labor mobility, which leads to spatial concentration processes. The microfounded optimality decisions of the actors are in each case transformed into macroeconomic results. In the context of the theory of innovations the diffusion of technological knowledge and the resulting effect on growth due to technological progress is discussed and economic-policy implications are derived. Spatial economics adds to the picture of economic activity by introducing a spatial point of view.

**Recommendation**

Successful completion of the courses *Economics I: Microeconomics* and *Economics II: Macroeconomics* is required.

**Workload**

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

## M

**5.4 Module: Analytics and Statistics [M-WIWI-101637]**

**Responsible:** Prof. Dr. Oliver Grothe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Compulsory Elective Modules 1 \(Statistik\)](#)  
[Compulsory Elective Modules 2 \(Statistik\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Mandatory			
T-WIWI-103123	<a href="#">Advanced Statistics</a>	4,5 CR	Grothe
Election block: Ergänzungsangebot (between 4,5 and 5 credits)			
T-WIWI-106341	<a href="#">Machine Learning 2 – Advanced Methods</a>	5 CR	Zöllner
T-WIWI-103124	<a href="#">Multivariate Statistical Methods</a>	4,5 CR	Grothe

**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**

A Student

- Deepens the knowledge of descriptive and inferential statistics.
- Deals with simulation methods.
- Learns basic and advanced methods of statistical analysis of multivariate and high-dimensional data.

**Prerequisites**

The course "*Advanced Statistics*" is compulsory.

**Content**

- Deriving estimates and testing hypotheses
- Stochastic processes
- Multivariate statistics, copulas
- Dependence measures
- Dimension reduction
- High-dimensional methods
- Prediction

**Annotation**

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

**Workload**

The total workload for this module is approximately 270 hours.

## M

**5.5 Module: Applied Strategic Decisions [M-WIWI-101453]**

**Responsible:** Prof. Dr. Johannes Philipp Reiß  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

Credits	Language	Level	Version
9	Deutsch	4	3

Election block: Ergänzungsangebot (between 1 and 2 items as well as at least 4,5 credits)			
T-WIWI-102613	<a href="#">Auction Theory</a>	4,5 CR	Ehrhart
T-WIWI-102614	<a href="#">Experimental Economics</a>	4,5 CR	Weinhardt
T-WIWI-102622	<a href="#">Corporate Financial Policy</a>	4,5 CR	Ruckes
T-WIWI-102623	<a href="#">Financial Intermediation</a>	4,5 CR	Ruckes
T-WIWI-102640	<a href="#">Market Engineering: Information in Institutions</a>	4,5 CR	Weinhardt
T-WIWI-102862	<a href="#">Predictive Mechanism and Market Design</a>	4,5 CR	Reiß
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	4,5 CR	Nieken
Election block: Wahlpflichtangebot (1 item)			
T-WIWI-102861	<a href="#">Advanced Game Theory</a>	4,5 CR	Ehrhart, Puppe, Reiß
T-WIWI-106623	<a href="#">Technical Conditions Met</a>	0 CR	

**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**

Students

- can model and analyze complex situations of strategic interaction using advanced game theoretic concepts;
- are provided with essential and advanced game theoretic solution concepts on a rigorous level and can apply them to understand real-life problems;
- learn about the experimental method, ranging from designing an economic experiment to data analysis.

**Prerequisites**

The course *Advanced Game Theory* is obligatory. Exception: The course *Introduction to Game Theory* [2520525] was completed.

**Content**

The module provides solid skills in game theory and offers a broad range of game theoretic applications. To improve the understanding of theoretical concepts, it pays attention to empirical evidence as well.

**Recommendation**

Basic knowledge in game theory is assumed.

**Annotation**

The course *Predictive Mechanism and Market Design* is not offered each year.

The course "Decision Theory" [2520365] will not be offered any more from summer term 2015 on. The examination will be offered latest until winter term 2015/2016 (repeaters only).

**Workload**

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

## M

**5.6 Module: Automated Manufacturing Systems [M-MACH-101298]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-MACH-102162	<a href="#">Automated Manufacturing Systems</a>	9 CR	Fleischer

**Competence Certificate**  
written exam (120 minutes)

**Competence Goal**  
The students

- are able to analyze implemented automated manufacturing systems and describe their components.
- are capable to assess the implemented examples of implemented automated manufacturing systems and apply them to new problems.
- are able to name automation tasks in manufacturing plants and name the components which are necessary for the implementation of each automation task.
- are capable with respect to a given task to plan the configuration of an automated manufacturing system and to determine the necessary components to its realization.
- are able to design and select components for a given use case of the categories: "Handling Technology", "Industrial Robotics", "Sensory" and "Controls".
- are capable to compare different concepts for multi-machine systems and select a suitable concept for a given use case.

**Prerequisites**  
none

**Content**

The lecture provides an overview of the structure and functioning of automated manufacturing systems. In the introduction chapter the basic elements for the realization of automated manufacturing systems are given. This includes:

- Drive and control technology
- Handling technology for handling work pieces and tools
- Industrial Robotics
- Quality assurance in automated manufacturing
- automatic machines, cells, centers and systems for manufacturing and assembly
- structures of multi-machine systems
- planning of automated manufacturing systems

In the second part of the lecture, the basics are illustrated using implemented manufacturing processes for the production of automotive components (chassis and drive technology). The analysis of automated manufacturing systems for manufacturing of defined components is also included. In the field of vehicle power train both, the automated manufacturing process for the production of the conventional internal-combustion engine and the automated manufacturing process for the production of the prospective electric power train (electric motor and battery) are considered. In the field of car body, the focus is on the analysis of the process chain for the automated manufacturing of conventional sheet metal body parts, as well as for automated manufacturing of body components made out of fiber-reinforced plastics. Within tutorials, the contents from the lecture are advanced and applied to specific problems and tasks.

**Workload**

regular attendance: 63 hours  
self-study: 207 hours

**Learning type**

Lectures, exercise, excursion

## M

**5.7 Module: BioMEMS [M-MACH-101290]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Mandatory			
T-MACH-100966	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I	3 CR	Guber
Election block: BioMEMS (at least 6 credits)			
T-MACH-102164	Practical Training in Basics of Microsystem Technology	3 CR	Last
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-101910	Microactuators	3 CR	Kohl
T-MACH-102172	Bionics for Engineers and Natural Scientists	3 CR	Hölscher
T-MACH-102176	Current Topics on BioMEMS	4 CR	Guber

**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

- has basic as well as extensive knowledge about different fields of applications of BioMEMS
- understands continuative aspects of the related subjects optics and microoptics, micro actuators, replications techniques and bionics

**Prerequisites**

none



**Content**

Operations through small orifices, a pill which will take pictures on its way through your body or lab results right at the point of care - the need for easier and faster ways to help people is an important factor in research. The module BioMEMS (Bio(medical)-Micro-Electro-Mechanical-Systems) describes the application of microtechnology in the field of Life-Science, medical applications and Biotechnology and will teach you the necessary skills to understand and develop biological and medical devices.

The BioMEMS lectures will cover the fields of minimal invasive surgery, lab-on-chip systems, NOTES-Technology (Natural Orifice Transluminal Endoscopic Surgery), as well as endoscopic surgery and stent technology.

Additionally to the BioMEMS lectures you can specialize in various related fields like fabrication, actuation, optics and bionics. The course Replication processes will teach you some cost efficient and fast ways to produce parts for medical or biological devices. In the course Microactuation it is discussed how to receive movements in micrometer scale in a microsystem, this could be e.g. to drive micro pumps or micro valves. The necessary tools for optical measurement and methods of analysis to gain high resolution pictures are also part of this module. To deepen your knowledge and to get a hands-on experience this module contains a one week lab course. In the lecture bionics you can see how biological effects can be transferred into technical products.

**Workload**

270 hours

## M

**5.8 Module: Business & Service Engineering [M-WIWI-101410]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Level	Version
9	4	3

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-106201	Digital Transformation of Organizations	4,5 CR	Mädche
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 CR	Weinhardt
T-WIWI-102848	Personalization and Services	4,5 CR	Sonnenbichler
T-WIWI-102847	Recommender Systems	4,5 CR	Geyer-Schulz
T-WIWI-102799	Practical Seminar Service Innovation	4,5 CR	Satzger
T-WIWI-102641	Service Innovation	4,5 CR	Satzger
T-WIWI-109940	Special Topics in Information Systems	4,5 CR	Weinhardt

**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 student should

- learn to develop and implement new markets with regards to the technological progresses of information and communication technology and the increasing economic networking
- learn to restructure and develop new business processes in markets under those conditions
- understand service competition as a sustainable competitive strategy and understand the effects of service competition on the design of markets, products, processes and services.
- improve his statistics skills and apply them to appropriate cases
- learn to elaborate solutions in a team

**Prerequisites**

None

**Content**

This module addresses the challenges of creating new kinds of products, processes, services, and markets from a service perspective in the context of new developed information and communication technologies and the globalization process. The module describes service competition as a business strategy in the long term that leads to the design of business processes, business models, forms of organization, markets, and competition. This will be shown by actual examples from personalized services, recommender services and social networks.

**Recommendation**

None

**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](http://www.iism.kit.edu/im/lehre).

**Workload**

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

## M

**5.9 Module: Collective Decision Making [M-WIWI-101504]**

**Responsible:** Prof. Dr. Clemens Puppe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	4	3

Election block: Wahlpflichtangebot ()				
T-WIWI-102740	<b>Public Management</b>		4,5 CR	Wigger
T-WIWI-102859	<b>Social Choice Theory</b>		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 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 able to model practical problems of the public sector and to analyze them with respect to positive and normative questions,
- understand individual incentives and social outcomes of different institutional designs,
- are familiar with the functioning and design of democratic elections and can analyze them with respect to their individual incentives.

**Prerequisites**

None

**Content**

The focus of the module is on mechanisms of public decisions making, including voting and the aggregation of preferences and judgements.

**Workload**

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

## M

**5.10 Module: Combustion Engines I [M-MACH-101275]**

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

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-MACH-102194	<a href="#">Combustion Engines I</a>	5 CR	Koch, Kubach
T-MACH-105564	<a href="#">Energy Conversion and Increased Efficiency in Internal Combustion Engines</a>	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 princile of combustion engines. He is able to analyse and evaluate the combustion process. He is able to evaluate influences of gas exchange, mixture formation, fuels and exhaust gas aftertreatment on the combustion performance. He can solve basic research problems in the field of engine development.

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

**Prerequisites**

None

**Content**

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

**Workload**

regular attendance: 62 hours

self-study: 208 hours

## M

**5.11 Module: Combustion Engines II [M-MACH-101303]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Recurrence	Level	Version
9	Each term	4	1

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

None

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The module [M-MACH-101275 - Combustion Engines I](#) must have been started.

**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

**5.12 Module: Control Engineering II [M-ETIT-101157]**

**Responsible:** Prof. Dr.-Ing. Sören Hohmann  
Dr.-Ing. Mathias Kluge

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

**Credits**

9

**Level**

4

**Version**

2

Mandatory			
T-ETIT-100981	<a href="#">Automation of Discrete Event and Hybrid Systems</a>	3 CR	Hohmann
T-ETIT-100666	<a href="#">Control of Linear Multivariable Systems</a>	6 CR	Hohmann

**Competence Certificate**

The assessment is carried out as partial written exams of the single courses of this module (T-ETIT-100981 and T-ETIT-100666).

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

- have deeper knowledge in the field of control theory and system dynamics,
- are able to analyze multivariable systems in state space and frequency domain and are familiar with adequate methods for the control design,
- know the basics of modelling, simulation, analyses and control of discrete-event and hybrid systems.

**Prerequisites**

none

**Content**

This module broadens the basic knowledge of system dynamics of the students to the multivariable case. Both I/O-models in frequency domain and mainly state space models are regarded, for which several methods for the analysis and the control design with different goals (decoupling, robustness) and constraints (disturbances, sensor failures) are presented. Above that, the basics of modelling, simulation, analysis and control of discrete-event and hybrid systems are discussed.

**Recommendation**

For this module a basic knowledge in system theory and control engineering is assumed. These subjects can be found in the course *System Dynamics and Control Engineering* (2303155) which is recommended to have been attended beforehand.

**Workload**

See German version.

## M

**5.13 Module: Cross-Functional Management Accounting [M-WIWI-101510]**

**Responsible:** Prof. Dr. Marcus Wouters  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch/Englisch	4	7

Mandatory			
T-WIWI-102885	<b>Advanced Management Accounting</b>	4,5 CR	Wouters
Election block: Ergänzungsangebot (4,5 credits)			
T-WIWI-105777	<b>Business Intelligence Systems</b>	4,5 CR	Mädche, Nadj, Toreini
T-WIWI-105781	<b>Incentives in Organizations</b>	4,5 CR	Nieken
T-WIWI-102835	<b>Marketing Strategy Business Game</b>	1,5 CR	Klarmann
T-WIWI-107720	<b>Market Research</b>	4,5 CR	Klarmann
T-WIWI-102803	<b>Modeling Strategic Decision Making</b>	4,5 CR	Lindstädt
T-WIWI-102883	<b>Pricing</b>	4,5 CR	Feurer
T-WIWI-109864	<b>Product and Innovation Management</b>	3 CR	Klarmann
T-WIWI-102621	<b>Valuation</b>	4,5 CR	Ruckes
T-WIWI-108651	<b>Extraordinary additional course in the module Cross-Functional Management Accounting</b>	4,5 CR	Wouters

**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**

Students will be able to apply advanced management accounting methods to managerial decision-making problems in marketing, finance, organization and strategy.

**Prerequisites**

The course "Advanced Management Accounting" is compulsory.

The additional courses can only be chosen after the compulsory course has been completed successfully.

**Content**

The module includes a course on several advanced management accounting methods that can be used for various decisions in operations and innovation management. By selecting another course, each student looks in more detail at one interface between management accounting a particular field in management, namely marketing, finance, or organization and strategy.

**Recommendation**

None

**Annotation**

The module "Cross-functional Management Accounting" always includes the compulsory course "Advanced Management Accounting." Students look at the interface between management accounting and another field in management. Students build the module by adding a course from the specified list. Students can also suggest another suitable course for this module for evaluation by the coordinator.

**Workload**

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

## M

**5.14 Module: Data Science: Advanced CRM [M-WIWI-101470]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch	4	4

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-109921	<b>Advanced Machine Learning</b>	4,5 CR	Geyer-Schulz, Nazemi
T-WIWI-102762	<b>Business Dynamics</b>	4,5 CR	Geyer-Schulz
T-WIWI-103549	<b>Intelligent CRM Architectures</b>	4,5 CR	Geyer-Schulz
T-WIWI-102848	<b>Personalization and Services</b>	4,5 CR	Sonnenbichler
T-WIWI-102847	<b>Recommender Systems</b>	4,5 CR	Geyer-Schulz
T-WIWI-105778	<b>Service Analytics A</b>	4,5 CR	Fromm, Setzer

**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

- understand service competition as a sustainable competitive strategy and understand the effects of service competition on the design of markets, products, processes and services,
- models, analyzes and optimizes the structure and dynamics of complex business applications,
- develops and realizes personalized services, especially in the field of recommendation services,
- analyzes social networks and knows their application field in CRM,
- works in teams.

**Prerequisites**

None

**Content**

Building on the basics of CRM from the Bachelor's degree program, the module "Data Science: Advanced CRM" is focusing on the use of information technology and its related economic issues in the CRM environment. The course "Intelligent CRM Architectures" deals with the design of modern intelligent systems. The focus is on the software architecture and design patterns that are relevant to learning systems. It also covers important aspects of machine learning that complete the picture of an intelligent system. Examples of presented systems are "Taste Map"-architectures, "Counting Services", as well as architectures of "Business Games". The impact of management decisions in complex systems are considered in the course "Business dynamics". The understanding, modeling and simulation of complex systems allows the analysis, the goal-oriented design and the optimization of markets, business processes and regulations throughout the company. Specific problems of intelligent systems are covered in the courses "Personalization and Services", "Recommender Systems", "Service Analytics" and "Social Network Analysis in CRM". The content includes procedures and methods to create user-oriented services. The measurement and monitoring of service systems, the design of personalized offers, and the generation of recommendations based on the collected data of products and customers are discussed. The importance of user modeling and -recognition, data security and privacy are addressed as well.

**Recommendation**

None

**Annotation**

The module has been renamed to "Data Science: Advanced CRM" in winter term 2016/2017.



**Workload**

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

## M

**5.15 Module: Data Science: Evidence-based Marketing [M-WIWI-101647]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Recurrence	Language	Level	Version
9	Once	Deutsch	4	5

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-103139	<b>Marketing Analytics</b>	4,5 CR	Klarmann
T-WIWI-107720	<b>Market Research</b>	4,5 CR	Klarmann

**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

- possess advanced knowledge of relevant market research contents
- know many different qualitative and quantitative methods for measuring customer behavior, preparation of strategic decisions, making causal deductions, usage of social media data and sales forecasting
- possess the statistical skills required for working in marketing research

**Prerequisites**

Keine.

**Content**

This module provides in-depth knowledge of relevant quantitative and qualitative methods used in market research. Students can attend the following courses:

- The course **“Market Research”** provides contents of practical relevance for measuring customer attitudes and customer behavior. The participants learn using statistical methods for strategic decision-making in marketing. Students who are interested in writing their master thesis at the Marketing & Sales Research Group are required to take this course.
- The course **„Marketing Analytics“** is based on „Market Research“ and teaches advanced statistical methods for analyzing relevant marketing and market research questions.

**Recommendation**

None

**Workload**

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

## M

**5.16 Module: Designing Interactive Information Systems [M-WIWI-104080]**

**Responsible:** Prof. Dr. Alexander Mädche  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch/Englisch	4	1

Mandatory			
T-WIWI-108461	<b>Interactive Information Systems</b>	4,5 CR	Mädche, Morana
Election block: Ergänzungsangebot (at most 4,5 credits)			
T-WIWI-105773	<b>Digital Service Design</b>	4,5 CR	Mädche
T-WIWI-108437	<b>Practical Seminar: Information Systems and Service Design</b>	4,5 CR	Mädche

**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.

**Competence Goal**

The student

- has a comprehensive understanding of conceptual and theoretical foundations of interactive systems
- knows design processes for interactive systems
- is aware of the most important techniques and tools for designing interactive systems and knows how to apply them to real-world problems
- is able to apply design principles for the design of most important classes of interactive systems,
- creates new solutions of interactive systems teams

**Prerequisites**

The course “Interactive Information Systems” is compulsory and must be examined.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The module **M-WIWI-103200 - Designing Interactive Systems** must not have been started.

**Content**

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 in production and administration (e.g. in the form of dashboards).

With the continuous growing capabilities of computers, the design of the interaction between human and computer becomes even more important. This module focuses on design processes and principles for interactive systems. The contents of the module abstract from the technical implementation details and focus on foundational concepts, theories, practices and methods for the design of interactive systems. The students get the necessary knowledge to guide the successful implementation of interactive systems in business and private life.

Each lecture in the module is accompanied with a capstone project that is carried out with an industry partner.

**Annotation**

See <http://issd.iism.kit.edu/305.php> for further information.

**Workload**

The total workload for this module is approximately 270 hours.

## M

**5.17 Module: Digital Service Systems in Industry [M-WIWI-102808]**

**Responsible:** Prof. Dr. Wolf Fichtner  
Prof. Dr. Stefan Nickel

**Organisation:** KIT Department of Economics and Management

**Part of:** [Compulsory Elective Modules 1 \(Betriebswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Betriebswirtschaftslehre\)](#)

Credits	Language	Level	Version
9	Deutsch	4	5

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102872	<a href="#">Challenges in Supply Chain Management</a>	4,5 CR	Mohr
T-WIWI-102822	<a href="#">Industrial Services</a>	4,5 CR	Fromm
T-WIWI-107043	<a href="#">Liberalised Power Markets</a>	3 CR	Fichtner
T-WIWI-106200	<a href="#">Modeling and OR-Software: Advanced Topics</a>	4,5 CR	Nickel
T-WIWI-106201	<a href="#">Digital Transformation of Organizations</a>	4,5 CR	Mädche
T-WIWI-106563	<a href="#">Practical Seminar Digital Service Systems</a>	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 the basics of the management of digital services applied on an industrial context
- gain an industry-specific insight into the importance and most relevant characteristics of information systems as key components of the digitalization of business processes, products and services
- are able to transfer and apply the models and methods introduced on practical scenarios and simulations.
- understand the control and optimization methods in the sector of service management and are able to apply them properly.

**Prerequisites**

This module can only be assigned as an elective module.

**Content**

This module aims at deepening the fundamental knowledge of digital service management in the industrial context. Various mechanisms and methods to shape and control connected digital service systems in different industries are discussed and demonstrated with real life application cases.

**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](http://www.ksri.kit.edu/teaching)

**Workload**

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

## M

**5.18 Module: Disruptive FinTech Innovations [M-WIWI-103261]**

**Responsible:** Prof. Dr Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Business Administration](#)  
[Compulsory Elective Modules 1 \(Betriebswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Betriebswirtschaftslehre\)](#)

Credits	Language	Level	Version
9	Englisch	4	1

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-106193	<a href="#">Engineering FinTech Solutions</a>	4,5 CR	Ulrich
T-WIWI-106496	<a href="#">Computational FinTech with Python and C++</a>	1,5 CR	Ulrich
T-WIWI-106495	<a href="#">Automated Financial Advisory</a>	3 CR	Ulrich

**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**

Students with a strong technological background and/or a strong interest for software development and investments will learn how to build a prototype that automates essential steps for a fully automated investment and risk management process. Students also learn to organize themselves efficiently in teams of several developers in order to complete a prototype in a limited amount of time. Moreover, students deepen their understanding of finance and technology and learn how to combine both in an effective way. Students will hence be well prepared to become leaders and pioneers for upcoming FinTech innovations (and beyond) to help society to better invest for the future and to better protect from adverse risks.

**Prerequisites**

None.

**Content**

Within the scope of the lecture "Engineering FinTech Solutions" students get the opportunity to solve a partial problem from a larger FinTech problem independently and at the same time with close mentoring - by employees and professor of the C-RAM research group. The student is introduced to the problem to be solved on the basis of his very own level of knowledge and equipped with the necessary aids. Students are given the opportunity to combine new research approaches from the field of risk and investment management with modern information technology in order to independently master a step towards prototype development. Depending on the topic, students work alone or in teams. As part of the close mentoring approach, teams will meet weekly to discuss their progress and open questions with course students and the professor.

In the course "Computational FinTech with Python and C++" students are given individually tailored programming tasks at the beginning of the semester.

The contents of the seminar "Automated Financial Advisory" will be discussed with the students at the beginning of the semester.

**Recommendation**

None

**Annotation**

See respective lecture

**Workload**

The total workload for this module is approximately 270 hours. For further information, see respective lecture.

## M

**5.19 Module: Econometrics and Statistics I [M-WIWI-101638]**

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Compulsory Elective Modules 1 \(Statistik\)](#)  
[Compulsory Elective Modules 2 \(Statistik\)](#)

**Credits**  
9

**Recurrence**  
Each term

**Language**  
Deutsch

**Level**  
4

**Version**  
3

Mandatory			
T-WIWI-103125	<a href="#">Applied Econometrics</a>	4,5 CR	Schienle
Election block: Ergänzungsangebot (between 4,5 and 5 credits)			
T-WIWI-103066	<a href="#">Data Mining and Applications</a>	4,5 CR	Nakhaeizadeh
T-WIWI-103064	<a href="#">Financial Econometrics</a>	4,5 CR	Schienle
T-WIWI-103126	<a href="#">Non- and Semiparametrics</a>	4,5 CR	Schienle
T-WIWI-103127	<a href="#">Panel Data</a>	4,5 CR	Heller
T-WIWI-103065	<a href="#">Statistical Modeling of Generalized Regression Models</a>	4,5 CR	Heller

**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 in depth understanding of advanced Econometric techniques suitable for different types of data. He/ She is able to apply his/her theoretical knowledge to real world problems with the help of statistical software and to evaluate performance of different approaches based on statistical criteria.

**Prerequisites**

The course "Advanced Statistics" [2520020] is compulsory and must be examined.

**Content**

The courses of this module offer students a broad range of advanced Econometric techniques for state-of-the art data analysis.

**Workload**

The total workload for this module is approximately 270 hours.

## M

**5.20 Module: Econometrics and Statistics II [M-WIWI-101639]**

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Compulsory Elective Modules 1 \(Statistik\)](#)  
[Compulsory Elective Modules 2 \(Statistik\)](#)

**Credits**  
9

**Recurrence**  
Each term

**Language**  
Deutsch

**Level**  
4

**Version**  
2

Election block: Wahlpflichtangebot (between 9 and 10 credits)			
T-WIWI-103066	<a href="#">Data Mining and Applications</a>	4,5 CR	Nakhaeizadeh
T-WIWI-103064	<a href="#">Financial Econometrics</a>	4,5 CR	Schienle
T-WIWI-103124	<a href="#">Multivariate Statistical Methods</a>	4,5 CR	Grothe
T-WIWI-103126	<a href="#">Non- and Semiparametrics</a>	4,5 CR	Schienle
T-WIWI-103127	<a href="#">Panel Data</a>	4,5 CR	Heller
T-WIWI-103128	<a href="#">Portfolio and Asset Liability Management</a>	4,5 CR	Safarian
T-WIWI-103065	<a href="#">Statistical Modeling of Generalized Regression Models</a>	4,5 CR	Heller
T-WIWI-103129	<a href="#">Stochastic Calculus and Finance</a>	4,5 CR	Safarian

**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 in depth understanding of advanced Econometric techniques suitable for different types of data. He/ She is able to apply his/her theoretical knowledge to real world problems with the help of statistical software and to evaluate performance of different approaches based on statistical criteria.

**Prerequisites**

This module can only be passed if the module "*Econometrics and Statistics I*" has been finished successfully before.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The module [M-WIWI-101638 - Econometrics and Statistics I](#) must have been started.

**Content**

This module builds on prerequisites acquired in Module "*Econometrics and Statistics I*". The courses of this module offer students a broad range of advanced Econometric techniques for state-of-the-art data analysis.

**Workload**

The total workload for this module is approximately 270 hours.

## M

## 5.21 Module: Economic Theory and its Application in Finance [M-WIWI-101502]

**Responsible:** Prof. Dr. Kay Mitusch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

Credits	Language	Level	Version
9	Deutsch	4	4

Election block: Ergänzungsangebot (1 item)			
T-WIWI-102647	Asset Pricing	4,5 CR	Ruckes, Uhrig-Homburg
T-WIWI-102622	Corporate Financial Policy	4,5 CR	Ruckes
T-WIWI-109050	Corporate Risk Management	4,5 CR	Ruckes
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
Election block: Wahlpflichtangebot (1 item)			
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 CR	Mitusch
T-WIWI-102861	Advanced Game Theory	4,5 CR	Ehrhart, Puppe, Reiß

### 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 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

The students

- have learnt the methods of formal economic modeling, particularly of General Equilibrium Theory and contract theory
- will be able to apply these methods to the topics in Finance, specifically the areas of financial markets and institutions and corporate finance
- have gained many useful insights into the relationship between firms and investors and the functioning of financial markets

### Prerequisites

One of the courses T-WIWI-102861 "Advanced Game Theory" and T-WIWI-102609 "Advanced Topics in Economic Theory" is compulsory.

### Content

The mandatory course "Advanced Topics in Economic Theory" is devoted in equal parts to General Equilibrium Theory and to contract theory. The course "Asset Pricing" will apply techniques of General Equilibrium Theory to valuation of financial assets. The courses "Corporate Financial Policy" and "Finanzintermediation" will apply the techniques of contract theory to issues of corporate finance and financial institutions.

### Workload

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



## M

**5.22 Module: eEnergy: Markets, Services and Systems [M-WIWI-103720]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Business Administration](#)  
[Compulsory Elective Modules 1 \(Betriebswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Betriebswirtschaftslehre\)](#)

Credits	Language	Level	Version
9	Deutsch	4	1

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-107501	<a href="#">Energy Market Engineering</a>	4,5 CR	Weinhardt
T-WIWI-107503	<a href="#">Energy Networks and Regulation</a>	4,5 CR	Weinhardt
T-WIWI-107504	<a href="#">Smart Grid Applications</a>	4,5 CR	Weinhardt

**Competence Certificate**

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of 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 aware of design options for energy and especially electricity markets and can derive implications for the market results from the market design,
- knows about current trends regarding the Smart Grid and understands affiliated modelling approaches,
- can evaluate business models of electricity grids according to the regulation regime
- is prepared for scientific contributions in the field of energy system analysis.

**Prerequisites**

None.

**Content**

The module conveys scientific and practical knowledge to analyse energy markets and according business models. To do so the scientific discussion on energy market designs is evaluated and analysed. Different energy market models are presented and their design implications are evaluated. Furthermore, the electricity system is analysed with regards to being a network industry and resulting regulation and business models are discussed. Besides these traditional areas of energy economics we will look at methods and models of digitalisation in the energy sector.

**Annotation**

The lecture Smart Grid Applications will be available starting in the winter term 2018/19.

**Workload**

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

## M

## 5.23 Module: Electives in Informatics [M-WIWI-101630]

**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:** [Compulsory Elective Modules 1 \(Informatik\)](#)  
[Compulsory Elective Modules 2 \(Informatik\)](#)

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

Election block: Wahlpflichtangebot ()			
T-WIWI-109445	<a href="#">Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services</a>	5 CR	Sunyaev
T-WIWI-109248	<a href="#">Critical Information Infrastructures</a>	5 CR	Sunyaev
T-WIWI-109246	<a href="#">Digital Health</a>	4 CR	Sunyaev
T-WIWI-109270	<a href="#">Human Factors in Security and Privacy</a>	5 CR	Volkamer
T-WIWI-102680	<a href="#">Computational Economics</a>	5 CR	Shukla
T-WIWI-102661	<a href="#">Database Systems and XML</a>	5 CR	Oberweis
T-WIWI-102668	<a href="#">Enterprise Architecture Management</a>	5 CR	Wolf
T-WIWI-106423	<a href="#">Information Service Engineering</a>	5 CR	Sack
T-WIWI-102666	<a href="#">Knowledge Discovery</a>	5 CR	Sure-Vetter
T-WIWI-102667	<a href="#">Management of IT-Projects</a>	5 CR	Schätzle
T-WIWI-106340	<a href="#">Machine Learning 1 - Basic Methods</a>	5 CR	Zöllner
T-WIWI-106341	<a href="#">Machine Learning 2 – Advanced Methods</a>	5 CR	Zöllner
T-WIWI-102697	<a href="#">Business Process Modelling</a>	5 CR	Oberweis
T-WIWI-102679	<a href="#">Nature-Inspired Optimisation Methods</a>	5 CR	Shukla
T-WIWI-109799	<a href="#">Process Mining</a>	5 CR	Oberweis
T-WIWI-102874	<a href="#">Semantic Web Technologies</a>	5 CR	Sure-Vetter
T-WIWI-105801	<a href="#">Service Oriented Computing</a>	5 CR	Sure-Vetter
T-WIWI-102895	<a href="#">Software Quality Management</a>	5 CR	Oberweis
T-WIWI-102676	<a href="#">Special Topics of Enterprise Information Systems</a>	5 CR	Oberweis
T-WIWI-102669	<a href="#">Strategic Management of Information Technology</a>	5 CR	Wolf
T-WIWI-103112	<a href="#">Web Science</a>	5 CR	Sure-Vetter
Election block: Praktikum ()			
T-WIWI-109250	<a href="#">Emerging Trends in Critical Information Infrastructures</a>	4 CR	Sunyaev
T-WIWI-108439	<a href="#">Advanced Lab Security, Usability and Society</a>	4 CR	Volkamer
T-WIWI-109786	<a href="#">Advanced Lab Security</a>	4 CR	Volkamer
T-WIWI-109271	<a href="#">Advanced Lab User Studies in Security</a>	4 CR	Volkamer
T-WIWI-109985	<a href="#">Project Lab Cognitive Automobiles and Robots</a>	4 CR	Zöllner
T-WIWI-109983	<a href="#">Project Lab Machine Learning</a>	4 CR	Zöllner
T-WIWI-109251	<a href="#">Selected Issues in Critical Information Infrastructures</a>	4 CR	Sunyaev
T-WIWI-109249	<a href="#">Sociotechnical Information Systems Development</a>	4 CR	Sunyaev
T-WIWI-103523	<a href="#">Advanced Lab Informatics</a>	4 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner

**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. 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

- has the ability to master methods and tools in a complex discipline and to demonstrate innovativeness regarding the methods used,
- knows the principles and methods in the context of their application in practice,
- is able to grasp and apply the rapid developments in the field of computer science, which are encountered in work life, quickly and correctly, based on a fundamental understanding of the concepts and methods of computer science,
- is capable of finding and defending arguments for solving problems.

**Prerequisites**

None.

**Content**

The thematic focus will be based on the choice of courses in the areas of Effiziente Algorithmen, Betriebliche Informations- und Kommunikationssysteme, Wissensmanagement, Komplexitätsmanagement and Software- und Systems Engineering.

**Annotation**

Detailed information on the recognition of examinations in the field of Informatics can be found at <http://www.aifb.kit.edu/web/Auslandsaufenthalt>.

**Workload**

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

## M

**5.24 Module: Electronic Markets [M-WIWI-101409]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch	4	4

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-108880	<b>Blockchains &amp; Cryptofinance</b>	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-102762	<b>Business Dynamics</b>	4,5 CR	Geyer-Schulz
T-WIWI-102886	<b>Business Administration in Information Engineering and Management</b>	5 CR	Geyer-Schulz
T-WIWI-102640	<b>Market Engineering: Information in Institutions</b>	4,5 CR	Weinhardt
T-WIWI-105946	<b>Price Management</b>	4,5 CR	Geyer-Schulz, Glenn
T-WIWI-102713	<b>Telecommunication and Internet Economics</b>	4,5 CR	Mitusch

**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 coordination and motivation methods and analyzes them regarding their efficiency,
- classifies markets and describes the roles of the participants in a formal way,
- knows the conditions for market failure and knows and develops countermeasures,
- knows institutions and market mechanisms, their fundamental theories and empirical research results,
- knows the design criteria of market mechanisms and a systematical approach for creating new markets,
- models, analyzes and optimizes the structure and dynamics of complex business applications.

**Prerequisites**

None

**Content**

What are the conditions that make electronic markets develop and how can one analyse and optimize such markets?

In this module, the selection of the type of organization as an optimization of transaction costs is treated. Afterwards, the efficiency of electronic markets (price, information and allocation efficiency) as well as reasons for market failure are described. Finally, motivational issues (like bounded rationality and information asymmetries (private information and moral hazard), as well as the development of incentive schemes, are presented. Regarding the market design, especially the interdependencies of market organization, market mechanisms, institutions and products are described and theoretical foundations are lectured.

Electronic markets are dynamic systems that are characterized by feedback loops between many different variables. By means of the tools of business dynamics such markets can be modelled. Simulations of complex systems allow the analysis and optimization of markets, business processes, policies, and organizations.

Topics include:

- classification, analysis, and design of markets
- simulation of markets
- auction methods and auction theory
- automated negotiations
- nonlinear pricing
- continuous double auctions
- market-maker, regulation, control

**Recommendation**

None

**Annotation**

The course Price Management is offered for the first time in summer term 2016.

**Workload**

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

## M

## 5.25 Module: Emphasis in Informatics [M-WIWI-101628]

**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:** [Compulsory Elective Modules 1 \(Informatik\)](#)  
[Compulsory Elective Modules 2 \(Informatik\)](#)

**Credits**  
9

**Recurrence**  
Each term

**Duration**  
1 semester

**Level**  
4

**Version**  
9

Election block: Wahlpflichtangebot (between 1 and 3 items)			
T-WIWI-109445	<a href="#">Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services</a>	5 CR	Sunyaev
T-WIWI-109248	<a href="#">Critical Information Infrastructures</a>	5 CR	Sunyaev
T-WIWI-109246	<a href="#">Digital Health</a>	4 CR	Sunyaev
T-WIWI-109270	<a href="#">Human Factors in Security and Privacy</a>	5 CR	Volkamer
T-WIWI-102680	<a href="#">Computational Economics</a>	5 CR	Shukla
T-WIWI-102661	<a href="#">Database Systems and XML</a>	5 CR	Oberweis
T-WIWI-102668	<a href="#">Enterprise Architecture Management</a>	5 CR	Wolf
T-WIWI-106423	<a href="#">Information Service Engineering</a>	5 CR	Sack
T-WIWI-102666	<a href="#">Knowledge Discovery</a>	5 CR	Sure-Vetter
T-WIWI-102667	<a href="#">Management of IT-Projects</a>	5 CR	Schätzle
T-WIWI-106340	<a href="#">Machine Learning 1 - Basic Methods</a>	5 CR	Zöllner
T-WIWI-106341	<a href="#">Machine Learning 2 – Advanced Methods</a>	5 CR	Zöllner
T-WIWI-102697	<a href="#">Business Process Modelling</a>	5 CR	Oberweis
T-WIWI-102679	<a href="#">Nature-Inspired Optimisation Methods</a>	5 CR	Shukla
T-WIWI-109799	<a href="#">Process Mining</a>	5 CR	Oberweis
T-WIWI-102874	<a href="#">Semantic Web Technologies</a>	5 CR	Sure-Vetter
T-WIWI-105801	<a href="#">Service Oriented Computing</a>	5 CR	Sure-Vetter
T-WIWI-102895	<a href="#">Software Quality Management</a>	5 CR	Oberweis
T-WIWI-102676	<a href="#">Special Topics of Enterprise Information Systems</a>	5 CR	Oberweis
T-WIWI-102669	<a href="#">Strategic Management of Information Technology</a>	5 CR	Wolf
T-WIWI-103112	<a href="#">Web Science</a>	5 CR	Sure-Vetter
Election block: Praktikum ()			
T-WIWI-109250	<a href="#">Emerging Trends in Critical Information Infrastructures</a>	4 CR	Sunyaev
T-WIWI-108439	<a href="#">Advanced Lab Security, Usability and Society</a>	4 CR	Volkamer
T-WIWI-109786	<a href="#">Advanced Lab Security</a>	4 CR	Volkamer
T-WIWI-109271	<a href="#">Advanced Lab User Studies in Security</a>	4 CR	Volkamer
T-WIWI-109985	<a href="#">Project Lab Cognitive Automobiles and Robots</a>	4 CR	Zöllner
T-WIWI-109983	<a href="#">Project Lab Machine Learning</a>	4 CR	Zöllner
T-WIWI-109251	<a href="#">Selected Issues in Critical Information Infrastructures</a>	4 CR	Sunyaev
T-WIWI-109249	<a href="#">Sociotechnical Information Systems Development</a>	4 CR	Sunyaev
T-WIWI-103523	<a href="#">Advanced Lab Informatics</a>	4 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner

**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. 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

- has the ability to master methods and tools in a complex discipline and to demonstrate innovativeness regarding the methods used,
- knows the principles and methods in the context of their application in practice,
- is able to grasp and apply the rapid developments in the field of computer science, which are encountered in work life, quickly and correctly, based on a fundamental understanding of the concepts and methods of computer science,
- is capable of finding and defending arguments for solving problems.

**Prerequisites**

None.

**Content**

The thematic focus will be based on the choice of courses in the areas of Effiziente Algorithmen, Betriebliche Informations- und Kommunikationssysteme, Wissensmanagement, Komplexitätsmanagement and Software- und Systems Engineering.

**Annotation**

Detailed information on the recognition of examinations in the field of Informatics can be found at <http://www.aifb.kit.edu/web/Auslandsaufenthalt>.

**Workload**

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

## M

**5.26 Module: Energy and Process Technology I [M-MACH-101296]**

**Responsible:** Heiner Wirbser  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-MACH-102211	<a href="#">Energy and Process Technology I</a>	9 CR	Bauer, Schwitzke, Velji, Wirbser

**Competence Certificate**

The assessment is carried out as partial exams (according to Section 4 (2), 13 SPO) of the courses of this module, whose sum of credits must meet the 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**

In this modul students achieve a basic understanding of the technical properties of energy conversion processes and machines.

**Prerequisites**

None

**Content**

Energy and Process Technology 1:

1. thermodynamic basics and cycle processes (ITT)
2. basics of piston engines (IFKM)
3. basics of turbomachines (FSM)
4. basics of thermal turbomachines (ITS)

**Annotation**

All lectures and exams are hold in German only.



## M

**5.27 Module: Energy and Process Technology II [M-MACH-101297]**

**Responsible:** Heiner Wirbser  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-MACH-102212	<a href="#">Energy and Process Technology II</a>	9 CR	Schwitzke, Wirbser

**Competence Certificate**

The assessment is carried out as partial exams (according to Section 4 (2), 13 SPO) of the courses of this module, whose sum of credits must meet the 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**

In this modul students achieve the ability to evaluate solitary and interconnected energy systems with respect to societal and economical aspects

**Prerequisites**

None

**Content**

Energy and Process Technology 2:

1. basics in combustion and pollutant formation (ITT)
2. technical realisation and application of piston engines (IFKM) fluid flow engines (FSM) and thermal turbomachines (ITS)
3. technical aspects of energy supply systems and networks (ITS)

**Annotation**

All lectures and exams are hold in German only.

## M

**5.28 Module: Energy Economics and Energy Markets [M-WIWI-101451]**

**Responsible:** Prof. Dr. Wolf Fichtner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Mandatory			
T-WIWI-107043	<b>Liberalised Power Markets</b>	3 CR	Fichtner
Election block: Ergänzungsangebot (at least 6 credits)			
T-WIWI-102691	<b>Energy Trade and Risk Management</b>	4 CR	Cremer, Fichtner, Keles
T-WIWI-107501	<b>Energy Market Engineering</b>	4,5 CR	Weinhardt
T-WIWI-108016	<b>Simulation Game in Energy Economics</b>	3 CR	Genoese
T-WIWI-107446	<b>Quantitative Methods in Energy Economics</b>	3 CR	Keles, Plötz
T-WIWI-102712	<b>Regulation Theory and Practice</b>	4,5 CR	Mitusch

**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 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. Additional courses might be accredited upon request.

**Competence Goal**

The student

- gains detailed knowledge about the new requirements of liberalised energy markets,
- describes the planning tasks on the different energy markets,
- knows solution approaches to respective planning tasks.

**Prerequisites**

The lecture Liberalised Power Markets has to be examined.

**Content**

**Liberalised Power Markets:** The European liberalisation process, energy markets, pricing, market failure, investment incentives, market power

**Energy Trade and Risk Management:** trade centres, trade products, market mechanisms, position and risk management

**Simulation Game in Energy Economics:** Simulation of the German electricity system

**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**

From winter term 2017/2018 the course T-WIWI-102607 Energy Policy will not be offered anymore in this module.

**Workload**

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

## M

**5.29 Module: Energy Economics and Technology [M-WIWI-101452]**

**Responsible:** Prof. Dr. Wolf Fichtner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-102793	<b>Efficient Energy Systems and Electric Mobility</b>	3,5 CR	Jochem
T-WIWI-102650	<b>Energy and Environment</b>	4,5 CR	Karl
T-WIWI-102830	<b>Energy Systems Analysis</b>	3 CR	Ardone
T-WIWI-107464	<b>Smart Energy Infrastructure</b>	3 CR	Ardone, Pustisek
T-WIWI-102695	<b>Heat Economy</b>	3 CR	Fichtner

**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 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

- gains detailed knowledge about present and future energy supply technologies (focus on final energy carriers electricity and heat),
- knows the techno-economic characteristics of plants for energy provision, for energy transport as well as for energy distribution and demand,
- is able to assess the environmental impact of these technologies.

**Prerequisites**

None

**Content**

*Heat Economy:* district heating, heating technologies, reduction of heat demand, statutory provisions

*Energy Systems Analysis:* Interdependencies in energy economics, energy systems modelling approaches in energy economics

*Energy and Environment:* emission factors, emission reduction measures, environmental impact

*Efficient Energy Systems and Electric Mobility:* concepts and current trends in energy efficiency, Overview of and economical, ecological and social impacts through electric mobility

**Workload**

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

## M

**5.30 Module: Entrepreneurship (EnTechnon) [M-WIWI-101488]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Business Administration](#)  
[Compulsory Elective Modules 1 \(Betriebswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Betriebswirtschaftslehre\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	2 semester	4	6

Election block: Pflichtbestandteil (1 item)			
T-WIWI-102864	<a href="#">Entrepreneurship</a>	3 CR	Terzidis
Election block: Wahlpflichtangebot (1 item)			
T-WIWI-102865	<a href="#">Business Planning</a>	3 CR	Terzidis
T-WIWI-102866	<a href="#">Design Thinking</a>	3 CR	Terzidis
T-WIWI-102833	<a href="#">Entrepreneurial Leadership &amp; Innovation Management</a>	3 CR	Linz, Terzidis
T-WIWI-102894	<a href="#">Entrepreneurship Research</a>	3 CR	Terzidis
Election block: Ergänzungsangebot (1 item)			
T-WIWI-102612	<a href="#">Managing New Technologies</a>	3 CR	Reiß
T-WIWI-102893	<a href="#">Innovation Management: Concepts, Strategies and Methods</a>	3 CR	Weissenberger-Eibl
T-WIWI-102639	<a href="#">Business Models in the Internet: Planning and Implementation</a>	4,5 CR	Weinhardt
T-WIWI-102851	<a href="#">Developing Business Models for the Semantic Web</a>	3 CR	Studer
T-WIWI-102852	<a href="#">Case Studies Seminar: Innovation Management</a>	3 CR	Weissenberger-Eibl
T-WIWI-102853	<a href="#">Roadmapping</a>	3 CR	Koch
T-WIWI-102833	<a href="#">Entrepreneurial Leadership &amp; Innovation Management</a>	3 CR	Linz, Terzidis
T-WIWI-102865	<a href="#">Business Planning</a>	3 CR	Terzidis
T-WIWI-102866	<a href="#">Design Thinking</a>	3 CR	Terzidis
T-WIWI-102894	<a href="#">Entrepreneurship Research</a>	3 CR	Terzidis
T-WIWI-109064	<a href="#">Joint Entrepreneurship Summer School</a>	6 CR	Terzidis

**Competence Certificate**

See German version.

**Competence Goal**

See German version.

**Prerequisites**

None

**Recommendation**

None

**Workload**

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

## M

**5.31 Module: Environmental Economics [M-WIWI-101468]**

**Responsible:** Prof. Dr. Kay Mitusch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

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

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-102615	<a href="#">Environmental Economics and Sustainability</a>	5 CR	Walz
T-WIWI-102616	<a href="#">Environmental and Resource Policy</a>	4 CR	Walz
T-WIWI-102650	<a href="#">Energy and Environment</a>	4,5 CR	Karl
T-WIWI-100007	<a href="#">Transport Economics</a>	4,5 CR	Mitusch, Szimba
T-INFO-101348	<a href="#">Environmental Law</a>	3 CR	Bäcker

**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 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**

The students

- understand the treatment of non-market resources as well as future resource shortages
- are able to model markets of energy and environmental goods
- are able to assess the results of government intervention
- know legal basics and are able to evaluate conflicts with regard to legal situation

**Prerequisites**

None

**Content**

Environmental degradation and increasing resource use are global challenges, which have to be tackled on a worldwide level. The module addresses these challenges from the perspective of economics, and imparts the fundamental knowledge of environmental and sustainability economics, and environmental and resource policy to the students. Additional courses address environmental law, environmental pressure, and applications to the transport sector.

**Recommendation**

Knowledge in the area of microeconomics and of the content of the course *Economics I: Microeconomics* [2600012], respectively, is required.

**Workload**

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

## M

**5.32 Module: Experimental Economics [M-WIWI-101505]**

**Responsible:** Prof. Dr. Johannes Philipp Reiß  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

Credits	Language	Level	Version
9	Deutsch	4	5

Election block: Wahlpflichtangebot (2 items)			
T-WIWI-102862	<a href="#">Predictive Mechanism and Market Design</a>	4,5 CR	Reiß
T-WIWI-102863	<a href="#">Topics in Experimental Economics</a>	4,5 CR	Reiß
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	4,5 CR	Nieken
T-WIWI-102614	<a href="#">Experimental Economics</a>	4,5 CR	Weinhardt

**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**

Students

- are acquainted with the methods of Experimental Economics along with its strengths and weaknesses;
- understand how theory-guided research in Experimental Economics interacts with the development of theory;
- are provided with foundations in data analysis;
- design an economic experiment and analyze its outcome.

**Prerequisites**

None.

**Content**

The module Experimental Economics offers an introduction into the methods and topics of Experimental Economics. It also fosters and extends knowledge in theory-guided experimental economics and its interaction with theory development. Throughout the module, readings of selected papers are required.

**Recommendation**

Basic knowledge in mathematics, statistics, and game theory is assumed.

**Annotation**

The course "Predictive Mechanism and Market Design" is offered every second winter semester, e.g. WS2013 / 14, WS2015 / 16, ...

**Workload**

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

## M

**5.33 Module: Extracurricular Module in Engineering [M-WIWI-101404]**

**Responsible:** Prüfungsausschuss der KIT-Fakultät für Wirtschaftswissenschaften  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

<b>Credits</b> 9	<b>Recurrence</b> Once	<b>Level</b> 4	<b>Version</b> 3
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Election block: Wahlpflichtangebot (between 9 and 12 credits)			
T-WIWI-106291	<a href="#">PH APL-ING-TL01</a>	3 CR	
T-WIWI-106292	<a href="#">PH APL-ING-TL02</a>	3 CR	
T-WIWI-106293	<a href="#">PH APL-ING-TL03</a>	3 CR	
T-WIWI-106294	<a href="#">PH APL-ING-TL04 ub</a>	0 CR	
T-WIWI-106295	<a href="#">PH APL-ING-TL05 ub</a>	0 CR	
T-WIWI-106296	<a href="#">PH APL-ING-TL06 ub</a>	0 CR	
T-WIWI-108384	<a href="#">PH APL-ING-TL07</a>	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.

## M

**5.34 Module: Finance 1 [M-WIWI-101482]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** [Business Administration](#)  
[Compulsory Elective Modules 1 \(Betriebswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Betriebswirtschaftslehre\)](#)

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

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102643	<a href="#">Derivatives</a>	4,5 CR	Uhrig-Homburg
T-WIWI-102621	<a href="#">Valuation</a>	4,5 CR	Ruckes
T-WIWI-102647	<a href="#">Asset Pricing</a>	4,5 CR	Ruckes, Uhrig-Homburg

**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

- has core skills in economics and methodology in the field of finance
- assesses corporate investment projects from a financial perspective
- is able to make appropriate investment decisions on financial markets

**Prerequisites**

None

**Content**

The courses of this module equip the students with core skills in economics and methodology in the field of modern finance. Securities which are traded on financial and derivative markets are presented, and frequently applied trading strategies are discussed. A further focus of this module is on the assessment of both profits and risks in security portfolios and corporate investment projects from a financial perspective.

**Workload**

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



## M

**5.35 Module: Finance 2 [M-WIWI-101483]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102647	Asset Pricing	4,5 CR	Ruckes, Uhrig-Homburg
T-WIWI-108880	Blockchains & Cryptofinance	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-102625	Exchanges	1,5 CR	Franke
T-WIWI-102622	Corporate Financial Policy	4,5 CR	Ruckes
T-WIWI-109050	Corporate Risk Management	4,5 CR	Ruckes
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-102644	Fixed Income Securities	4,5 CR	Uhrig-Homburg
T-WIWI-102900	Financial Analysis	4,5 CR	Luedecke
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg
T-WIWI-102645	Credit Risk	4,5 CR	Uhrig-Homburg
T-WIWI-102621	Valuation	4,5 CR	Ruckes

**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 is in a position to discuss, analyze and provide answers to advanced economic and methodological issues in the field of modern finance.

**Prerequisites**

It is only possible to choose this module in combination with the module *Finance 1*. The module is passed only after the final partial exam of *Finance 1* is additionally passed.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The module **M-WIWI-101482 - Finance 1** must have been started.

**Content**

The module Finance 2 is based on the module Finance 1. The courses of this module equip the students with advanced skills in economics and methodology in the field of modern finance on a broad basis.

**Annotation**

The courses *eFinance: Information Engineering and Management for Securities Trading* [2540454] and *Financial Analysis* [2530205] can be chosen from summer term 2015 on.

**Workload**

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

## M

**5.36 Module: Finance 3 [M-WIWI-101480]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-102647	Asset Pricing	4,5 CR	Ruckes, Uhrig-Homburg
T-WIWI-108880	Blockchains & Cryptofinance	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-102625	Exchanges	1,5 CR	Franke
T-WIWI-102622	Corporate Financial Policy	4,5 CR	Ruckes
T-WIWI-109050	Corporate Risk Management	4,5 CR	Ruckes
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-102644	Fixed Income Securities	4,5 CR	Uhrig-Homburg
T-WIWI-102900	Financial Analysis	4,5 CR	Luedecke
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg
T-WIWI-102645	Credit Risk	4,5 CR	Uhrig-Homburg
T-WIWI-102621	Valuation	4,5 CR	Ruckes

**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 is in a position to discuss, analyze and provide answers to advanced economic and methodological issues in the field of modern finance.

**Prerequisites**

It is only possible to choose this module in combination with the module *Finance 1* and *Finance 2*. The module is passed only after the final partial exams of *Finance 1* and *Finance 2* are additionally passed.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The module **M-WIWI-101482 - Finance 1** must have been started.
2. The module **M-WIWI-101483 - Finance 2** must have been started.

**Content**

The courses of this module equip the students with advanced skills in economics and methodology in the field of modern finance on a broad basis.

**Workload**

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

## M

**5.37 Module: Fundamentals of Transportation [M-BGU-101064]**

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each summer term	2 semester	Deutsch/Englisch	4	3

Election block: Pflichtleistung (between 1 and 2 items as well as between 3 and 6 credits)			
T-BGU-106609	<a href="#">Characteristics of Transportation Systems</a>	3 CR	Vortisch
T-BGU-106610	<a href="#">Transportation Systems</a>	3 CR	Vortisch
Election block: Wahlpflicht (between 1 and 2 items as well as between 3 and 6 credits)			
T-BGU-106611	<a href="#">Freight Transport</a>	3 CR	Chlond
T-BGU-106301	<a href="#">Long-Distance and Air Traffic</a>	3 CR	Chlond
T-BGU-101005	<a href="#">Tendering, Planning and Financing in Public Transport</a>	3 CR	Vortisch
T-BGU-100014	<a href="#">Seminar in Transportation</a>	3 CR	Chlond, Vortisch
T-WIWI-103174	<a href="#">Seminar Mobility Services (Master)</a>	3 CR	Satzger, Stryja
T-BGU-103425	<a href="#">Mobility Services and new Forms of Mobility</a>	3 CR	Kagerbauer
T-BGU-103426	<a href="#">Strategic Transport Planning</a>	3 CR	Waßmuth
T-BGU-106608	<a href="#">Information Management for Public Mobility Services</a>	3 CR	Vortisch

**Competence Goal**

See German version.

**Prerequisites**

None

**Recommendation**

None

## M

**5.38 Module: Generation and transmission of renewable power [M-ETIT-101164]**

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

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Election block: Wahlpflichtblock (at least 9 credits)			
T-ETIT-100830	<a href="#">Power Network</a>	6 CR	Leibfried
T-ETIT-101941	<a href="#">Power Transmission and Power Network Control</a>	5 CR	Leibfried
T-ETIT-100724	<a href="#">Photovoltaic System Design</a>	3 CR	Grab
T-ETIT-101915	<a href="#">High-Voltage Test Technique</a>	4 CR	Badent

**Competence Goal**

The student

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

**Prerequisites**

None

**Content**

The module deals with wide knowledge about the electrical power engineering. This ranges from the electric power equipment networks in terms of function, structure and interpretation on the calculation of electrical power networks to special areas such as the FACTS elements or power transformers.

## M

**5.39 Module: Global Production and Logistics [M-MACH-101282]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Mandatory			
T-MACH-105158	<a href="#">Global Production and Logistics - Part 1: Global Production</a>	4 CR	Lanza
T-MACH-105159	<a href="#">Global Production and Logistics - Part 2: Global Logistics</a>	4 CR	Furmans
Election block: Globale Produktion und Logistik (Ergänzungsbereich) (1 item)			
T-MACH-102128	<a href="#">Information Systems and Supply Chain Management</a>	3 CR	Kilger
T-MACH-105188	<a href="#">Integrative Strategies in Production and Development of High Performance Cars</a>	4 CR	Schlichtenmayer
T-MACH-105783	<a href="#">Learning Factory "Global Production"</a>	4 CR	Lanza
T-MACH-105165	<a href="#">Automotive Logistics</a>	4 CR	Furmans
T-WIWI-103091	<a href="#">Production and Logistics Controlling</a>	3 CR	Rausch
T-MACH-102107	<a href="#">Quality Management</a>	4 CR	Lanza

**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 analyze the main topics of global production and logistics.
- can explain the main topics about planning and operations of global supply chains and are able to use simple models for planning.
- are capable to name the main topics about planning of global production networks.

**Prerequisites**

None

**Content**

The module Global Production and Logistics provides comprehensive and well-founded basics for the main topics of global production and logistics. The lectures aim to show opportunities and market conditions for global enterprises. Part 1 focuses on economic backgrounds, opportunities and risks of global production. Part 2 focuses on the structure of international logistics, their modeling, design and analysis. The threats in international logistics are discussed in case studies.

**Workload**

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

**Learning type**

Lectures, seminars, workshops, excursions

## M

**5.40 Module: Governance, Risk & Compliance [M-INFO-101242]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [Compulsory Elective Modules 2 \(Recht und Soziologie\)](#)

<b>Credits</b> 9	<b>Recurrence</b> Each term	<b>Duration</b> 2 semester	<b>Language</b> Deutsch	<b>Level</b> 4	<b>Version</b> 4
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<b>Election block: Governance, Risk &amp; Compliance (at least 1 item as well as at least 9 credits)</b>			
T-INFO-101316	<a href="#">Law of Contracts</a>	3 CR	Dreier
T-INFO-101288	<a href="#">Corporate Compliance</a>	3 CR	Dreier
T-INFO-108405	<a href="#">Data Protection by Design</a>	3 CR	Raabe
T-INFO-102047	<a href="#">Seminar: Governance, Risk &amp; Compliance</a>	3 CR	Dreier
T-INFO-109910	<a href="#">IT- Security Law</a>	3 CR	Raabe



## M

**5.41 Module: Growth and Agglomeration [M-WIWI-101496]**

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

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

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-109194	<a href="#">Dynamic Macroeconomics</a>	4,5 CR	Brumm
T-WIWI-102785	<a href="#">Theory of Endogenous Growth</a>	4,5 CR	Ott
T-WIWI-103107	<a href="#">Spatial Economics</a>	4,5 CR	Ott

**Competence Certificate**

The assessment is carried out as partial written exams (see the lectures descriptions).

The overall grade for the module is the average of the grades for each course weighted by the credits.

**Competence Goal**

The student

- gains deepened knowledge of micro-based general equilibrium models
- understands how based on individual optimizing decisions aggregate phenomena like economic growth or agglomeration (cities / metropolises) result
- is able to understand and evaluate the contribution of these phenomena to the development of economic trends
- can derive policy recommendations based on theory

**Prerequisites**

None

**Content**

The module includes the contents of the lectures *Endogenous Growth Theory* [2561503], *Spatial Economics* [2561260] and *International Economic Policy* [2560254]. While the first two lectures have a more formal-analytic focus, the third lecture approaches fundamental ideas and problems from the field of international economic policy from a more verbal perspective.

The common underlying principle of all three lectures in this module is that, based on different theoretical models, economic policy recommendations are derived.

**Recommendation**

Attendance of the course *Introduction Economic Policy* [2560280] is recommended.

Successful completion of the courses *Economics I: Microeconomics* and *Economics II: Macroeconomics* is required.

**Workload**

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

## M

**5.42 Module: High-Voltage Technology [M-ETIT-101163]**

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

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Duration	Level	Version
9	2 semester	4	1

Mandatory			
T-ETIT-101913	<a href="#">High-Voltage Technology I</a>	4,5 CR	Badent
T-ETIT-101914	<a href="#">High-Voltage Technology II</a>	4,5 CR	Badent

**Competence Goal**

The student

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

**Content**

The module deals with wide knowledge about the electrical power engineering. This ranges from the electric power equipment networks in terms of function, structure and interpretation on the calculation of electrical power networks to special areas such as the FACTS elements or power transformers.

## M

**5.43 Module: Industrial Production II [M-WIWI-101471]**

**Responsible:** Prof. Dr. Frank Schultmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Business Administration](#)  
[Compulsory Elective Modules 1 \(Betriebswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Betriebswirtschaftslehre\)](#)

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

Mandatory			
T-WIWI-102631	<a href="#">Planning and Management of Industrial Plants</a>	5,5 CR	Schultmann
Election block: <a href="#">Ergänzungsangebot aus dem Modul Industrielle Produktion III (at most 1 item)</a>			
T-WIWI-102763	<a href="#">Supply Chain Management with Advanced Planning Systems</a>	3,5 CR	Bosch, Göbelt
T-WIWI-102826	<a href="#">Risk Management in Industrial Supply Networks</a>	3,5 CR	Wiens
T-WIWI-102828	<a href="#">Supply Chain Management in the Automotive Industry</a>	3,5 CR	Heupel, Lang
T-WIWI-103134	<a href="#">Project Management</a>	3,5 CR	Schultmann
Election block: <a href="#">Ergänzungsangebot (at most 1 item)</a>			
T-WIWI-102634	<a href="#">Emissions into the Environment</a>	3,5 CR	Karl
T-WIWI-102882	<a href="#">International Management in Engineering and Production</a>	3,5 CR	Sasse
T-WIWI-103133	<a href="#">Life Cycle Assessment</a>	3,5 CR	Keller

**Competence Certificate**

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course *Planning and Managing of Industrial Plants* [2581952] 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 able to describe the tasks of tactical production management with special attention drawn upon industrial plants.
- Students shall understand the relevant tasks in plant management (projection, realisation and supervising tools for industrial plants).
- Students shall be able to describe the special need of a techno-economic approach to solve problems in the field of tactical production management.
- Students shall be proficient in using selected techno-economic methods like investment and cost estimates, plant layout, capacity planning, evaluation principles of production techniques, production systems as well as methods to design and optimize production systems.
- Students shall be able to evaluate techno-economical approaches in planning tactical production management with respect to their efficiency, accuracy and relevance for industrial use.

**Prerequisites**

The course *Planning and Managing of Industrial Plants* [2581952] and at least one additional activity are compulsory and must be examined.

**Content**

- Planning and Management of Industrial Plants: Basics, circulation flow starting from projecting to techno-economic evaluation, construction and operating up to plant dismantling.

**Annotation**

Apart from the core course the courses offered are recommendations and can be replaced by courses from the Module Industrial Production III.

**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

**5.44 Module: Industrial Production III [M-WIWI-101412]**

**Responsible:** Prof. Dr. Frank Schultmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Mandatory			
T-WIWI-102632	<b>Production and Logistics Management</b>	5,5 CR	Schultmann
Election block: Ergänzungsangebot aus dem Modul Industrielle Produktion II (at most 1 item)			
T-WIWI-102634	<b>Emissions into the Environment</b>	3,5 CR	Karl
T-WIWI-102882	<b>International Management in Engineering and Production</b>	3,5 CR	Sasse
T-WIWI-103133	<b>Life Cycle Assessment</b>	3,5 CR	Keller
Election block: Ergänzungsangebot (at most 1 item)			
T-WIWI-102763	<b>Supply Chain Management with Advanced Planning Systems</b>	3,5 CR	Bosch, Göbelt
T-WIWI-102826	<b>Risk Management in Industrial Supply Networks</b>	3,5 CR	Wiens
T-WIWI-102828	<b>Supply Chain Management in the Automotive Industry</b>	3,5 CR	Heupel, Lang
T-WIWI-103134	<b>Project Management</b>	3,5 CR	Schultmann

**Competence Certificate**

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course *Production and Logistics Management* [2581954] 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**

- Students describe the tasks concerning general problems of an operative production and logistics management.
- Students describe the planning tasks of supply chain management.
- Students use proficiently approaches to solve general planning problems.
- Students explain the existing interdependencies between planning tasks and applied methods.
- Students describe the main goals and set-up of software supporting tools in production and logistics management (i.e. APS, PPS-, ERP- and SCM Systems).
- Students discuss the scope of these software tools and their general disadvantages.

**Prerequisites**

The course *Production and Logistics Management* [2581954] and at least one additional activity are compulsory and must be examined.

**Content**

- Planning tasks and exemplary methods of production planning and control in supply chain management.
- Supporting software tools in production and logistics management (APS, PPS- and ERP Systems).
- Project management in the field of production and supply chain management.

**Annotation**

Apart from the core course the courses offered are recommendations and can be replaced by courses from the Module Industrial Production II.

**Workload**

The total amount of work for this module is approx. 270 hours (9 credits). The allocation is made according to the credit points of the courses of the module.

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

## M

## 5.45 Module: Informatics [M-WIWI-101472]

**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:** Informatics

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	4	10

Election block: Wahlpflichtangebot ()			
T-WIWI-109445	Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	5 CR	Sunyaev
T-WIWI-109248	Critical Information Infrastructures	5 CR	Sunyaev
T-WIWI-109246	Digital Health	4 CR	Sunyaev
T-WIWI-109270	Human Factors in Security and Privacy	5 CR	Volkamer
T-WIWI-102680	Computational Economics	5 CR	Shukla
T-WIWI-102661	Database Systems and XML	5 CR	Oberweis
T-WIWI-102668	Enterprise Architecture Management	5 CR	Wolf
T-WIWI-106423	Information Service Engineering	5 CR	Sack
T-WIWI-102666	Knowledge Discovery	5 CR	Sure-Vetter
T-WIWI-102667	Management of IT-Projects	5 CR	Schätzle
T-WIWI-106340	Machine Learning 1 - Basic Methods	5 CR	Zöllner
T-WIWI-106341	Machine Learning 2 – Advanced Methods	5 CR	Zöllner
T-WIWI-102697	Business Process Modelling	5 CR	Oberweis
T-WIWI-102679	Nature-Inspired Optimisation Methods	5 CR	Shukla
T-WIWI-109799	Process Mining	5 CR	Oberweis
T-WIWI-102874	Semantic Web Technologies	5 CR	Sure-Vetter
T-WIWI-105801	Service Oriented Computing	5 CR	Sure-Vetter
T-WIWI-102895	Software Quality Management	5 CR	Oberweis
T-WIWI-102676	Special Topics of Enterprise Information Systems	5 CR	Oberweis
T-WIWI-102669	Strategic Management of Information Technology	5 CR	Wolf
T-WIWI-103112	Web Science	5 CR	Sure-Vetter
Election block: Praktikum (between 0 and 1 items)			
T-WIWI-109250	Emerging Trends in Critical Information Infrastructures	4 CR	Sunyaev
T-WIWI-108439	Advanced Lab Security, Usability and Society	4 CR	Volkamer
T-WIWI-109786	Advanced Lab Security	4 CR	Volkamer
T-WIWI-109271	Advanced Lab User Studies in Security	4 CR	Volkamer
T-WIWI-109985	Project Lab Cognitive Automobiles and Robots	4 CR	Zöllner
T-WIWI-109983	Project Lab Machine Learning	4 CR	Zöllner
T-WIWI-109251	Selected Issues in Critical Information Infrastructures	4 CR	Sunyaev
T-WIWI-109249	Sociotechnical Information Systems Development	4 CR	Sunyaev
T-WIWI-103523	Advanced Lab Informatics	4 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner

**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. 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.

Please note the following information about the module component exams of Prof. Dr. H. Schmeck:

The examinations in Algorithms for Internet Applications [T-WIWI-102658], Efficient Algorithms [T-WIWI-102655], Organic Computing [T-WIWI-102659] and Smart Energy Distribution [T-WIWI-102845] are offered latest until summer term 2017 (repeaters only).

**Competence Goal**

The student

- has the ability to master methods and tools in a complex discipline and to demonstrate innovativeness regarding the methods used,
- knows the principles and methods in the context of their application in practice,
- is able to grasp and apply the rapid developments in the field of computer science, which are encountered in work life, quickly and correctly, based on a fundamental understanding of the concepts and methods of computer science,
- is capable of finding and defending arguments for solving problems.

**Prerequisites**

It is only allowed to choose one lab.

**Content**

The thematic focus will be based on the choice of courses in the areas of Effiziente Algorithmen, Betriebliche Informations- und Kommunikationssysteme, Wissensmanagement, Komplexitätsmanagement and Software- und Systems Engineering.

**Annotation**

Detailed information on the recognition of examinations in the field of Informatics can be found at <http://www.aifb.kit.edu/web/Auslandsaufenthalt>.

**Workload**

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



## M

**5.46 Module: Information Engineering [M-WIWI-101411]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Mandatory			
T-WIWI-109918	<b>Foundations of Information Systems</b>	5 CR	Mädche, Weinhardt
Election block: Ergänzungsangebot (between 4 and 4,5 credits)			
T-WIWI-107501	<b>Energy Market Engineering</b>	4,5 CR	Weinhardt
T-WIWI-102640	<b>Market Engineering: Information in Institutions</b>	4,5 CR	Weinhardt
T-WIWI-109940	<b>Special Topics in Information Systems</b>	4,5 CR	Weinhardt

**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

- understands and analyzes the central role of information as an economic good, a production factor, and a competitive factor,
- identifies, evaluates, prices, and markets information goods,
- analyze and evaluate existing markets regarding the missing incentives and the optimal solution of a given market mechanism, respectively,
- develop solutions in teams.

**Prerequisites**

The course *Principles of Information Engineering and Management* [2540450] is compulsory and must be examined.

**Content**

In the lecture *Principles of Information Engineering and Management*, a clear distinction of information as a production, competitive, and economic good is introduced. The central role of information is explained through the concept of the "information lifecycle". The single phases from existence/generation through allocation and evaluation until the distribution and usage of information are analyzed from the business administration perspective and the microeconomic perspective.

In a second course the student can deepen his knowledge on the one hand on the design and operation of markets and on the other hand on the impact of digital goods in network industries regarding the pricing policies, business strategies and regulation issues. If chosen, the course *Special Topics in Information Engineering & Management* additionally provides an opportunity of practical research in the aforementioned range of subjects.

**Recommendation**

None

**Annotation**

All practical Seminars offered at the IM can be chosen for *Special Topics in Information Engineering & Management*. Please update yourself on [www.iism.kit.edu/im/lehre](http://www.iism.kit.edu/im/lehre).

**Workload**

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

## M

**5.47 Module: Information Systems in Organizations [M-WIWI-104068]**

**Responsible:** Prof. Dr. Alexander Mädche  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-105777	<b>Business Intelligence Systems</b>	4,5 CR	Mädche, Nadj, Toreini
T-WIWI-106201	<b>Digital Transformation of Organizations</b>	4,5 CR	Mädche
T-WIWI-108461	<b>Interactive Information Systems</b>	4,5 CR	Mädche, Morana
T-WIWI-108437	<b>Practical Seminar: Information Systems and Service Design</b>	4,5 CR	Mädche

**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

- has a comprehensive understanding of conceptual and theoretical foundations of information systems in organizations
- is aware of the most important classes of information systems used in organizations: process-centric, information-centric and people-centric information systems.
- knows the most important activities required to execute in the pre-implementation, implementation and post-implementation phase of information systems in organizations in order to create business value
- has a deep understanding of key capabilities of business intelligence systems and/or interactive information systems used in organizations

**Prerequisites**

None

**Content**

During the last decades we witnessed a growing importance of Information Technology (IT) in the business world along with faster and faster innovation cycles. IT has become core for businesses from an operational company-internal and external customer perspective. Today, companies have to rethink their way of doing business, from an internal as well as an external digitalization perspective.

This module focuses on the internal digitalization perspective. The contents of the module abstract from the technical implementation details and focus on foundational concepts, theories, practices and methods for information systems in organizations. The students get the necessary knowledge to guide the successful digitalization of organizations. Each lecture in the module is accompanied with a capstone project that is carried out in cooperation with an industry partner.

**Annotation**

New module starting summer term 2018.

**Workload**

The total workload for this module is approximately 270 hours.

## M

**5.48 Module: Innovation and Growth [M-WIWI-101478]**

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

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

Election block: Wahlpflichtangebot (between 9 and 10 credits)			
T-WIWI-109194	<a href="#">Dynamic Macroeconomics</a>	4,5 CR	Brumm
T-WIWI-102785	<a href="#">Theory of Endogenous Growth</a>	4,5 CR	Ott
T-WIWI-102840	<a href="#">Innovationtheory and -Policy</a>	4,5 CR	Ott

**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

- know the basic techniques for analyzing static and dynamic optimization models that are applied in the context of micro-and macroeconomic theories
- understand the important role of innovation to the overall economic growth and welfare
- identify the importance of alternative incentive mechanisms for the emergence and dissemination of innovations
- explain, in which situations market interventions by the state, for example taxes and subsidies, can be legitimized, and evaluate them in the light of economic welfare

**Prerequisites**

None

**Content**

The module includes courses that deal with issues of innovation and growth in the context of micro-and macroeconomic theories. The dynamic analysis makes it possible to analyze the consequences of individual decisions over time, and sheds light on the tension between static and dynamic efficiency in particular. In this context is also analyzed, which policy is appropriate to carry out corrective interventions in the market and thus increase welfare in the presence of market failure.

**Recommendation**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

**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

**5.49 Module: Innovation Economics [M-WIWI-101514]**

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

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

Election block: Wahlpflichtangebot (between 9 and 10 credits)			
T-WIWI-102840	Innovationtheory and -Policy	4,5 CR	Ott
T-WIWI-102906	Methods in Economic Dynamics	1,5 CR	Ott
T-WIWI-109864	Product and Innovation Management	3 CR	Klarmann
T-WIWI-102789	Seminar in Economic Policy	3 CR	Ott

**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 seperately.

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

**Competence Goal**

Students shall be given the ability to

- understand the important role of innovation for economic growth and welfare
- understand the relevance of alternative incentive mechanisms for the emergence and dissemination of innovations
- know basic terms of product and innovation concepts
- know fundamental concepts of innovation management
- work with fundamental theoretical innovation models and to implement them in appropriate computer algebra systems
- query appropriate data sources and to analyse and visualise them using statistical methods

**Prerequisites**

None

**Content**

The module provides students with knowledge about implications of technological and organizational changes.

Addressed economic issues are incentives for developing innovations, diffusion processes, and associated effects. In this context the module analyses appropriate policies in the presence of market failures to take corrective action on the market process and thus to increase the dynamic efficiency of economies.

Furthermore, the module offers the possibility to learn about different aspects of theoretical modelling of innovation-based growth as a part of the seminar and the methods-workshop. This includes the implementation of formal models in computer algebra systems as well as recording, processing and econometric analysis of related data from relational databases (concerning for example patents or trademarks). Moreover, methods of network theory are applied.

Finally, the module emphasises the business perspective: Issues of all stages of innovation processes will be discussed, from innovation strategies up to the market commercialisation.

**Recommendation**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012] and Economics II [2600014]. Further, it is assumed that students have interest in using quantitative-mathematical methods.

**Workload**

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

## M

**5.50 Module: Innovation Management [M-WIWI-101507]**

**Responsible:** Prof. Dr. Marion Weissenberger-Eibl  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	4	5

Mandatory			
T-WIWI-102893	<b>Innovation Management: Concepts, Strategies and Methods</b>	3 CR	Weissenberger-Eibl
Election block: Wahlpflichtangebot (1 item)			
T-WIWI-102873	<b>Current Issues in Innovation Management</b>	3 CR	Weissenberger-Eibl
T-WIWI-102852	<b>Case Studies Seminar: Innovation Management</b>	3 CR	Weissenberger-Eibl
T-WIWI-108774	<b>Analyzing and Evaluating Innovation Processes</b>	3 CR	Weissenberger-Eibl
T-WIWI-102853	<b>Roadmapping</b>	3 CR	Koch
T-WIWI-109932	<b>A closer look at Social Innovation</b>	3 CR	Beyer, Weissenberger-Eibl
T-WIWI-102858	<b>Technology Assessment</b>	3 CR	Koch
T-WIWI-102854	<b>Technologies for Innovation Management</b>	3 CR	Koch
Election block: Ergänzungsangebot (1 item)			
T-WIWI-102873	<b>Current Issues in Innovation Management</b>	3 CR	Weissenberger-Eibl
T-WIWI-102866	<b>Design Thinking</b>	3 CR	Terzidis
T-WIWI-108875	<b>Digital Transformation and Business Models</b>	3 CR	Koch
T-WIWI-102833	<b>Entrepreneurial Leadership &amp; Innovation Management</b>	3 CR	Linz, Terzidis
T-WIWI-102864	<b>Entrepreneurship</b>	3 CR	Terzidis
T-WIWI-102852	<b>Case Studies Seminar: Innovation Management</b>	3 CR	Weissenberger-Eibl
T-WIWI-108774	<b>Analyzing and Evaluating Innovation Processes</b>	3 CR	Weissenberger-Eibl
T-WIWI-102853	<b>Roadmapping</b>	3 CR	Koch
T-WIWI-102854	<b>Technologies for Innovation Management</b>	3 CR	Koch
T-WIWI-102858	<b>Technology Assessment</b>	3 CR	Koch

**Competence Certificate**

See German version.

**Competence Goal**

Students develop a comprehensive understanding of the innovation process and its conditionality. There is an additional focus on the concepts and processes which are of particular relevance with regard to shaping the entire process. Various strategies and methods are then taught based on this.

After completing the module, students should have developed a systemic understanding of the innovation process and be able to shape this by developing and applying suitable methods.

**Prerequisites**

The lecture "Innovation Management: Concepts, Strategies and Methods" and one of the seminars of the chair for Innovation and Technology Management are compulsory. The third course can be chosen from the courses of the module.

**Content**

The Innovation Management: Concepts, Strategies and Methods lecture course teaches concepts, strategies and methods which help students to form a systemic understanding of the innovation process and how to shape it. Building on this holistic understanding, the seminar courses then go into the subjects in greater depth and address specific processes and methods which are central to innovation management.

**Recommendation**

None

**Workload**

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

## M

**5.51 Module: Integrated Production Planning [M-MACH-101272]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-MACH-109054	<a href="#">Integrated Production Planning in the Age of Industry 4.0</a>	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**

none

**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

**5.52 Module: Intellectual Property Law [M-INFO-101215]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [Compulsory Elective Modules 2 \(Recht und Soziologie\)](#)

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

Election block: Recht des Geistigen Eigentums (at least 1 item as well as at least 9 credits)			
T-INFO-102036	<a href="#">Computer Contract Law</a>	3 CR	Dreier
T-INFO-101308	<a href="#">Copyright</a>	3 CR	Dreier
T-INFO-101310	<a href="#">Patent Law</a>	3 CR	Dreier
T-INFO-101313	<a href="#">Trademark and Unfair Competition Law</a>	3 CR	Matz
T-INFO-101307	<a href="#">Internet Law</a>	3 CR	Dreier
T-INFO-108462	<a href="#">Selected legal issues of Internet law</a>	3 CR	Dreier

**Prerequisites**

None



## M

**5.53 Module: Intelligent Risk and Investment Advisory [M-WIWI-103247]****Responsible:** Prof. Dr Maxim Ulrich**Organisation:** KIT Department of Economics and Management**Part of:** **Business Administration**

Compulsory Elective Modules 1 (Betriebswirtschaftslehre)

Compulsory Elective Modules 2 (Betriebswirtschaftslehre)

Credits	Language	Level	Version
9	Englisch	4	3

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-106442	<b>Building Intelligent and Robo-Advised Portfolios</b>	9 CR	Ulrich
T-WIWI-107032	<b>Computational Risk and Asset Management I</b>	4,5 CR	Ulrich
T-WIWI-106494	<b>Computational Risk and Asset Management II</b>	4,5 CR	Ulrich
T-WIWI-106193	<b>Engineering FinTech Solutions</b>	4,5 CR	Ulrich

**Competence Certificate**

In winter semester 2018/2019 no exam for the courses "Building Intelligent and Robo-Advised Portfolios" and "Computational Risk and Asset Management I / II" will be offered.

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**

Students obtain a practical and yet research oriented introduction into the field of quantitative and computational risk and investment management. Students learn how to use concepts from computer science, statistics, OR and economics to build intelligent risk and investment systems. Based on personal preferences, students can specialize within the module on either more practical programming and statistical learning points or more on the economic and mathematical insights and intuition.

After successful completion of the module, students know the industry intuition as well as state-of-the-art academic 'financial engineering' methods necessary to successfully contribute to sustainable and value oriented innovations in the field of intelligent risk and investment advisory.

**Prerequisites**

None.

**Content**

The lecture "Building Intelligent and Robo-Advised Portfolios" offers an application-oriented introduction to intelligent and automated portfolio management.

The lectures "Computational Risk and Asset Management" offer an application-oriented introduction to financial market modeling with modern statistical concepts. The acquired knowledge is helpful for quantitative industry internships and jobs, as well as for further quantitative and/or data analysis oriented lectures/seminars/final papers at FBV and other KIT institutes. In terms of content, the student learns to analyse fundamental problems of financial market modelling, such as the prediction of returns, risk distributions and risk premiums, using probabilistic concepts and to solve them independently using modern software. The intuitive and at the same time rigorous interaction of statistical modelling on the one hand and the application to new financial market problems on the other hand characterizes the teaching philosophy of the course. All necessary statistical and financial specific concepts are discussed in the lectures. The students are given numerous possibilities to solve current financial problems independently with modern software. The learning of the programming language Python is part of the teaching program.

Within the scope of the lecture "Engineering FinTech Solutions" students get the opportunity to solve a subproblem from a larger FinTech problem independently and at the same time with close mentoring - by employee and professor of the C-RAM research group. The student is introduced to the problem to be solved on the basis of his very own level of knowledge and equipped with the necessary aids. Students are given the opportunity to combine new research approaches from the field of risk and investment management with modern information technology in order to independently master a step towards prototype development. Depending on the topic, students work alone or in teams. As part of the close mentoring approach, teams will meet weekly to discuss their progress and open questions with course students and the professor.

**Recommendation**

None

**Annotation**

See respective lecture

**Workload**

The total workload for this module is approximately 270 hours. For further information, see respective lecture.

## M

**5.54 Module: Introduction to Logistics [M-MACH-101263]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Pflichtblock (between 1 and 2 items as well as 6 credits)			
T-MACH-102151	<a href="#">Material Flow in Logistic Systems</a>	6 CR	Furmans
T-MACH-102163	<a href="#">Basics of Technical Logistics</a>	6 CR	Mittwollen, Oellerich
Election block: Einführung in die Logistik (Ergänzungsbereich) (1 item)			
T-MACH-102128	<a href="#">Information Systems and Supply Chain Management</a>	3 CR	Kilger
T-MACH-105151	<a href="#">Energy Efficient Intralogistic Systems</a>	4 CR	Braun, Schönung
T-MACH-105165	<a href="#">Automotive Logistics</a>	4 CR	Furmans
T-MACH-105175	<a href="#">Airport Logistics</a>	3 CR	Richter
T-MACH-105187	<a href="#">IT-Fundamentals of Logistics</a>	3 CR	Thomas
T-MACH-105174	<a href="#">Warehousing and Distribution Systems</a>	3 CR	Furmans
T-MACH-105171	<a href="#">Safety Engineering</a>	4 CR	Kany
T-WIWI-103091	<a href="#">Production and Logistics Controlling</a>	3 CR	Rausch
T-MACH-102159	<a href="#">Elements and Systems of Technical Logistics</a>	4 CR	Fischer, Mittwollen
T-MACH-108946	<a href="#">Elements and Systems of Technical Logistics - Project</a>	2 CR	Fischer, 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 an overview of different logistic questions in practice,
- is able to model logistic systems with adequate accuracy by using simple models,
- is able to handle analytical methods for a performance evaluation of logistic systems,
- is able to identify cause and effects within logistic systems.

**Prerequisites**

none

**Modeled Conditions**

You have to fulfill one of 2 conditions:

1. The module [M-MACH-101277 - Material Flow in Logistic Systems](#) must not have been started.
2. The module [M-MACH-101279 - Technical Logistics](#) must not have been started.

**Content**

The module *Introduction to Logistics* provides well-founded knowledge in main questions of logistics. In this module, focuses on the acquisition of theoretical basics linked with exemplary practice questions are laid. To gain a deeper understanding, the course is accompanied by exercises and further improved by case studies.

**Workload**

270 hours

## M

**5.55 Module: Lean Management in Construction [M-BGU-101884]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-BGU-108000	<a href="#">Lean Construction</a>	4,5 CR	Haghsheno
T-BGU-101007	<a href="#">Project Paper Lean Construction</a>	1,5 CR	Haghsheno
Election block: Wahlpflicht (between 1 and 2 items as well as between 3 and 4,5 credits)			
T-BGU-103430	<a href="#">Turnkey Construction I - Processes and Methods</a>	1,5 CR	Haghsheno
T-BGU-103431	<a href="#">Turnkey Construction II - Trades and Technology</a>	3 CR	Haghsheno
T-BGU-103427	<a href="#">Site Management</a>	1,5 CR	Haghsheno
T-BGU-103429	<a href="#">Building Laws</a>	3 CR	Haghsheno
T-BGU-103432	<a href="#">Project Management in Construction and Real Estate Industry I</a>	3 CR	Haghsheno
T-BGU-103433	<a href="#">Project Management in Construction and Real Estate Industry II</a>	3 CR	Haghsheno

**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.

The exam must be repeated at the latest 2 semesters after the first try. The exam will be based on the content of the latest lecture.

The exam of the course Lean Construction consists of a preparatory and oral assessment. The preparatory assessment is a group work and consists of an assignment with presentation. The preparatory assessment is precondition to attend the oral examination (30 min) of the course Lean Construction. The grade of the exam Lean Construction is defined by weighted average of grades for oral examination (75 %) and preparatory assignment (25 %).

Examination of courses Projektmanagement in der Bau- und Immobilienwirtschaft I, Projektmanagement in der Bau- und Immobilienwirtschaft II, and Baurecht are carried out written. Combinations of courses Schlüsselfertiges Bauen I, Schlüsselfertiges Bauen II, Bauleitung, and Nachtragsmanagement are examined orally.

**Competence Goal**

see German version

**Module grade calculation**

grade of the module is CP weighted average of grades of the partial exams

**Prerequisites**

The course Lean Construction is compulsory and must be examined.

**Content**

see German version

**Recommendation**

It is recommend to take the module Fundamentals of construction [W3INGBGU3] from the Bachelor's degree program.

**Annotation**

none

**Workload**

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

**Literature**

Gehbauer, F. (2013) Lean Management Im Bauwesen. Skript des Instituts für Technologie und Management im Baubetrieb, Karlsruher Institut für Technologie (KIT).

Liker, J. & Meier, D. (2007) Praxisbuch, der Toyota Weg: für jedes Unternehmen. Finanzbuch Verlag.

Rother, M., Shook, J., & Wiegand, B. (2006). Sehen lernen: mit Wertstromdesign die Wertschöpfung erhöhen und Verschwendung beseitigen. Lean Management Institut.

## M

**5.56 Module: Logistics in Value Chain Networks [M-MACH-101280]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	3

Election block: Logistik in Wertschöpfungsnetzwerken (Kernbereich) (1 item as well as at least 6 credits)			
T-MACH-105181	<a href="#">Supply Chain Management</a>	6 CR	Alicke
T-MACH-102089	<a href="#">Logistics - Organisation, Design and Control of Logistic Systems</a>	6 CR	Furmans
Election block: Logistik in Wertschöpfungsnetzwerken (Ergänzungsbereich) (1 item as well as at least 3 credits)			
T-MACH-105174	<a href="#">Warehousing and Distribution Systems</a>	3 CR	Furmans
T-MACH-105175	<a href="#">Airport Logistics</a>	3 CR	Richter
T-MACH-105165	<a href="#">Automotive Logistics</a>	4 CR	Furmans
T-MACH-102128	<a href="#">Information Systems and Supply Chain Management</a>	3 CR	Kilger
T-WIWI-103091	<a href="#">Production and Logistics Controlling</a>	3 CR	Rausch

**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

- is able to plan logistic systems and evaluate their performance,
- can use approaches of Supply Chain Management within the operational practice,
- identifies, analyses and evaluates risks within logistic systems.

**Prerequisites**

none

**Modeled Conditions**

You have to fulfill one of 2 conditions:

1. The module [M-MACH-101282 - Global Production and Logistics](#) must have been started.
2. The course [T-MACH-102151 - Material Flow in Logistic Systems](#) must have been started.

**Content**

The module *Logistics in value chain networks* provides basics for the main topics of logistics. Within the lecture basic methods for planning and running logistic systems are introduced. Furthermore special issues like supply chain management and risks in logistic systems are focused. To gain a deeper understanding, the course is accompanied by exercises.

**Workload**

270 hours

## M

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

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-MACH-102158	<a href="#">Machine Tools and Industrial Handling</a>	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**

None

**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

**5.58 Module: Major Field: Integrated Product Development [M-MACH-102626]**

**Responsible:** Prof. Dr.-Ing. Albert Albers  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Recurrence	Language	Level	Version
16	Once	Deutsch	4	1

Mandatory			
T-MACH-105401	<a href="#">Integrated Product Development</a>	16 CR	Albers, Albers Assistenten

**Competence Certificate**

oral examination (60 minutes)

**Competence Goal**

By working practically in experience-based learning arrangements with industrial development tasks, graduates are able to succeed in new and unknown situations when developing innovative products by using methodological and systematic approaches. They can apply and adapt strategies of development and innovation management, technical system analysis and team leadership to the situation. As a result, they are able to foster the development of innovative products in industrial development teams in prominent positions, taking into account social, economic and ethical aspects.

**Prerequisites**

None

**Content**

Organizational integration: integrated product development model, core team management and simultaneous engineering, informational integration: innovation management, cost management, quality management and knowledge management

Personal integration: team development and leadership

Guest lectures from the industry

**Annotation**

The participation in "Integrated Product Development" requires the concurrent participation in lectures (2145156), tutorials (2145157) and project work (2145300).

Due to organizational reasons, the number of participants is limited. Thus a selection has to be made. For registration to the selection process a standard form has to be used, that can be downloaded from IPEK homepage from april to july. The selection itself is made by Prof. Albers in personal interviews.

**Workload**

The work load is about 480 hours, corresponding to 16 credit points.

**Learning type**

lecture

tutorial

product development project



## M

**5.59 Module: Management Accounting [M-WIWI-101498]**

**Responsible:** Prof. Dr. Marcus Wouters  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Business Administration](#)  
[Compulsory Elective Modules 1 \(Betriebswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Betriebswirtschaftslehre\)](#)

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

Mandatory			
T-WIWI-102800	<a href="#">Management Accounting 1</a>	4,5 CR	Wouters
T-WIWI-102801	<a href="#">Management Accounting 2</a>	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**

None

**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

**5.60 Module: Manufacturing Technology [M-MACH-101276]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-MACH-102105	<a href="#">Manufacturing Technology</a>	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**

None

**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

**5.61 Module: Market Engineering [M-WIWI-101446]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Mandatory			
T-WIWI-102640	<b>Market Engineering: Information in Institutions</b>	4,5 CR	Weinhardt
Election block: Ergänzungsangebot (4,5 credits)			
T-WIWI-102613	<b>Auction Theory</b>	4,5 CR	Ehrhart
T-WIWI-108880	<b>Blockchains &amp; Cryptofinance</b>	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-109941	<b>eFinance: Information Systems for Securities Trading</b>	4,5 CR	Weinhardt
T-WIWI-107501	<b>Energy Market Engineering</b>	4,5 CR	Weinhardt
T-WIWI-107503	<b>Energy Networks and Regulation</b>	4,5 CR	Weinhardt
T-WIWI-102614	<b>Experimental Economics</b>	4,5 CR	Weinhardt

**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

- know the design criterias of market mechanisms and the systematic approach to create new markets,
- understand the basics of the mechanism design and auction theory,
- analyze and evaluate existing markets regarding the missing incentives and the optimal solution of a given market mechanism, respectively,
- develop solutions in teams.

**Prerequisites**

The course *Market Engineering: Information in Institutions* [2540460] is compulsory and must be examined.

**Content**

This module explains the dependencies between the design von markets and their success. Markets are complex interaction of different institution and participants in a market behave strategically according to the market rules. The development and the design of markets or market mechanisms has a strong influence on the behavior of the participants. A systematic approach and a thorough analysis of existing markets is inevitable to design, create and operate a market place successfully. the approaches for a systematic analysis are explained in the mandatory course *Market Engineering* [2540460] by discussing theories about mechanism design and institutional economics. The student can deepen his knowledge about markets in a second course.

**Recommendation**

None

**Annotation**

The course "Computational Economics" [2590458] will not be offered any more in this module from winter term 2015/2016 on. The examination will be offered latest until summer term 2016 (repeaters only).

**Workload**

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

## M

**5.62 Module: Marketing Management [M-WIWI-101490]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Recurrence	Duration	Level	Version
9	Each summer term	1 semester	4	11

Election block: Wahlpflichtangebot (at least 1 item)			
T-WIWI-107720	Market Research	4,5 CR	Klarmann
T-WIWI-102883	Pricing	4,5 CR	Feurer
T-WIWI-109864	Product and Innovation Management	3 CR	Klarmann
Election block: Ergänzungsangebot (at most 1 item)			
T-WIWI-106137	Country Manager Simulation	1,5 CR	Feurer
T-WIWI-102835	Marketing Strategy Business Game	1,5 CR	Klarmann

**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. For passing the module exam in every singled partial exam the respective minimum requirements has to be achieved.

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**

Students

- have an advanced knowledge about central marketing contents
- have a fundamental understanding of the marketing instruments
- know and understand several strategic concepts and how to implement them
- are able to implement their extensive marketing knowledge in a practical context
- know several qualitative and quantitative approaches to prepare decisions in Marketing
- have the theoretical knowledge to write a master thesis in Marketing
- have the theoretical knowledge to work in/together with the Marketing department

**Prerequisites**

None

**Content**

The aim of this module is to deepen central marketing contents in different areas. Therefore the students can choose between the following marketing courses:

- Product and Innovation Marketing
- Market Research – this course has to be completed successfully by students interested in seminar or master thesis positions at the chair of marketing
- Marketing Strategy Business Game
- Strategic Brand Management

**Annotation**

Please note that only one of the listed 1,5-ECTS courses can be chosen in the Marketing Management module.

**Workload**

The total workload for this module is approximately 270 hours.

## M

**5.63 Module: Material Flow in Logistic Systems [M-MACH-101277]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Mandatory			
T-MACH-102151	<a href="#">Material Flow in Logistic Systems</a>	6 CR	Furmans
Election block: Materialfluss in Logistiksystemen (Ergänzungsbereich) (1 item as well as at least 3 credits)			
T-MACH-105174	<a href="#">Warehousing and Distribution Systems</a>	3 CR	Furmans
T-MACH-105175	<a href="#">Airport Logistics</a>	3 CR	Richter
T-MACH-105165	<a href="#">Automotive Logistics</a>	4 CR	Furmans
T-WIWI-103091	<a href="#">Production and Logistics Controlling</a>	3 CR	Rausch

**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

- acquires comprehensive and well-founded knowledge on the main topics of logistics, an overview of different logistic questions in practice and knows the functionality of material handling systems,
- is able to illustrate logistic systems with adequate accuracy by using simple models,
- is able to realize coherences within logistic systems,
- is able to evaluate logistic systems by using the learnt methods.

**Prerequisites**

none

**Content**

The module *Material Flow in Logistic Systems* provides comprehensive and well-founded basics for the main topics of logistics. Within the lectures, the interaction between several components of logistic systems will be shown. The module focuses on technical characteristics of material handling systems as well as on methods for illustrating and evaluating logistics systems. To gain a deeper understanding, the course is accompanied by exercises and case studies.

**Workload**

270 hours

**Learning type**

Lectures, tutorials.

## M

**5.64 Module: Material Flow in Networked Logistic Systems [M-MACH-101278]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Level	Version
9	Once	1 semester	4	2

Mandatory			
T-MACH-105189	<a href="#">Mathematical Models and Methods for Production Systems</a>	6 CR	Furmans, Rimmele
Election block: Materialfluss in vernetzten Logistiksystemen (at least 3 credits)			
T-MACH-105174	<a href="#">Warehousing and Distribution Systems</a>	3 CR	Furmans
T-MACH-105175	<a href="#">Airport Logistics</a>	3 CR	Richter
T-MACH-105165	<a href="#">Automotive Logistics</a>	4 CR	Furmans
T-WIWI-103091	<a href="#">Production and Logistics Controlling</a>	3 CR	Rausch

**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 in-depth knowledge on the main topics of logistics, gets an overview of different logistic questions in practice,
- is able to evaluate logistic systems by using the learnt methods,
- is able to analyze and explain the phenomena of industrial material and value streams.

**Prerequisites**

The course "*Mathematical models and methods for Production Systems*" [T-MACH-102151] is compulsory and must be examined.

In combination with this module, the course "Material Flow in Logistics Systems" [T-MACH-102151] must be completed.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-MACH-102151 - Material Flow in Logistic Systems](#) must have been started.

**Content**

The module *Material Flow in networked Logistic Systems* provides in-depth basics for the main topics of logistics and industrial material and value streams. The obligatory lecture focuses on queuing methods to model production systems. To gain a deeper understanding, the course is accompanied by exercises.

**Recommendation**

It is strongly recommended to successfully complete the course "Material Flow in Logistics Systems" [T-MACH-102151] before starting the module.

**Workload**

Regular attendance: 270 hours (9 credits). Lectures with 180 hours attendance 6 credits. Lectures with 120 hours 4 credits.

**Learning type**

Lecture, tutorial.

## M

**5.65 Module: Mathematical Programming [M-WIWI-101473]**

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Operations Research](#)  
[Compulsory Elective Modules 1 \(Operations Research\)](#)  
[Compulsory Elective Modules 2 \(Operations Research\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	4	5

Election block: Wahlpflichtangebot (at most 2 items)			
T-WIWI-102719	<a href="#">Mixed Integer Programming I</a>	4,5 CR	Stein
T-WIWI-102726	<a href="#">Global Optimization I</a>	4,5 CR	Stein
T-WIWI-103638	<a href="#">Global Optimization I and II</a>	9 CR	Stein
T-WIWI-102856	<a href="#">Convex Analysis</a>	4,5 CR	Stein
T-WIWI-102724	<a href="#">Nonlinear Optimization I</a>	4,5 CR	Stein
T-WIWI-103637	<a href="#">Nonlinear Optimization I and II</a>	9 CR	Stein
T-WIWI-102855	<a href="#">Parametric Optimization</a>	4,5 CR	Stein
Election block: Ergänzungsangebot (at most 2 items)			
T-WIWI-106548	<a href="#">Advanced Stochastic Optimization</a>	4,5 CR	Rebennack
T-WIWI-102720	<a href="#">Mixed Integer Programming II</a>	4,5 CR	Stein
T-WIWI-102727	<a href="#">Global Optimization II</a>	4,5 CR	Stein
T-WIWI-102723	<a href="#">Graph Theory and Advanced Location Models</a>	4,5 CR	Nickel
T-WIWI-106549	<a href="#">Large-scale Optimization</a>	4,5 CR	Rebennack
T-WIWI-103124	<a href="#">Multivariate Statistical Methods</a>	4,5 CR	Grothe
T-WIWI-102725	<a href="#">Nonlinear Optimization II</a>	4,5 CR	Stein
T-WIWI-102715	<a href="#">Operations Research in Supply Chain Management</a>	4,5 CR	Nickel

**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

- names and describes basic notions for advanced optimization methods, in particular from continuous and mixed integer programming,
- 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,
- identifies drawbacks of the solution methods and, if necessary, is able to make suggestions to adapt them to practical problems.

**Prerequisites**

At least one of the courses "Mixed Integer Programming I", "Parametric Optimization", "Convex Analysis", "Nonlinear Optimization I" and "Global Optimization I" has to be taken.

Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

**Content**

The modul focuses on theoretical foundations as well as solution algorithms for optimization problems with continuous and mixed integer decision variables.



**Annotation**

The lectures are partly offered irregularly. The curriculum of the next three years is available online ([www.ior.kit.edu](http://www.ior.kit.edu)).

For the lectures of Prof. Stein a grade of 30 % of the exercise course has to be fulfilled. The description of the particular lectures is more detailed.

**Workload**

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

## M

**5.66 Module: Microeconomic Theory [M-WIWI-101500]**

**Responsible:** Prof. Dr. Clemens Puppe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

Credits	Language	Level	Version
9	Deutsch	4	3

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-102609	<a href="#">Advanced Topics in Economic Theory</a>	4,5 CR	Mitusch
T-WIWI-102861	<a href="#">Advanced Game Theory</a>	4,5 CR	Ehrhart, Puppe, Reiß
T-WIWI-102859	<a href="#">Social Choice Theory</a>	4,5 CR	Puppe
T-WIWI-102613	<a href="#">Auction Theory</a>	4,5 CR	Ehrhart
T-WIWI-105781	<a href="#">Incentives in Organizations</a>	4,5 CR	Nieken

**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 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 able to model practical microeconomic problems mathematically and to analyze them with respect to positive and normative questions,
- understand individual incentives and social outcomes of different institutional designs.

An example of a positive question is: which regulation policy results in which firm decisions under imperfect competition?  
 An example of a normative question is: which voting rule has appealing properties?

**Prerequisites**

None

**Content**

The student should gain an understanding of advanced topics in economic theory, game theory and welfare economics. Core topics are, among others, strategic interactions in markets, cooperative and non-cooperative bargaining (Advanced Game Theory), allocation under asymmetric information and general equilibrium over time (Advanced Topics in Economic Theory), voting and the aggregation of preferences and judgements (Social Choice Theory).

**Workload**

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

## M

**5.67 Module: Microfabrication [M-MACH-101291]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Mandatory			
T-MACH-102166	<a href="#">Fabrication Processes in Microsystem Technology</a>	3 CR	Bade
Election block: Mikrofertigung (Ergänzungsbereich) (at least 6 credits)			
T-MACH-102164	<a href="#">Practical Training in Basics of Microsystem Technology</a>	3 CR	Last
T-MACH-100530	<a href="#">Physics for Engineers</a>	6 CR	Dienwiebel, Gumbsch, Nesterov-Müller, Weygand
T-MACH-102167	<a href="#">Nanotribology and -Mechanics</a>	3 CR	Dienwiebel, Hölscher
T-MACH-102191	<a href="#">Polymers in MEMS B: Physics, Microstructuring and Applications</a>	3 CR	Worgull
T-MACH-102192	<a href="#">Polymers in MEMS A: Chemistry, Synthesis and Applications</a>	3 CR	Rapp
T-MACH-102200	<a href="#">Polymers in MEMS C: Biopolymers and Bioplastics</a>	3 CR	Rapp, Worgull
T-MACH-105556	<a href="#">Practical Course Polymers in MEMS</a>	3 CR	Rapp, Worgull
T-MACH-109122	<a href="#">X-ray Optics</a>	4 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**

The student

- gains advanced knowledge concerning fabrication techniques in micrometer scale
- acquires knowledge in up-to-date developing research
- can detect and use causal relation in microfabrication process chains.

**Prerequisites**

none

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-MACH-102166 - Fabrication Processes in Microsystem Technology](#) must not have been started.

**Content**

This engineering module allows the student to gain advanced knowledge in the area of microfabrication. Different manufacturing methods are described and analyzed in an advanced manner. Necessary interdisciplinary knowledge from physics, chemistry, materials science and also up-to-date developments (nano and x-ray optics) in micro fabrication is offered.

**Workload**

270 hours

## M

**5.68 Module: Microoptics [M-MACH-101292]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Mikrooptik (at least 9 credits)			
T-MACH-102164	<a href="#">Practical Training in Basics of Microsystem Technology</a>	3 CR	Last
T-MACH-102165	<a href="#">Selected Topics on Optics and Microoptics for Mechanical Engineers</a>	3 CR	Mappes
T-MACH-101910	<a href="#">Microactuators</a>	3 CR	Kohl
T-ETIT-100741	<a href="#">Laser Physics</a>	4 CR	Koos
T-ETIT-101945	<a href="#">Optical Waveguides and Fibers</a>	4 CR	Koos
T-MACH-109122	<a href="#">X-ray Optics</a>	4 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**

The student

- basic knowledge for the applications of microoptical systems
- understanding fabrication processes of microoptical elements & systems
- analyzing strengths and weaknesses of lithography processes
- knowledge on the basics of optical sources and detectors and their use in technical systems
- fundamental knowledge on different lasers and their design
- knowledge on X-ray imaging methods

**Prerequisites**

none

**Content**

Optical imaging, measuring and sensor systems are a base for modern natural sciences. In particular life sciences and telecommunications have an intrinsic need for the application of optical technologies. Numerous fields of physics and engineering, e.g. astronomy and material sciences, require optical techniques. Micro optical systems are introduced in medical diagnostics and biological sensing as well as in products of the daily life.

In this module, an introduction to the basics of optics is provided; optical effects are presented with respect to their technical use.

Optical elements and instruments are presented. Fabrication processes of micro optical systems and elements, in particular lithography, are discussed.

In addition X-ray optics and X-ray imaging systems are presented as well as elements of optical telecommunication. A closer look on the physics behind lasers, being one of the most important technical light sources, is provided. As high end technology and clean room equipment is present in all the lectures of this module, the students will have a hands-on training with several experiments in micro optics.

**Workload**

270 hours

## M

**5.69 Module: Microsystem Technology [M-MACH-101293]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Mandatory			
T-MACH-105182	<a href="#">Introduction to Microsystem Technology I</a>	3 CR	Badilita, Jouda, Korvink
Election block: Mikrosystemtechnik (Ergänzungsbereich) (at least 6 credits)			
T-MACH-102165	<a href="#">Selected Topics on Optics and Microoptics for Mechanical Engineers</a>	3 CR	Mappes
T-MACH-100967	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II</a>	3 CR	Guber
T-MACH-100968	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III</a>	3 CR	Guber
T-MACH-102172	<a href="#">Bionics for Engineers and Natural Scientists</a>	3 CR	Hölscher
T-MACH-105183	<a href="#">Introduction to Microsystem Technology II</a>	3 CR	Jouda, Korvink
T-MACH-101910	<a href="#">Microactuators</a>	3 CR	Kohl
T-MACH-102080	<a href="#">Nanotechnology with Clusterbeams</a>	3 CR	Gspann
T-MACH-102152	<a href="#">Novel Actuators and Sensors</a>	4 CR	Kohl, Sommer
T-ETIT-101907	<a href="#">Optoelectronic Components</a>	4 CR	Freude
T-MACH-100530	<a href="#">Physics for Engineers</a>	6 CR	Dienwiebel, Gumbsch, Nesterov-Müller, Weygand
T-MACH-102192	<a href="#">Polymers in MEMS A: Chemistry, Synthesis and Applications</a>	3 CR	Rapp
T-MACH-102191	<a href="#">Polymers in MEMS B: Physics, Microstructuring and Applications</a>	3 CR	Worgull
T-MACH-102200	<a href="#">Polymers in MEMS C: Biopolymers and Bioplastics</a>	3 CR	Rapp, Worgull
T-MACH-102164	<a href="#">Practical Training in Basics of Microsystem Technology</a>	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**

none

**Workload**

270 hours

## M

**5.70 Module: Module Masterarbeit [M-WIWI-101659]**

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Master Thesis

Credits	Language	Level	Version
30	Deutsch	4	1

Mandatory			
T-WIWI-103142	Master Thesis	30 CR	Studiendekan der KIT-Fakultät für Informatik, Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

**Competence Certificate**

See German version.

**Competence Goal**

The student can independently handle a complex and unfamiliar subject based on scientific criteria and on the current state of research.

He/she is in a position to critically analyze and structure the researched information as well as derive principles and regularities. He/she knows how to apply the thereby achieved results to solve the task at hand. Taking into account this knowledge and his/her interdisciplinary knowledge, he/she can draw own conclusions, derive improvement potentials, propose and implement science-based decisions.

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 sensibly structure a research paper, document them and clearly communicate the results in scientific form.

**Prerequisites**

See German version.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. You need to earn at least 60 credits in the following fields:
  - Business Administration
  - Informatics
  - Operations Research
  - Economics
  - Compulsory Elective Modules 1
  - Compulsory Elective Modules 2

**Content**

See German version.

**Annotation**

See German version.

**Workload**

The total workload for this module is approximately 900 hours. For further information see German version.

## M

**5.71 Module: Nanotechnology [M-MACH-101294]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Mandatory			
T-MACH-105180	<a href="#">Nanotechnology for Engineers and Natural Scientists</a>	4 CR	Dienwiebel, Hölscher, Walheim
Election block: Nanotechnologie (Ergänzungsbereich) (at least 5 credits)			
T-MACH-102080	<a href="#">Nanotechnology with Clusterbeams</a>	3 CR	Gspann
T-MACH-102167	<a href="#">Nanotribology and -Mechanics</a>	3 CR	Dienwiebel, Hölscher
T-MACH-102164	<a href="#">Practical Training in Basics of Microsystem Technology</a>	3 CR	Last
T-MACH-102152	<a href="#">Novel Actuators and Sensors</a>	4 CR	Kohl, Sommer
T-MACH-102172	<a href="#">Bionics for Engineers and Natural Scientists</a>	3 CR	Hölscher
T-ETIT-100740	<a href="#">Quantum Functional Devices and Semiconductor Technology</a>	3 CR	Koos

**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

- has detailed knowledge in the field of nanotechnology
- is able to evaluate the specific characteristics of nanosystems.

**Prerequisites**

none

**Content**

The module deals with the most important principles and fundamentals of modern nanotechnology. The compulsory module "Nanotechnology with scanning probe methods" introduces the basics of nanotechnology and nanoanalytics. The specific phenomena and properties found in nanoscale systems are the main topic of the module.

**Workload**

270 hours

## M

**5.72 Module: Natural Hazards and Risk Management [M-WIWI-104837]**

**Responsible:** Prof. Dr. Michael Kunz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

**Credits**  
9

**Recurrence**  
Each term

**Language**  
Deutsch

**Level**  
4

**Version**  
1

Election block: Wahlpflichtangebot (between 9 and 12 credits)			
T-BGU-101499	<a href="#">Introduction to Hydrogeology</a>	5 CR	Goldscheider
T-BGU-108943	<a href="#">Engineering Hydrology</a>	3 CR	Ehret
T-BGU-106597	<a href="#">Management of Water Resources and River Basins</a>	6 CR	Ehret
T-BGU-101859	<a href="#">Morphodynamics</a>	3 CR	Nestmann
T-BGU-106620	<a href="#">Examination Prerequisite Environmental Communication</a>	0 CR	Kämpf
T-BGU-101676	<a href="#">Environmental Communication</a>	4 CR	Kämpf

**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**

None

**Content**

See German version

**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

**5.73 Module: Network Economics [M-WIWI-101406]**

**Responsible:** Prof. Dr. Kay Mitusch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Economics**  
 Compulsory Elective Modules 1 (Volkswirtschaftslehre)  
 Compulsory Elective Modules 2 (Volkswirtschaftslehre)

Credits	Level	Version
9	4	2

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-100005	Competition in Networks	4,5 CR	Mitusch
T-WIWI-100007	Transport Economics	4,5 CR	Mitusch, Szimba
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 CR	Mitusch
T-WIWI-102712	Regulation Theory and Practice	4,5 CR	Mitusch
T-WIWI-102713	Telecommunication and Internet Economics	4,5 CR	Mitusch

**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 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**

The students

- have acquired the basic knowledge for a future job in a network company or in a regulatory agency, ministry etc.
- recognize the specific characterizations of network sectors, know fundamental methods for an economic analysis of network sectors and recognize the interfaces for an interdisciplinary cooperation of economists, engineers and lawyers
- understand the interactions between infrastructures, control systems, and the users of networks, especially concerning their implications on investments, price setting and competitive behavior, and they can model or simulate exemplary applications
- can assess the necessity of regulation of natural monopolies and identify regulatory measures that are important for networks.

**Prerequisites**

None

**Content**

The module is concerned with network or infrastructure industries in the economy, e.g. telecommunication, traffic and energy sectors. These sectors are characterized by close interdependencies of operators and users of infrastructure as well as on states. States intervene in various forms, by the public and regulation authorities, due to the importance of network industries and due to limited abilities of markets to work properly in these industries. The students are supposed to develop a broad knowledge of these sectors and of the political options available.

**Recommendation**

Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required.

**Workload**

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

## M

## 5.74 Module: Operations Research in Supply Chain Management [M-WIWI-102832]

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Operations Research](#)  
[Compulsory Elective Modules 1 \(Operations Research\)](#)  
[Compulsory Elective Modules 2 \(Operations Research\)](#)

Credits	Language	Level	Version
9	Deutsch	4	5

Election block: Wahlpflichtangebot (at most 2 items)			
T-WIWI-102723	<a href="#">Graph Theory and Advanced Location Models</a>	4,5 CR	Nickel
T-WIWI-106200	<a href="#">Modeling and OR-Software: Advanced Topics</a>	4,5 CR	Nickel
T-WIWI-102715	<a href="#">Operations Research in Supply Chain Management</a>	4,5 CR	Nickel
Election block: Ergänzungsangebot (at most 2 items)			
T-WIWI-106546	<a href="#">Introduction to Stochastic Optimization</a>	4,5 CR	Rebennack
T-WIWI-102718	<a href="#">Discrete-Event Simulation in Production and Logistics</a>	4,5 CR	Nickel
T-WIWI-102719	<a href="#">Mixed Integer Programming I</a>	4,5 CR	Stein
T-WIWI-102720	<a href="#">Mixed Integer Programming II</a>	4,5 CR	Stein
T-WIWI-106549	<a href="#">Large-scale Optimization</a>	4,5 CR	Rebennack
T-WIWI-102704	<a href="#">Facility Location and Strategic Supply Chain Management</a>	4,5 CR	Nickel
T-WIWI-102714	<a href="#">Tactical and Operational Supply Chain Management</a>	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

- is familiar with basic concepts and terms of Supply Chain Management,
- knows the different areas of SCM and their respective optimization problems,
- is acquainted with classical location problem models (in planes, in 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 "Operations Research in Supply Chain Management", "Graph Theory and Advanced Location Models", "Modeling and OR-Software: Advanced Topics" and "Special Topics of Stochastic Optimization (elective)" has to be taken.

Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

Exemption for the **summer term 2017**:

In the summer term 2017, the two OR master modules "Mathematical Optimization" and "Operations Research in Supply Chain Management" can be taken without compulsory courses. This corresponds to the already existing regulation when taking OR modules in the elective area. The derogation does not apply to the **winter term 2017/18**.

### Modeled Conditions

The following conditions have to be fulfilled:

1. The module [M-WIWI-101415 - Operations Research in Supply Chain Management and Health Care Management](#) must not have been started.

**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 SCM. On the one hand, the determination of optimal locations within a supply chain is addressed. 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 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**

Basic knowledge as conveyed in the module *Introduction to Operations Research* [WI10R] is assumed.

**Annotation**

Some lectures and courses are offered irregularly.

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

**Workload**

Total effort for 9 credits: ca. 270 hours

- Presence time: 84 hours
- Preparation/Wrap-up: 112 hours
- Examination and examination preparation: 74 hours

## M

**5.75 Module: Optoelectronics and Optical Communication [M-MACH-101295]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Optoelektronik und Optische Kommunikationstechnik (Kernbereich) (1 item)			
T-ETIT-100639	<a href="#">Optical Transmitters and Receivers</a>	4 CR	Freude
Election block: Optoelektronik und Optische Kommunikationstechnik (Ergänzungsbereich) (at least 5 credits)			
T-MACH-102152	<a href="#">Novel Actuators and Sensors</a>	4 CR	Kohl, Sommer
T-ETIT-101938	<a href="#">Communication Systems and Protocols</a>	5 CR	Becker
T-ETIT-100741	<a href="#">Laser Physics</a>	4 CR	Koos
T-ETIT-100740	<a href="#">Quantum Functional Devices and Semiconductor Technology</a>	3 CR	Koos
T-ETIT-101945	<a href="#">Optical Waveguides and Fibers</a>	4 CR	Koos

**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**

Student has basic knowledge of optical communication systems and related device and fabrication technologies.

- He/she can apply this knowledge to specific problems.

**Prerequisites**

none

**Content**

This module covers practical and theoretical aspects in the areas of optical communications and optoelectronics. System aspects of communication networks are complemented by fundamental principles and device technologies of optoelectronics as well as and microsystem fabrication technologies.

**Workload**

270 hours

## M

**5.76 Module: Private Business Law [M-INFO-101216]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [Compulsory Elective Modules 2 \(Recht und Soziologie\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Recht der Wirtschaftsunternehmen (at least 1 item as well as at least 9 credits)			
T-INFO-101329	<a href="#">Employment Law I</a>	3 CR	Dreier
T-INFO-101330	<a href="#">Employment Law II</a>	3 CR	Dreier
T-INFO-101316	<a href="#">Law of Contracts</a>	3 CR	Dreier
T-INFO-101314	<a href="#">Tax Law II</a>	3 CR	Dietrich, Dreier
T-INFO-101315	<a href="#">Tax Law I</a>	3 CR	Dreier

**Competence Goal**

The student

- has gained in-depth knowledge of German company law, commercial law and civil law;
- is able to analyze, evaluate and solve complex legal and economic relations and problems;
- is well grounded in individual labour law, collective labour law and commercial constitutional law, evaluates and critically assesses clauses in labour contracts;
- recognizes the significance of the parties to collective labour agreements within the economic system and has differentiated knowledge of labour disputes law and the law governing the supply of temporary workers and of social law;
- possesses detailed knowledge of national earnings and corporate tax law and is able to deal with provisions of tax law in a scientific manner and assesses the effect of these provisions on corporate decision-making.

**Prerequisites**

None

**Content**

The module provides the student with knowledge in special matters in business law, like employment law, tax law and business law, which are essential for managerial decisions.

## M

**5.77 Module: Process Engineering in Construction [M-BGU-101110]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-BGU-101844	<a href="#">Process Engineering</a>	3 CR	Schneider
Election block: Wahlpflicht (between 2 and 3 items as well as between 6 and 7,5 credits)			
T-BGU-101845	<a href="#">Construction Equipment</a>	3 CR	Gentes
T-BGU-101832	<a href="#">Operation Methods for Foundation and Marine Construction</a>	1,5 CR	Schneider
T-BGU-101801	<a href="#">Operation Methods for Earthmoving</a>	1,5 CR	Schlick
T-BGU-101846	<a href="#">Tunnel Construction and Blasting Engineering</a>	3 CR	Haghsheno
T-BGU-101847	<a href="#">Project Studies</a>	3 CR	Gentes
T-BGU-101850	<a href="#">Disassembly Process Engineering</a>	3 CR	Gentes

**Competence Certificate**

- 'Teilleistung' T-BGU-101844 with written examination according to § 4 Par. 2 No. 1 according to selected course:

- 'Teilleistung' T-BGU-101845 with written examination according to § 4 Par. 2 No. 1
- 'Teilleistung' T-BGU-101832 with oral examination according to § 4 Par. 2 No. 2
- 'Teilleistung' T-BGU-101801 with oral examination according to § 4 Par. 2 No. 2
- 'Teilleistung' T-BGU-101846 with oral examination according to § 4 Par. 2 No. 2
- 'Teilleistung' T-BGU-101847 with oral examination according to § 4 Par. 2 No. 2
- 'Teilleistung' T-BGU-101850 with oral examination according to § 4 Par. 2 No. 2

details about the learning controls see at the respective 'Teilleistung'

**Competence Goal**

Students understand different processes and the related construction equipment, its technology, capabilities and constraints. Students can define process solutions consisting of machinery and devices. They can evaluate existing processes through knowledge about process performance and operating conditions, and they can identify potential for improvement.

**Module grade calculation**

grade of the module is CP weighted average of grades of the partial exams

**Prerequisites**

The course Verfahrenstechnik [6241704] is compulsory and must be examined.

**Content**

Within the frame of this module, various construction and conditioning processes will be presented as well as performance calculations conducted. Students learn about the construction machinery and devices of these processes. Transmission, generation, conversion and controlling of power are explained with the help of various practical examples. Moreover, the module includes possibilities for an on-site familiarization.

**Recommendation**

none

**Annotation**

None

**Workload**

see German version

## M

**5.78 Module: Project Management in Construction [M-BGU-101888]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-BGU-103432	<a href="#">Project Management in Construction and Real Estate Industry I</a>	3 CR	Haghsheno
T-BGU-103431	<a href="#">Turnkey Construction II - Trades and Technology</a>	3 CR	Haghsheno
Election block: Wahlpflicht (between 1 and 2 items as well as between 3 and 4,5 credits)			
T-BGU-103427	<a href="#">Site Management</a>	1,5 CR	Haghsheno
T-BGU-103430	<a href="#">Turnkey Construction I - Processes and Methods</a>	1,5 CR	Haghsheno
T-BGU-103428	<a href="#">Supplementary Claim Management</a>	1,5 CR	Haghsheno
T-BGU-103429	<a href="#">Building Laws</a>	3 CR	Haghsheno
T-BGU-103433	<a href="#">Project Management in Construction and Real Estate Industry II</a>	3 CR	Haghsheno

**Competence Certificate**

- 'Teilleistung' T-BGU-103432 with written examination according to § 4 Par. 2 No. 1
- 'Teilleistung' T-BGU-103431 with oral examination according to § 4 Par. 2 No. 2

according to selected course:

- 'Teilleistung' T-BGU-103427 with oral examination according to § 4 Par. 2 No. 2
- 'Teilleistung' T-BGU-103430 with oral examination according to § 4 Par. 2 No. 2
- 'Teilleistung' T-BGU-103428 with oral examination according to § 4 Par. 2 No. 2
- 'Teilleistung' T-BGU-103429 with oral examination according to § 4 Par. 2 No. 2
- 'Teilleistung' T-BGU-103433 with oral examination according to § 4 Par. 2 No. 2

details about the learning controls see at the respective 'Teilleistung'

**Competence Goal**

see German version

**Module grade calculation**

grade of the module is CP weighted average of grades of the partial exams

**Prerequisites**

The courses Projektmanagement in der Bau- und Immobilienwirtschaft I and Schlüsselfertiges Bauen II are compulsory and must be examined.

**Content**

see German version

**Recommendation**

none

**Annotation**

none

**Workload**

see German version

**Literature**

- DIETHELM, G.: Projektmanagement, Band 1: Grundlagen, Verlag Neue Wirtschafts-Briefe, Herne, 2000
- DIETHELM, G.: Projektmanagement, Band 2: Sonderfragen, Verlag Neue Wirtschafts-Briefe, Herne, 2001
- ESCHENBRUCH, K.: Recht der Projektsteuerung, Werner Verlag, München, 2003
- HAHN, R.: Projektmanagement für Ingenieure, Wiley-VCH Verlag, Weinheim, 2002
- KERZNER, H.: Project Management - A Systems Approach to Planning, Scheduling and Controlling, Wiley & Sons, 2006
- KOCHENDÖRFER, B., LIEBCHEN, J.: Bau-Projekt-Management, Verlag B. G. Teubner, Stuttgart, 2001
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- VOLKMANN, W.: Projektabwicklung, Verlag für Wirtschaft und Verwaltung Hubert Wingen, Essen, 2002
- ELWERT, Ulrich, Flassak, Alexander: Nachtragsmanagement in der Baupraxis - Grundlagen, Beispiele, Anwendung, Vieweg, 2., erw. und aktualisierte Aufl., Wiesbaden, 2008.
- WÜRFELE, Falk [Hrsg.]: Nachtragsmanagement - Leistungsbeschreibung, Leistungsabweichung, Bauzeitverzögerung, Werner, Neuwied, 2006.
- SCHERER, Holger: Integriertes Nachtragsmanagement - Verfahrenshandbuch für die Dokumentation von Behinderungen, Störungen und Nachtragssachverhalten auf der Grundlage der VOB, Zeittechnik-Verlag, Neu-Isenburg, 2001.
- HELLER, Jörg: Sicherung der Nachtragsvergütung nach VOB und BGB, Zeittechnik-Verlag, Neu-Isenburg, 2000



## M

**5.79 Module: Public Business Law [M-INFO-101217]**

**Responsible:** Prof. Dr. Matthias Bäcker  
**Organisation:** KIT Department of Informatics  
**Part of:** [Compulsory Elective Modules 2 \(Recht und Soziologie\)](#)

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

Election block: Öffentliches Wirtschaftsrecht (at least 1 item as well as at least 9 credits)			
T-INFO-101309	<a href="#">Telecommunications Law</a>	3 CR	Marsch
T-INFO-101303	<a href="#">Data Protection Law</a>	3 CR	Marsch
T-INFO-101311	<a href="#">Public Media Law</a>	3 CR	Dreier
T-INFO-101312	<a href="#">European and International Law</a>	3 CR	Brühann
T-INFO-101348	<a href="#">Environmental Law</a>	3 CR	Bäcker

**Competence Certificate**

see course description.

## M

**5.80 Module: Rail System Technology [M-MACH-101274]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	3

Mandatory			
T-MACH-102143	<a href="#">Rail System Technology</a>	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

**5.81 Module: Real Estate Economics and Sustainability [M-WIWI-101508]**

**Responsible:** Prof. Dr David Lorenz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Mandatory			
T-WIWI-102838	<b>Real Estate Economics and Sustainability Part 1: Basics and Valuation</b>	4,5 CR	Lorenz
T-WIWI-102839	<b>Real Estate Economics and Sustainability Part 2: Reporting and Rating</b>	4,5 CR	Lorenz

**Competence Certificate**

It is currently unclear whether the course "Real Estate Economics and Sustainability Part 2: Reporting and Rating" can be offered in summer term 2018. It must therefore be expected that the corresponding module M-WIWI-101508 "Real Estate Management and Sustainability" can not be completed according to schedule. 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 examination for the courses generally consist of a 60 minute written exam. A 20 minute oral exam is only offered after the second failure of the written exam. The exams for the respective parts (Part 1: Basics and Valuation and Part 2: Reporting and Rating) happen in the same semester in which the lectures take place.

Therefore, Part I currently only takes place in the winter semester and Part II takes place in the summer semester. In each semester there are two alternative dates for the exam and exams can be re-sat at any regular exam date.

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

It is possible to include the grade of a seminar paper, dealing with a topic from the area of Real Estate Economics and Sustainability, into the final grade of the module (according to Section 4(2), 3 of the examination regulation). The seminar has a weight of 20 percent.

**Competence Goal**

The student

- possesses an overview of key interrelationships within the real estate industry concerning macro- and microeconomic questions as well as the interaction of the industry's key players;
- is aware of the basics concerning the sustainable development debate and knows about the possible contribution of buildings and the real estate industry to a more sustainable development;
- knows the basics, key methods and tools of property valuation and is able to apply them;
- is aware of the key influencing factors of a building's market value and is able to factor in sustainability considerations into market value estimates;
- possess an overview of important other methods and processes – besides property valuation – which are applied within the real estate industry to assess property related risks (e.g. property ratings) and to communicate property performance towards third parties (e.g. sustainability assessment of buildings and sustainability reporting of companies).

**Prerequisites**

None

**Content**

The implementation of sustainable development principles within the real estate industry requires taking into account sustainability considerations within real estate related procedures and decision making processes. Within this context, property valuation and valuation professionals play an important role.

Property valuations are carried out in almost any phase of the building life cycle and support, for example, financing as well as by and sell decisions.

Valuation methods and procedures, however, have to be adjusted to changing market participants' preferences and their willingness to pay. For this reason, the issue of "valuation and sustainability" is of particular topicality and relevance.

Within the real estate industry professionals are sought which combine micro- and macroeconomic knowledge and real estate specific expertise with knowledge and skills regarding the sustainability of buildings and building stocks.

The real estate industry offers attractive working and career opportunities. This teaching module / course therefore offers insights into key methods applied within the real estate industry (particularly valuation) and places them into the context of sustainable development. The focus of the module / course, however, is not only on theoretical content but also on the provisioning of linkages to real estate practice; this will be realized, amongst other issues, by practical tutorials which are offered in addition to the course lectures.

**Recommendation**

A combination with courses in the area of

- Finance
- Insurance
- Civil engineering and architecture

is recommended.

Particularly recommended is the successful completion of the following Bachelor-Modules:

- Real Estate Management I and II
- Design, Construction and Assessment of Green Buildings I and II

**Workload**

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

## M

**5.82 Module: Sales Management [M-WIWI-101487]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Business Administration](#)  
[Compulsory Elective Modules 1 \(Betriebswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Betriebswirtschaftslehre\)](#)

Credits	Duration	Level	Version
9	1 semester	4	6

Mandatory			
T-WIWI-102890	<a href="#">Sales Management and Retailing</a>	3 CR	Klarmann
Election block: Ergänzungsangebot (at most 1 item)			
T-WIWI-106137	<a href="#">Country Manager Simulation</a>	1,5 CR	Feurer
T-WIWI-102834	<a href="#">Case Studies in Sales and Pricing</a>	1,5 CR	Klarmann
T-WIWI-106981	<a href="#">Digital Marketing and Sales in B2B</a>	1,5 CR	Konhäuser
T-WIWI-102891	<a href="#">Price Negotiation and Sales Presentations</a>	1,5 CR	Klarmann, Schröder
Election block: Ergänzungsangebot (at most 2 items)			
T-WIWI-107720	<a href="#">Market Research</a>	4,5 CR	Klarmann
T-WIWI-102883	<a href="#">Pricing</a>	4,5 CR	Feurer

**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

**Competence Goal**

Students

- have an advanced knowledge about sales management (design and structure of sales systems, relationship with sales partners and important customers)
- have a fundamental understanding of price management (in particular consumer behavior of pricing, pricing strategy, price determination)
- are able to handle particularities and challenges in sales management
- know several qualitative and quantitative approaches to prepare decisions in Marketing
- are able to implement their extensive sales and pricing knowledge in a practical context
- have the theoretical knowledge to write a master thesis in Marketing
- have the theoretical knowledge to work in/together with the sales department

**Prerequisites**

The course "Sales Management and Retailing" is compulsory.

**Content**

The aim of the module is to deepen the sales management knowledge of the students. Theoretical approaches often have a combined view on marketing and sales, whereas in practical surroundings the sales department is completely separated from the marketing tasks. Given this fact, we concentrate on pure sales management topics and address different facets of the sales management.

**Annotation**

For further information please contact the Marketing and Sales Research Group ([marketing.iism.kit.edu](mailto:marketing.iism.kit.edu)).

**Workload**

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

## M

**5.83 Module: Seminar Module [M-WIWI-101808]**

**Responsible:** Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Compulsory Elective Modules 1 \(mandatory\)](#)

Credits	Language	Level	Version
9	Deutsch	4	6

<b>Election block: Seminar Wirtschaftswissenschaften, Mathematik und Recht (between 3 and 6 credits)</b>			
T-WIWI-103474	<a href="#">Seminar in Business Administration A (Master)</a>	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103476	<a href="#">Seminar in Business Administration B (Master)</a>	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103477	<a href="#">Seminar in Economics B (Master)</a>	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-103478	<a href="#">Seminar in Economics A (Master)</a>	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-103479	<a href="#">Seminar in Informatics A (Master)</a>	3 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-103480	<a href="#">Seminar in Informatics B (Master)</a>	3 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-103481	<a href="#">Seminar in Operations Research A (Master)</a>	3 CR	Nickel, Rebennack, Stein
T-WIWI-103482	<a href="#">Seminar in Operations Research B (Master)</a>	3 CR	Nickel, Rebennack, Stein
T-WIWI-103483	<a href="#">Seminar in Statistics A (Master)</a>	3 CR	Grothe, Schienle
T-WIWI-103484	<a href="#">Seminar in Statistics B (Master)</a>	3 CR	Grothe, Schienle
T-INFO-101997	<a href="#">Seminar: Legal Studies I</a>	3 CR	Dreier
T-INFO-105945	<a href="#">Seminar: Legal Studies II</a>	3 CR	Dreier
<b>Election block: Seminar Ingenieurwissenschaften (at most 1 item)</b>			
T-MACH-102135	<a href="#">Conveying Technology and Logistics</a>	3 CR	Furmans, Pagani
T-MACH-109062	<a href="#">Seminar Production Technology</a>	3 CR	Fleischer, Lanza, Schulze
T-MACH-108737	<a href="#">Seminar Data-Mining in Production</a>	3 CR	Lanza
T-BGU-100014	<a href="#">Seminar in Transportation</a>	3 CR	Chlund, Vortisch
T-WIWI-108763	<a href="#">Seminar in Engineering Science Master (approval)</a>	3 CR	Fachvertreter ingenieurwissenschaftlicher Fakultäten
<b>Election block: SQ-Seminar (between 3 and 4 credits)</b>			
T-WIWI-104680	<a href="#">Wildcard Key Competences Seminar 1</a>	1 CR	
T-WIWI-104681	<a href="#">Wildcard Key Competences Seminar 2</a>	2 CR	
T-WIWI-104682	<a href="#">Wildcard Key Competences Seminar 3</a>	3 CR	
T-WIWI-104683	<a href="#">Wildcard Key Competences Seminar 4</a>	1 CR	
T-WIWI-104684	<a href="#">Wildcard Key Competences Seminar 5</a>	2 CR	
T-WIWI-104685	<a href="#">Wildcard Key Competences Seminar 6</a>	3 CR	
T-WIWI-105956	<a href="#">Wildcard Key Competences Seminar 8</a>	4 CR	

### Competence Certificate

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). A detailed description of every singled assessment is given in the specific course characerization.

The final mark for the module is the average of the marks for each of the two seminars weighted by the credits and truncated after the first decimal. Grades of the KQ courses are not included.

### Competence Goal

- The students are in a position to independently handle current, research-based tasks according to scientific criteria.
- They are able to research, analyze, abstract and critically review the information.
- They can draw own conclusions using their interdisciplinary knowledge from the less structured information and selectively develop current research results.
- They can logically and systematically present the obtained results both orally and in written form in accordance with scientific guidelines (structuring, technical terminology, referencing). They can argue and defend the results professionally in the discussion.

### Prerequisites

The course specific preconditions must be observed.

- *Seminars*: Two seminars out of the course list, that have at least 3 CP each and are offered by a representative of the Department of Economics and Management or of the Center for applied legal studies (Department of Informatics), have to be chosen.
- Alternatively one of the two seminars can be absolved at a engineering department. The seminar has to be offered by a representative of the respective department as well. The assessment has to meet the demands of the Department of Economics and Management (active participation, term paper with a workload of at least 80 h, presentation). This alternative seminar **requires an official approval** and can be applied at the examination office of the Department of Economics and Management. Seminars at the institutes wbk and IFL do not require these approval.
- *Key Qualification (KQ)-course(s)*: One or more courses with at least 3 CP in total of additional key qualifications have to be chosen among the courses [HoC, ZAK, Sprachenzentrum].

### 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

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



## M

**5.84 Module: Service Analytics [M-WIWI-101506]**

**Responsible:** Prof. Dr. Hansjörg Fromm  
Prof. Dr. Christof Weinhardt

**Organisation:** KIT Department of Economics and Management

**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch	4	5

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-108715	<b>Artificial Intelligence in Service Systems</b>	4,5 CR	Satzger
T-WIWI-105777	<b>Business Intelligence Systems</b>	4,5 CR	Mädche, Nadj, Toreini
T-WIWI-102822	<b>Industrial Services</b>	4,5 CR	Fromm
T-WIWI-102899	<b>Modeling and Analyzing Consumer Behavior with R</b>	4,5 CR	Dorner, Weinhardt
T-WIWI-105778	<b>Service Analytics A</b>	4,5 CR	Fromm, Setzer
T-WIWI-109940	<b>Special Topics in Information Systems</b>	4,5 CR	Weinhardt

**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**

Students

- knows the theoretical bases and the key components of Business Intelligence systems,
- acquires the basic skills to make use of business intelligence and analytics software in the service context
- are introduced into various application scenarios of analytics in the service context
- are able to distinguish different analytics methods and apply them in context
- learn how to apply analytics software in the service context
- are trained for the structured compilation and solution of practice relevant problems with the help of commercial business intelligence software packages as well as analytics methods and tools

**Prerequisites**

None

**Content**

The importance of services in modern economies is most evident – nearly 70% of gross value added are achieved in the tertiary sector and a growing number of industrial enterprises add customer specific services to their material goods or transform their business models fundamentally. The growing availability of data “Big Data” and their intelligent processing by applying analytic methods and business intelligence systems plays a key role.

It is the goal of the module to give students a comprehensive overview on the subject Business Intelligence & Analytics focusing on service issues. Various scenarios illustrate how the methods and systems introduced help to improve existing services or create innovative data-based services.

**Recommendation**

The courses Service Analytics A [2595501] or Service Analytics B [2540498] should be applied.

**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](http://www.ksri.kit.edu/teaching).

**Workload**

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

## M

**5.85 Module: Service Design Thinking [M-WIWI-101503]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

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

Mandatory			
T-WIWI-102849	<b>Service Design Thinking</b>	9 CR	Satzger, Weinhardt

**Competence Certificate**

The assessment is carried out as a general exam (according to Section 4(2), 3 of the examination regulation). The overall grade of the module is the grade of the examination (according to Section 4(2), 3 of the examination regulation).

**Competence Goal**

- Deep knowledge of the innovation method Design Thinking, as introduced and promoted by Stanford University
- Development of new, creative solutions through extensive observation of oneself and one's environment, in particular with regard to the relevant service users
- Know how to use prototyping and experimentation to visualize one's ideas, to test and iteratively develop them, and to converge on a solution
- Learn to apply the method to a real innovation projects issued by industry partners.

**Prerequisites**

None

**Content**

- Paper Bike: Learning about the basic method elements by building a paper bike that has to fulfill a given set of challenges. The bikes will be tested in a race during an international Kick-Off event with other universities of the SUGAR network (intern. Design Thinking network).
- Design Space Exploration: Exploring the problem space through customer and user observation as well as desk research.
- Critical Function Prototype: Identification of critical features from the customer's perspective that can contribute to the solution of the overarching problem. Building and testing prototypes that integrate these functionalities.
- Dark Horse Prototype: Inverting earlier assumptions and experiences, which leads to the inclusion of new features and solutions. Developing radically new ideas are in the focus of this phase.
- Funky Prototype: Integration of the individually tested and successful functions to several complete solution scenarios, which are further tested and developed.
- Functional Prototype: Selection of successful scenarios from the previous phase and building a higher resolution prototype. The final solution to the challenge is laid out in detail and tested with users.
- Final Prototype: Implementing the functional prototype and presenting it to the customer.

**Recommendation**

This course is held in English – proficiency in writing and communication is required.

Our past students recommend to take this course at the beginning of the masters program.

**Annotation**

Due to practical project work as a component of the program, access is limited.

The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.

For more information on the application process and the program itself are provided in the module component description and the program's website (<http://sdt-karlsruhe.de>).

Furthermore, the KSRI conducts an information event for applicants every year in May.

This module is part of the KSRI Teaching Program „Digital Service Systems“. For more information see the KSRI Teaching website: [www.ksri.kit.edu/teaching](http://www.ksri.kit.edu/teaching).

**Workload**

The total amount of work for this module is approx. 270 hours (9 credits). The workload for this course is comparably high as the course runs in cooperation with partner universities from around the world as well as partner companies. This causes overhead.

## M

**5.86 Module: Service Economics and Management [M-WIWI-102754]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102881	<b>Business and IT Service Management</b>	4,5 CR	Satzger
T-WIWI-102640	<b>Market Engineering: Information in Institutions</b>	4,5 CR	Weinhardt
T-WIWI-106201	<b>Digital Transformation of Organizations</b>	4,5 CR	Mädche

**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 the scientific basics of the management of digital services and corresponding systems
- gain a comprehensive insight in the importance and the most important features of information systems as a central component of the digitalization of business processes, products and services
- know the most relevant concepts and theories to shape the digital transformation process of service systems successfully
- understand the OR methods in the sector of service management and apply them adequately
- are able to use large amounts of available data systematically for the planning, operation and improvement of complex service offers and to design and control information systems
- are able to develop market-oriented coordination mechanisms and apply service systems.

**Prerequisites**

None

**Content**

This module provides the foundation for the management of digital services and corresponding systems. The courses in this module cover the major concepts for a successful management of service systems and their digital transformation. Current examples from the research and practice enhance the relevance of the discussed topics.

**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](http://www.ksri.kit.edu/teaching).

**Workload**

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

## M

**5.87 Module: Service Innovation, Design & Engineering [M-WIWI-102806]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-105773	Digital Service Design	4,5 CR	Mädche
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 CR	Weinhardt
T-WIWI-108437	Practical Seminar: Information Systems and Service Design	4,5 CR	Mädche
T-WIWI-102799	Practical Seminar Service Innovation	4,5 CR	Satzger
T-WIWI-102641	Service Innovation	4,5 CR	Satzger

**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

- know about the challenges, concepts, methods and tools of service innovation management and are able to use them successfully.
- have a profound comprehension of the development and design of innovative services and are able to apply suitable methods and tools on concrete and specific issues.
- are able to embed the concepts of innovation management, development and design of services into organisations
- are aware of the strategic importance of services, are able to present value creation in the context of services systems and to strategically exploit the possibilities of their digital transformation
- elaborate concrete and problem-solving solutions for practical tasks in teams.

**Prerequisites****Dependencies between courses:**

The course Practical Seminar Service Innovation cannot be applied in combination with the course Practical Seminar Digital Service Design.

**Content**

This module is designed to constitute the basis for the development of successful ICT supported innovations thus including the methods and tools for innovation management, for the design and the development of digital services and the implementation of new business models. Current examples from science and practice enhance the relevance of the topics addressed.

**Recommendation**

Attending the course Practical Seminar Service Innovation [2595477] is recommended in combination with the course Service Innovation [2595468].

Attending the course Practical Seminar Digital Service Design [new] is recommended in combination with the course Digital Service Design [new].

**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](http://www.ksri.kit.edu/teaching).

**Workload**

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

## M

**5.88 Module: Service Management [M-WIWI-101448]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** **Business Administration**  
**Compulsory Elective Modules 1 (Betriebswirtschaftslehre)**  
**Compulsory Elective Modules 2 (Betriebswirtschaftslehre)**

**Credits**

9

**Level**

4

**Version**

4

<b>Mandatory</b>			
T-WIWI-102881	<b>Business and IT Service Management</b>	4,5 CR	Satzger
<b>Election block: Ergänzungsangebot (4,5 credits)</b>			
T-WIWI-108715	<b>Artificial Intelligence in Service Systems</b>	4,5 CR	Satzger
T-WIWI-106201	<b>Digital Transformation of Organizations</b>	4,5 CR	Mädche
T-WIWI-102822	<b>Industrial Services</b>	4,5 CR	Fromm
T-WIWI-102899	<b>Modeling and Analyzing Consumer Behavior with R</b>	4,5 CR	Dorner, Weinhardt
T-WIWI-105778	<b>Service Analytics A</b>	4,5 CR	Fromm, Setzer
T-WIWI-102641	<b>Service Innovation</b>	4,5 CR	Satzger

**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

- understand the basics of developing and managing IT-based services,
- understand and apply OR methods in service management,
- systematically use vast amounts of available data for planning, operation, personalization and improvement of complex service offerings, and
- understand and analyze innovation processes in corporations.

**Prerequisites**

The course *Business and IT Service Management* [2590484] is compulsory and must be examined.

**Content**

The module service management addresses the basics of developing and managing IT-based services. The lectures contained in this module teach the basics of developing and managing IT-based services and the application of OR methods in the field of service management. Moreover, students learn to systematically analyze vast amounts of data for planning, operation and improvement for complex service offerings. These tools enhance operational and strategic decision support and help to analyze and understand the overall innovation processes in corporations. Current examples from research and industry demonstrate the relevance of the topics discussed in this module.

**Recommendation**

None

**Workload**

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



## M

**5.89 Module: Service Operations [M-WIWI-102805]**

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Operations Research](#)  
[Compulsory Elective Modules 1 \(Operations Research\)](#)  
[Compulsory Elective Modules 2 \(Operations Research\)](#)

Credits	Language	Level	Version
9	Deutsch	4	5

Election block: Wahlpflichtangebot (at most 2 items)			
T-WIWI-102718	<a href="#">Discrete-Event Simulation in Production and Logistics</a>	4,5 CR	Nickel
T-WIWI-102884	<a href="#">Operations Research in Health Care Management</a>	4,5 CR	Nickel
T-WIWI-102715	<a href="#">Operations Research in Supply Chain Management</a>	4,5 CR	Nickel
T-WIWI-102716	<a href="#">Practical Seminar: Health Care Management (with Case Studies)</a>	4,5 CR	Nickel
Election block: Ergänzungsangebot (at most 2 items)			
T-WIWI-102860	<a href="#">Supply Chain Management in the Process Industry</a>	4,5 CR	Nickel
T-WIWI-102872	<a href="#">Challenges in Supply Chain Management</a>	4,5 CR	Mohr

**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

- knows the theoretical bases and the key components of Business Intelligence systems,
- acquires the basic skills to make use of business intelligence and analytics software in the service context
- are introduced into various application scenarios of analytics in the service context
- are able to distinguish different analytics methods and apply them in context
- learn how to apply analytics software in the service context
- are trained for the structured compilation and solution of practice relevant problems with the help of commercial business intelligence software packages as well as analytics methods and tools

**Prerequisites**

At least one of the four courses Operations Research in Supply Chain Management, Operations Research in Health Care Management, Practical seminar: Health Care Management or Discrete-Event Simulation in Production and Logistics has to be assigned.

Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

**Content**

The importance of services in modern economies is most evident – nearly 70% of gross value added are achieved in the tertiary sector and a growing number of industrial enterprises add customer specific services to their material goods or transform their business models fundamentally. The growing availability of data "Big Data" and their intelligent processing by applying analytic methods and business intelligence systems plays a key role.

It is the goal of the module to give students a comprehensive overview on the subject Business Intelligence & Analytics focusing on service issues. Various scenarios illustrate how the methods and systems introduced help to improve existing services or create innovative data-based services.

**Recommendation**

The course Practical Seminar Health Care should be combined with the course OR in Health Care Management.

**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](http://www.ksri.kit.edu/teaching).

**Workload**

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

## M

**5.90 Module: Sociology [M-GEISTSOZ-101169]**

**Responsible:** Prof. Dr. Gerd Nollmann  
**Organisation:** KIT Department of Humanities and Social Sciences  
**Part of:** [Compulsory Elective Modules 2 \(Recht und Soziologie\)](#)

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

Mandatory			
T-GEISTSOZ-104565	<a href="#">Computer Aided Data Analysis</a>	0 CR	Nollmann
T-GEISTSOZ-109052	<a href="#">Application of Social Science Methods (WiWi)</a>	9 CR	Nollmann

**Competence Goal**

The student

- Gains theoretical and methodical knowledge of social processes and structures,
- learns a script based data analysis tool (R, Stata, Python),
- gathers his/her data within an own framework and/or analyzes complex data,
- is able to present his/her work results in a precise and clear way.

**Prerequisites**

Students must pass three exercise sheets within the seminar "Computer based data analysis".

**Content**

The Sociology module offers students the opportunity to learn a data analysis tool (R, Stata, Python) within the framework of a two-semester course and to independently transfer this tool to a content-related question. Both the tool and the contents are determined by the lecturers. The contents can refer to the analysis of large population surveys (SOEP, Microcensus, ALLBUS), to own experiments, to own field studies or to Big Data analyses.

**Annotation**

Basic knowledge in multivariate regression and inference statistics is required.

## M

**5.91 Module: Specialization in Food Process Engineering [M-CIWWT-101119]**

**Responsible:** Dr. Volker Gaukel  
**Organisation:** KIT Department of Chemical and Process Engineering  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-CIWWT-101875	<a href="#">Specialization in Food Process Engineering</a>	9 CR	Gaukel

**Competence Goal**

See German version.

**Prerequisites**

The module "Principles of Food Process Engineering" must be passed.

**Content**

See courses.

## M

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

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

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

**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

**5.93 Module: Stochastic Optimization [M-WIWI-103289]**

**Responsible:** Prof. Dr. Steffen Rebennack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Operations Research](#)  
[Compulsory Elective Modules 1 \(Operations Research\)](#)  
[Compulsory Elective Modules 2 \(Operations Research\)](#)

Credits	Recurrence	Duration	Level	Version
9	Each term	1 semester	4	6

Election block: Wahlpflichtangebot (at most 2 items)			
T-WIWI-106546	<a href="#">Introduction to Stochastic Optimization</a>	4,5 CR	Rebennack
T-WIWI-106548	<a href="#">Advanced Stochastic Optimization</a>	4,5 CR	Rebennack
T-WIWI-106549	<a href="#">Large-scale Optimization</a>	4,5 CR	Rebennack
Election block: Ergänzungsangebot (at most 2 items)			
T-WIWI-102723	<a href="#">Graph Theory and Advanced Location Models</a>	4,5 CR	Nickel
T-WIWI-102719	<a href="#">Mixed Integer Programming I</a>	4,5 CR	Stein
T-WIWI-102720	<a href="#">Mixed Integer Programming II</a>	4,5 CR	Stein
T-WIWI-103124	<a href="#">Multivariate Statistical Methods</a>	4,5 CR	Grothe
T-WIWI-102715	<a href="#">Operations Research in Supply Chain Management</a>	4,5 CR	Nickel
T-WIWI-106545	<a href="#">Optimization under Uncertainty</a>	5 CR	Rebennack
T-WIWI-106552	<a href="#">Simulation of Stochastic Systems</a>	4,5 CR	Grothe, 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

- names and describes basic notions for advanced stochastic optimization methods, in particular, ways to algorithmically exploit the special model structures,
- knows the indispensable methods and models for quantitative analysis of stochastic optimization problems,
- models and classifies stochastic optimization problems and chooses the appropriate solution methods to solve also challenging stochastic optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions,
- identifies drawbacks of the solution methods and, if necessary, is able to make suggestions to adapt them to practical problems.

**Prerequisites**

At least one of the courses "Advanced Stochastic Optimization" and "Large-scale Optimization" has to be taken.

Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

**Content**

The module focuses on the modeling as well as the imparting of theoretical principles and solution methods for optimization problems with special structure, which occur for example in the stochastic optimization.

**Recommendation**

It is recommended to listen to the lecture "Introduction to Stochastic Optimization" before the lecture "Advanced Stochastic Optimization" is visited.

**Annotation**

The course "Introduction to Stochastic Optimization" will be offered until the summer semester 2019 as an additional option in the elective offer of the module. Thereafter, the course can only be selected in the supplementary offer.

The courses are sometimes offered irregularly. The curriculum, planned for three years in advance, can be found on the Internet at <http://sop.ior.kit.edu/28.php>.

**Workload**

The total workload for this module is approximately 270 hours (9 credits). The allocation is made according to the credit points of the courses of the module. The total number of hours per course is determined by the amount of time spent attending the lectures and exercises, as well as the exam times and the time required to achieve the module's learning objectives for an average student for an average performance.

## M

**5.94 Module: Technical Logistics [M-MACH-101279]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Language	Level	Version
9	Deutsch	4	2

Election block: Technische Logistik (Kernbereich) (1 item as well as at least 6 credits)			
T-MACH-102163	<a href="#">Basics of Technical Logistics</a>	6 CR	Mittwollen, Oellerich
Election block: Technische Logistik (Ergänzungsbereich) (1 item as well as at least 3 credits)			
T-MACH-105174	<a href="#">Warehousing and Distribution Systems</a>	3 CR	Furmans
T-MACH-105171	<a href="#">Safety Engineering</a>	4 CR	Kany
T-MACH-105151	<a href="#">Energy Efficient Intralogistic Systems</a>	4 CR	Braun, Schönung
T-MACH-102159	<a href="#">Elements and Systems of Technical Logistics</a>	4 CR	Fischer, Mittwollen
T-MACH-102160	<a href="#">Selected Applications of Technical Logistics</a>	4 CR	Milushev, Mittwollen
T-MACH-105187	<a href="#">IT-Fundamentals of Logistics</a>	3 CR	Thomas
T-WIWI-103091	<a href="#">Production and Logistics Controlling</a>	3 CR	Rausch
T-MACH-108946	<a href="#">Elements and Systems of Technical Logistics - Project</a>	2 CR	Fischer, Mittwollen
T-MACH-108945	<a href="#">Selected Applications of Technical Logistics - Project</a>	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.

To improve the overall grade of the module up to one grading scale (0.3) there might be taken an optional term paper in the field of the IFL. The term paper may not be convalidated in the seminar module.

**Competence Goal**

The student

- acquires well-founded knowledge on the main topics of technical logistics
- gets an overview of different applications of technical logistics in practice,
- acquires expertise and understanding about functionality of material handling systems.

**Prerequisites**

none

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-MACH-102163 - Basics of Technical Logistics](#) must not have been started.

**Content**

The module *Technical Logistics* provides in-depth basics on the main topics of technical logistics. The module focuses on technical characteristics of material handling technology. To gain a deeper understanding, the course is accompanied by exercises.

**Workload**

270 hours



## M

## 5.95 Module: Transport Infrastructure Policy and Regional Development [M-WIWI-101485]

**Responsible:** Prof. Dr. Kay Mitusch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Economics](#)  
[Compulsory Elective Modules 1 \(Volkswirtschaftslehre\)](#)  
[Compulsory Elective Modules 2 \(Volkswirtschaftslehre\)](#)

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

Election block: Wahlpflichtangebot (2 items)			
T-WIWI-103107	<a href="#">Spatial Economics</a>	4,5 CR	Ott
T-WIWI-100007	<a href="#">Transport Economics</a>	4,5 CR	Mitusch, Szimba

### 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 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

The students

- understand the economic issues related to transport and regional development with a main focus on economic policy issues generated by the relationship of transport and regional development with the public sector
- are able to compare different considerations of politics, regulation and the private sector and to analyse and assess the respective decision problems both qualitatively and by applying appropriate methods from economic theory
- are prepared for careers in the public sector, particularly for public companies, politics, regulatory agencies, related consultancies, mayor construction companies or infrastructure project corporations

### Prerequisites

None

### Content

The development infrastructure (e.g. transport, energy, telecommunications) has always been one of the most relevant factors for economic development and particularly influences the development of the regional economy. From the repertoire of state actions, investments into transport infrastructure are often regarded the most important measure to foster regional economic growth. Besides the direct effects of transport policy on passenger and freight transport, a variety of individual economic activities is significantly dependent on the available or potential transport options. Decisions on the planning, financing and realization of mayor infrastructure projects require a solid and far-reaching consideration of direct and indirect growth effects with the occurring costs.

Through its combination of lectures the module reflects the complex interdependencies between infrastructure policy, transport industry and regional policy and provides its participants with a comprehensive understanding of the functionalities of one of the most important sectors of the economy and its relevance for economic policy.

### Annotation

The courses *Assessment of Public Policies and Projects I* (winter term) and *Assessment of Public Policies and Projects II* (summer term) will no longer be part of this module. Student who have already had exams in this courses can integrate these exams in this module.

### Workload

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

## M

**5.96 Module: Transportation Modelling and Traffic Management [M-BGU-101065]**

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	Deutsch/Englisch	4	3

Election block: Pflichtleistung (between 2 and 3 items as well as between 6 and 9 credits)			
T-BGU-101797	<a href="#">Methods and Models in Transportation Planning</a>	3 CR	Vortisch
T-BGU-101798	<a href="#">Traffic Engineering</a>	3 CR	Vortisch
T-BGU-101799	<a href="#">Traffic Management and Transport Telematics</a>	3 CR	Vortisch
T-BGU-101800	<a href="#">Traffic Flow Simulation</a>	3 CR	Vortisch
Election block: Wahlpflicht (at most 1 item as well as between 0 and 3 credits)			
T-BGU-100010	<a href="#">Transportation Data Analysis</a>	3 CR	Kagerbauer
T-BGU-106611	<a href="#">Freight Transport</a>	3 CR	Chlond
T-BGU-106301	<a href="#">Long-Distance and Air Traffic</a>	3 CR	Chlond
T-BGU-101005	<a href="#">Tendering, Planning and Financing in Public Transport</a>	3 CR	Vortisch
T-BGU-100014	<a href="#">Seminar in Transportation</a>	3 CR	Chlond, Vortisch
T-WIWI-103174	<a href="#">Seminar Mobility Services (Master)</a>	3 CR	Satzger, Stryja
T-BGU-103425	<a href="#">Mobility Services and new Forms of Mobility</a>	3 CR	Kagerbauer
T-BGU-103426	<a href="#">Strategic Transport Planning</a>	3 CR	Waßmuth
T-BGU-106608	<a href="#">Information Management for Public Mobility Services</a>	3 CR	Vortisch

**Competence Goal**

See German version.

**Prerequisites**

None

**Recommendation**

None

## M

**5.97 Module: Virtual Engineering A [M-MACH-101283]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	Deutsch	4	3

Mandatory			
T-MACH-102123	<a href="#">Virtual Engineering I</a>	4 CR	Ovtcharova
Election block: Virtual Engineering A (at least 5 credits)			
T-MACH-109933	<a href="#">Business Administration for Engineers and IT professionals</a>	4 CR	Maier
T-MACH-102185	<a href="#">CATIA CAD Training Course</a>	2 CR	Ovtcharova
T-MACH-105312	<a href="#">CATIA Advanced</a>	4 CR	Ovtcharova
T-MACH-108491	<a href="#">Digitalization of Products, Services &amp; Production</a>	4 CR	
T-MACH-102209	<a href="#">Information Engineering</a>	3 CR	Ovtcharova
T-MACH-106743	<a href="#">IoT platform for engineering</a>	4 CR	Ovtcharova
T-MACH-102153	<a href="#">PLM-CAD Workshop</a>	4 CR	Ovtcharova
T-MACH-102181	<a href="#">PLM for Product Development in Mechatronics</a>	4 CR	Eigner
T-MACH-106740	<a href="#">Virtual Engineering Lab</a>	4 CR	Ovtcharova
T-MACH-106741	<a href="#">Virtual training factory 4.X</a>	4 CR	Ovtcharova

**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 should:

- have basic knowledge about the industrial application of Information Technology in product development,
- have understanding about current and future application of information systems in product development processes in the context of Product Lifecycle Management and Virtual Engineering,
- be able to operate current CAx- and PLM-systems in the product development process
- understands demands and relevance of interconnected IT-systems and respective methods for product development

**Prerequisites**

None

**Content**

The Module Virtual Engineering A gives an overview about product development processes, beginning with requirement engineering, verification of manufacturing feasibility and virtual operation in the scope of Digital Factory. The guest-lectures contained in this module complete the content of the lecture with introducing current product development processes focusing.

**Workload**

- regular attendance: 140 hours
- Preparation and reworking: 20 hours
- Exam and exam revision/preparation: 110 hours

**Learning type**

Lecture, exercise

## M

**5.98 Module: Virtual Engineering B [M-MACH-101281]**

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

**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	Deutsch	4	3

Mandatory			
T-MACH-102124	<a href="#">Virtual Engineering II</a>	4 CR	Ovtcharova
Election block: Virtual Engineering B (at least 5 credits)			
T-MACH-109933	<a href="#">Business Administration for Engineers and IT professionals</a>	4 CR	Maier
T-MACH-102185	<a href="#">CATIA CAD Training Course</a>	2 CR	Ovtcharova
T-MACH-105312	<a href="#">CATIA Advanced</a>	4 CR	Ovtcharova
T-MACH-108491	<a href="#">Digitalization of Products, Services &amp; Production</a>	4 CR	
T-MACH-102209	<a href="#">Information Engineering</a>	3 CR	Ovtcharova
T-MACH-106743	<a href="#">IoT platform for engineering</a>	4 CR	Ovtcharova
T-MACH-102181	<a href="#">PLM for Product Development in Mechatronics</a>	4 CR	Eigner
T-MACH-102153	<a href="#">PLM-CAD Workshop</a>	4 CR	Ovtcharova
T-MACH-106740	<a href="#">Virtual Engineering Lab</a>	4 CR	Ovtcharova
T-MACH-106741	<a href="#">Virtual training factory 4.X</a>	4 CR	Ovtcharova

**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 should:

- have basic knowledge about industrial practice of Information Technology in the field of product development,
- have basic knowledge about innovative visualization techniques like Virtual Reality and feasible application of Virtual Mock-Ups (VMU) for validating product properties.
- Is able to estimate potentials and risks of current Virtual Reality Systems in product development.
- understands demands and relevance of interconnected IT-systems and respective methods for product development

**Prerequisites**

keine

**Content**

The module Virtual Engineering B communicates basics of Virtual Reality applications and their fields of application for validating product properties and for supporting product development processes.

Optional courses of this module complete the content with practical application of VR techniques in product development (Virtual Reality Exercise) and current product development processes.

**Workload**

Workload at 9 graduate credits / credit points: ca. 270 hours.

- regular attendance: 100 hours
- Preparation and reworking: 50 hours
- Exam and exam revision/preparation: 120 hours

Detailed apportionment results from credit points of the courses of the module

**Learning type**

Lecture, Exercise.

## M

**5.99 Module: Water Chemistry and Water Technology I [M-CIWVT-101121]**

**Responsible:** Prof. Dr. Harald Horn  
**Organisation:** KIT Department of Chemical and Process Engineering  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-CIWVT-101900	<a href="#">Water Chemistry and Water Technology I</a>	6 CR	Horn
T-CIWVT-103351	<a href="#">Laboratory Work Water Chemistry</a>	4 CR	Abbt-Braun, Horn

**Competence Goal**

The student

- has knowledge of types and sum of the water constituents and their interaction with each other and with the water molecules,
- knows and understands the basics of water chemistry and the most important methods for the treatment of different types of raw water.

**Prerequisites**

none

**Content**

This module gives the basis to understand the most important methods of raw water treatment.

Therefore types and sum of water constituents and their interaction with each other and with water molecules are introduced. The effects of the different treatment and purification methods are shown

## M

**5.100 Module: Water Chemistry and Water Technology II [M-CIWVT-101122]**

**Responsible:** Prof. Dr. Harald Horn  
**Organisation:** KIT Department of Chemical and Process Engineering  
**Part of:** [Compulsory Elective Modules 1 \(Natur- und Ingenieurwissenschaften\)](#)  
[Compulsory Elective Modules 2 \(Natur- und Ingenieurwissenschaften\)](#)

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

Mandatory			
T-CIWVT-101901	<a href="#">Water Chemistry and Water Technology II</a>	9 CR	Horn

**Competence Goal**

The student

- has knowledge of types and sum of the water constituents and their interaction with each other and with the water molecules,
- knows and understands the basics of water chemistry and the most important methods for the treatment of different types of raw water.
- knows about the different types of water treatment and water purification methods to convert, reduce or concentrate water constituents,

**Prerequisites**

The Module "Water Chemistry and Water Technology I" must be passed.

**Content**

The effects of the different treatment and purification methods are shown and it is explained how they can convert, reduce or concentrate water constituents.



## 6 Courses

T

### 6.1 Course: Wildcard Key Competences Seminar 2 [T-WIWI-104681]

**Organisation:** University

**Part of:** [M-WIWI-101808 - Seminarmodul](#)

Type	Credits	Version
Studienleistung	2	1

## T

**6.2 Course: A closer look at Social Innovation [T-WIWI-109932]**

**Responsible:** Dr. Daniela Beyer  
Prof. Dr. Marion Weissenberger-Eibl

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101507 - Innovationsmanagement](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Irregular	1

Events					
SS 2019	2545105	<a href="#">Soziale Innovation unter die Lupe genommen</a>	2 SWS	Seminar (S)	Beyer
Exams					
SS 2019	7900017	<a href="#">Soziale Innovationen unter die Lupe genommen</a>		Prüfung (PR)	Weissenberger-Eibl

**Competence Certificate**

Non exam assessment (following §4(2) 3 of the examination regulation). The grade consists of an innovation plan (comparable to an exposé) (15%), a guideline interview (25%), a presentation of the results (20%) and a seminar paper (40%).

**Prerequisites**

None

**Recommendation**

The previous attendance of the lecture Innovation Management is recommended.

## T

**6.3 Course: Advanced Game Theory [T-WIWI-102861]**

**Responsible:** Prof. Dr. Karl-Martin Ehrhart  
 Prof. Dr. Clemens Puppe  
 Prof. Dr. Johannes Philipp Reiß

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101453 - Angewandte strategische Entscheidungen](#)  
[M-WIWI-101500 - Microeconomic Theory](#)  
[M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Events					
WS 18/19	2521533	<a href="#">Advanced Game Theory</a>	2 SWS	Lecture (V)	Puppe, Ehrhart, Müller
WS 18/19	2521534	<a href="#">Übung zu Advanced Game Theory</a>	1 SWS	Practice (Ü)	Müller, Puppe
Exams					
WS 18/19	7900232	<a href="#">Advanced Game Theory</a>		Prüfung (PR)	Puppe

**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**

Basic knowledge of mathematics and statistics is assumed.

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

## V

**Advanced Game Theory**

2521533, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

This course offers an advanced and rigorous treatment of game theory.

**Workload**

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

## T

## 6.4 Course: Advanced Lab Informatics [T-WIWI-103523]

**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-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
WS 18/19	2512100	Security	4 SWS	Practical course (P)	Baumgart, Volkamer, Mayer
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	2512400	Entwicklung Soziotechnischer Informationssysteme	SWS	Practical course (P)	Sunyaev, Kromat
WS 18/19	2512501	Projektpraktikum Kognitive Automobile und Roboter	3 SWS	Practical course (P)	Zöllner
WS 18/19	2512600	Projektpraktikum Information Service Engineering	2 SWS	Practical course (P)	Sack
SS 2019	2512101	Praktikum Betriebliche Informationssysteme: Realisierung innovativer Dienste für Studierende	3 SWS	Practical course (P)	Oberweis, Toussaint, Ullrich
SS 2019	2512300	Knowledge Discovery and Data Mining	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Färber, Nguyen, Weller
SS 2019	2513306	Data Science & Real-time Big Data Analytics	2 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Riemer, Zehnder
Exams					
WS 18/19	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
WS 18/19	7900046	Sicherheit		Prüfung (PR)	Volkamer
WS 18/19	7900094	Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON		Prüfung (PR)	Sure-Vetter, Ott
WS 18/19	7900102	Advanced Lab Information Service Engineering		Prüfung (PR)	Sack
WS 18/19	7900107	Advanced Lab Cognitive Automobile and Robots		Prüfung (PR)	Zöllner
WS 18/19	7900115	Development of Sociotechnical Information Systems		Prüfung (PR)	Sunyaev
WS 18/19	7900192	Data Science with Open Data		Prüfung (PR)	Sure-Vetter

SS 2019	7900085	<b>Advanced Lab in Information Systems: Realization of innovative services for students</b>	Prüfung (PR)	Oberweis
SS 2019	7900094	<b>Knowledge Discovery and Data Mining</b>	Prüfung (PR)	Sure-Vetter

### Competence Certificate

#### Advanced Lab "Privacy Friendly Apps":

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of a practical work in which a software functionality must be implemented and three interim submissions of the software to be developed. The weighting of the individual components will be announced during the first meeting.

#### All other courses of the Institute AIFB:

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

- a practical work
- a presentation and
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

### Prerequisites

None

### Annotation

The title of this course is a generic one. Specific titles and the topics of offered seminars will be announced before the start of a semester in the internet at <https://portal.wiwi.kit.edu>.

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



#### Security

2512100, WS 18/19, 4 SWS, [Open in study portal](#)

**Practical course (P)**

### Notes

More information on [https://ilias.studium.kit.edu/goto.php?target=crs\\_719271&client\\_id=produktiv](https://ilias.studium.kit.edu/goto.php?target=crs_719271&client_id=produktiv)



#### 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

V

**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.

V

**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

V

**Entwicklung Soziotechnischer Informationssysteme**

2512400, WS 18/19, SWS, [Open in study portal](#)

Practical course (P)

**Description**

The aim of this course is to provide a practical introduction into developing socio-technical information systems, such as web platforms, mobile apps, or desktop applications. Course participants will create (individually or in groups) software solutions for specific problems from various practical domains. The course tasks comprise requirements assessment, system design, and software implementation. Furthermore, course participants will gain insights into software quality assurance methods and software documentation.

**Workload**

4 ECTS = approx. 120 h

**Projektpraktikum Information Service Engineering**

2512600, WS 18/19, 2 SWS, [Open in study portal](#)

**Practical course (P)****Description**

The project will be worked on in teams of 3-4 students each, guided by a tutor from the teaching staff. In the winter semester 2018/19 we intend to participate in the "[Cod1ng Da V1nc1" Initiative](#) .

The ISEproject course is based on the summer semester lecture "Information Service Engineering". Goal of the course is to work on a research problem in small groups (3-4 students) related to the ISE lecture topics, i.e. Natural Language Processing, Linked Data engineering, and Knowledge Mining. The solution of the given research problem requires the development of a software implementation.

Required coursework includes:

- Mid term presentation (5-10 min)
- Final presentation (10-15 min)
- Course report (c. 20 pages)
- Participation and contribution of the students during the course
- Software development and delivery

**Notes**

The ISEproject course can also be credited as a **seminar**.

The project will be worked on in teams of 3-4 students each, guided by a tutor from the teaching staff. In the winter semester 2018/19 we intend to participate in the "[Cod1ng Da V1nc1" Initiative](#) .

**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.



## T

**6.5 Course: Advanced Lab Security [T-WIWI-109786]**

**Responsible:** Prof. Dr. Melanie Volkamer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each winter term	1

Events					
WS 18/19	2512100	<a href="#">Security</a>	4 SWS	Practical course (P)	Baumgart, Volkamer, Mayer

**Competence Certificate**

The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

- a practical work
- a presentation and possibly
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

**Prerequisites**

None

**Recommendation**

Knowledge from the lecture "Information Security" is recommended.

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

## V

**Security**

2512100, WS 18/19, 4 SWS, [Open in study portal](#)

**Practical course (P)**

**Notes**

More information on [https://ilias.studium.kit.edu/goto.php?target=crs\\_719271&client\\_id=produktiv](https://ilias.studium.kit.edu/goto.php?target=crs_719271&client_id=produktiv)

## T

**6.6 Course: Advanced Lab Security, Usability and Society [T-WIWI-108439]**

**Responsible:** Prof. Dr. Melanie Volkamer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each summer term	1

Events					
WS 18/19	2512551	<a href="#">Praktikum Security, Usability and Society</a>	3 SWS	Practical course (P)	Volkamer, Mayer
Exams					
WS 18/19	7900116	<a href="#">Advanced Lab Security, Usability and Society</a>		Prüfung (PR)	Volkamer

**Competence Certificate**

The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

- a practical work
- a presentation and possibly
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

**Prerequisites**

None

**Recommendation**

Knowledge from the lecture "Information Security" is recommended.

**Annotation**

The course is expected to be offered from winter term 2018/2019.

**Contents:**

In the course of the programming lab, changing topics from the field of Human Factors in Security und Privacy will be worked on.

**Learning goals:**

The student

- can apply the basics of information security
- is able to implement appropriate measures to achieve different protection goals
- can structure a software project in the field of information security
- can use the Human Centred Security and Privacy by Design technique to develop user-friendly software
- can explain and present technical facts and the results of the programming lab in oral and written form

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

## V

**Praktikum Security, Usability and Society**

2512551, WS 18/19, 3 SWS, [Open in study portal](#)

**Practical course (P)**

**Notes**

Kick-off Meeting (compulsory attendance) 19.10.2018

## T

**6.7 Course: Advanced Lab User Studies in Security [T-WIWI-109271]**

**Responsible:** Prof. Dr. Melanie Volkamer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each summer term	1

Events					
SS 2019	2512552	<a href="#">Praktikum User Studies in Security and Privacy</a>	3 SWS	Practical course (P)	Volkamer, Gerber, Mayer
Exams					
WS 18/19	7900129	<a href="#">Advanced Lab User Studies in Security</a>		Prüfung (PR)	Volkamer
SS 2019	7900129	<a href="#">Advanced Lab User Studies in Security</a>		Prüfung (PR)	Volkamer

**Competence Certificate**

The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

- a practical work
- a presentation and possibly
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

**Prerequisites**

None

## T

**6.8 Course: Advanced Machine Learning [T-WIWI-109921]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
Dr. Abdolreza Nazemi

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101470 - Data Science: Advanced CRM](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2540535	<a href="#">Advanced Machine Learning</a>	2 SWS	Lecture (V)	Nazemi
SS 2019	2540536	<a href="#">Exercise Advanced Machine Learning</a>	1 SWS	Practice (Ü)	Nazemi

**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

**Advanced Machine Learning**

2540535, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content****Tentative Course Outline:**

- Introduction
- Statistical Inference
- Shrinkage Methods
- Model Assessment and Selection
- Tree-based Machine Learning Algorithms
- Dimensionality Reduction
- Neural Networks and Deep Learning
- Natural Language Processing with Deep Learning
- Support Vector Machine

**Workload****Time of attendance**

- Attending the lecture: 13 x 90min = 19h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m

**Literature**

- Alpaydin, E. (2014). Introduction to Machine Learning. Third Edition, MIT Press.
- De Prado, M. L. (2018). Advances in Financial Machine Learning. John Wiley & Sons.
- Goodfellow, I., Bengio, Y., and A. Courville (2017). Deep Learning. MIT Press. (online available)
- Hastie, T., Tibshirani, R., and J. Friedman (2009). Elements of Statistical Learning. Second Edition. Springer. (online available)
- Leskovec, J., Rajaraman, A., Ullman, J. D., (2014). Mining of Massive Datasets. Cambridge University Press. (online available)
- Witten, I. H., Eibe, F., Hall, M. A., Pal, C. J. (2016). Data Mining: Practical Machine Learning Tools and Techniques. Morgan Kaufmann.

## T

**6.9 Course: Advanced Management Accounting [T-WIWI-102885]**

**Responsible:** Prof. Dr. Marcus Wouters  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	Each winter term	1

Events					
WS 18/19	2579907	<a href="#">Advanced Management Accounting</a>	3 SWS	Lecture (V)	Wouters, Riar
Exams					
WS 18/19	79-2579907-00	<a href="#">Advanced Management Accounting</a>		Prüfung (PR)	Wouters

**Competence Certificate**

The assessment consists of an oral exam (20 min) taking place in the recess period (according to §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.

**Recommendation**

The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

**Annotation**

This course is held in English. Lectures and tutorials are integrated.

The course is compulsory and must be examined.

Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters@kit.edu).

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

## V

**Advanced Management Accounting**

2579907, WS 18/19, 3 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The course addresses several topics where management accounting is strongly related to marketing, finance, or organization and strategy, such as customer value propositions, financial performance measures, managing new product development, and technology investment decisions.

**Annotation**

This course is held in English. Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters@kit.edu).

**Workload**

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

**Literature**

Literature is mostly made available via ILIAS.

## T

**6.10 Course: Advanced Statistics [T-WIWI-103123]**

**Responsible:** Prof. Dr. Oliver Grothe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101637 - Analytics und Statistik](#)  
[M-WIWI-104902 - Statistik](#)

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

Events					
WS 18/19	2550552	<a href="#">Statistik für Fortgeschrittene</a>	2 SWS	Lecture (V)	Grothe
WS 18/19	2550553	<a href="#">Übung zu Statistik für Fortgeschrittene</a>	2 SWS	Practice (Ü)	Grothe, Kaplan, Coblenz
Exams					
WS 18/19	7900219	<a href="#">Advanced Statistics</a>		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. A bonus program can improve the grade by one grade level (i.e. by 0.3 or 0.4). The exam is offered every semester. Re-examinations are offered only for repeaters.

**Prerequisites**

None

**Annotation**

New course starting winter term 2015/2016

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

## V

**Statistik für Fortgeschrittene**

2550552, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Basic principles  
 Types of convergence and limit theorems  
 Multivariate Distributions  
 Copulas  
 Simulation techniques, Bootstrap  
 Statistical Estimation  
 Statistical Testing  
 Simulation studies

**Literature**

Comprehensive lecture notes

T

## 6.11 Course: Advanced Stochastic Optimization [T-WIWI-106548]

**Responsible:** Prof. Dr. Steffen Rebennack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

### 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

**6.12 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-101406 - Netzwerkökonomie](#)  
[M-WIWI-101497 - Agglomeration und Innovation](#)  
[M-WIWI-101500 - Microeconomic Theory](#)  
[M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
SS 2019	2520527	<a href="#">Advanced Topics in Economic Theory</a>	2 SWS	Lecture (V)	Mitusch, Scheffel
SS 2019	2520528	<a href="#">Übung zu Advanced Topics in Economic Theory</a>	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

## 6.13 Course: Airport Logistics [T-MACH-105175]

**Responsible:** André Richter  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101263 - Einführung in die Logistik](#)  
[M-MACH-101277 - Materialfluss in Logistiksystemen](#)  
[M-MACH-101278 - Materialfluss in vernetzten Logistiksystemen](#)  
[M-MACH-101280 - Logistik in Wertschöpfungsnetzwerken](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	2

Events					
WS 18/19	2117056	<a href="#">Airport logistics</a>	2 SWS	Lecture (V)	Richter
Exams					
WS 18/19	76-T-MACH-105175	<a href="#">Airport Logistics</a>		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

## 6.14 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	<a href="#">Analysis of Exhaust Gas und Lubricating Oil in Combustion Engines</a>	2 SWS	Lecture (V)	Gohl
Exams					
SS 2019	76--T-Mach-105173	<a href="#">Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines</a>		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

**6.15 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	<a href="#">Analysis tools for combustion diagnostics</a>	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

**6.16 Course: Analyzing and Evaluating Innovation Processes [T-WIWI-108774]**

**Responsible:** Prof. Dr. Marion Weissenberger-Eibl  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	1

Events					
WS 18/19	2545108	<a href="#">Innovationsprozesse analysieren und evaluieren</a>	2 SWS	Seminar (S)	Beyer
Exams					
WS 18/19	7900037	<a href="#">Analyzing and Evaluating Innovation Processes</a>		Prüfung (PR)	Weissenberger-Eibl

**Competence Certificate**

Non exam assessment (following §4(2) 3 of the examination regulation).

Innovation plan (exposé) (20%), Guided interviews/ quantitative survey (20%), presentation of results (20%), seminar paper (about 5 pages per person) (40%).

**Prerequisites**

None

**Recommendation**

Prior attendance of the course Innovation Management [2545015] is recommended.

T

**6.17 Course: Application of Social Science Methods (WiWi) [T-GEISTSOZ-109052]**

**Responsible:** Prof. Dr. Gerd Nollmann  
**Organisation:** KIT Department of Humanities and Social Sciences  
**Part of:** [M-GEISTSOZ-101169 - Soziologie](#)  
[M-WIWI-104906 - Geistes- und Sozialwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung schriftlich	9	Each summer term	1

Exams				
WS 18/19	7400048	<a href="#">Application of Social Science Methods (WiWi)</a>	Prüfung (PR)	Nollmann

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-GEISTSOZ-104565 - Computer Aided Data Analysis](#) must have been passed.

## T

**6.18 Course: Applied Econometrics [T-WIWI-103125]**

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101638 - Ökonometrie und Statistik I](#)  
[M-WIWI-104902 - Statistik](#)

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

Exams				
WS 18/19	7900251	<a href="#">Applied Econometrics</a>	Prüfung (PR)	Schienle
WS 18/19	7900280	<a href="#">Applied Econometrics</a>	Prüfung (PR)	Schienle

**Competence Certificate**

The assessment of this course is a written examination (90 min) according to §4(2), 1 of the examination regulation.

**Prerequisites**

None

**Annotation**

The course is not offered regularly.

## T

**6.19 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-101472 - 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	<a href="#">Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services</a>	2 SWS	Lecture (V)	Sunyaev
SS 2019	2511033	<a href="#">Übungen zu Angewandte Informatik II – Internet Computing</a>	1 SWS	Practice (Ü)	Sunyaev
Exams					
SS 2019	7900025	<a href="#">Applied Informatics II - Internet Computing</a>		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

*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.



6 COURSES

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

**Literature**

Tba in the lecture.

## T

**6.20 Course: Artificial Intelligence in Service Systems [T-WIWI-108715]**

**Responsible:** Prof. Dr. Gerhard Satzger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101448 - Service Management](#)  
[M-WIWI-101506 - Service Analytics](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2595650	<a href="#">Artificial Intelligence in Service Systems</a>	2 SWS	Lecture (V)	Kühl
Exams					
WS 18/19	7900253	<a href="#">Artificial Intelligence in Service Systems</a>		Prüfung (PR)	Satzger

**Competence Certificate**

The assessment consists of a written exam (60 min) according to §4(2), 1 of the examination regulations.

**Prerequisites**

None

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

## V

**Artificial Intelligence in Service Systems**

2595650, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Artificial Intelligence and the application of machine learning is becoming more and more popular to solve relevant business challenges. However, it is not only important to be familiar with precise algorithms, but rather a general understanding of the necessary steps with a holistic view—from real-world challenge to successful deployment of an AI. As part of this course, we teach the complete lifecycle of an AI project with a focus on supervised machine learning challenges. We do so by also teaching the use of Python and the required packages like scikit-learn and tensorflow with exemplary data. We then take this knowledge to the more complex case of service systems with different entities (e.g. companies) who interact with each other and show possibilities on how to derive holistic insights. Two possibilities to do so are the use of meta and transfer machine learning, where we teach insights in their theory, design and application.

## T

**6.21 Course: Asset Pricing [T-WIWI-102647]**

- Responsible:** Prof. Dr. Martin Ruckes  
Prof. Dr. Marliese Uhrig-Homburg
- Organisation:** KIT Department of Economics and Management
- Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101482 - Finance 1](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	2

Events					
SS 2019	2530555	<a href="#">Asset Pricing</a>	2 SWS	Lecture (V)	Uhrig-Homburg
SS 2019	2530556	<a href="#">Übung zu Asset Pricing</a>	1 SWS	Practice (Ü)	Uhrig-Homburg, Reichenbacher
Exams					
WS 18/19	7900056	<a href="#">Asset Pricing</a>		Prüfung (PR)	Uhrig-Homburg

**Competence Certificate**

The success control takes place in form of a written examination (75 min) during the semester break (according to §4(2), 1 SPO).

The examination is offered every semester and can be repeated at any regular examination date.

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 strongly recommend knowledge of the basic topics in investments (bachelor course), which will be necessary to be able to follow the course.

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

## V

**Asset Pricing**

2530555, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

The lecture deals with the diverse issues arising in the context of measuring and controlling credit risk. At first, the theoretical and empirical relations between ratings, probabilities of default, and credit spreads are analysed. After that, the focus is on the valuation of credit risk. Finally, the management of credit risk, e.g. using credit derivatives and credit portfolio analysis, is examined, and the legal framework and its implications are discussed

**Learning Content**

This lecture deals with the valuation of risky cash flows. A stochastic discount model and a central equation will be introduced, which form the basis of nearly every valuation model in finance. That includes the valuation of stocks, bonds and derivatives. The first part of the lecture will present the theory, the second part covers empirical questions related to this approach.

**Workload**

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

**Literature****Basic literature**

- Asset pricing / Cochrane, J.H. - Rev. ed., Princeton Univ. Press, 2005.

**Elective literature**

- Investments and Portfolio Management / Bodie, Z., Kane, A., Marcus, A.J. - 9. ed., McGraw-Hill, 2011.
- The econometrics of financial markets / Campbell, J.Y., Lo, A.W., MacKinlay, A.C. - 2. printing, with corrections, Princeton Univ. Press, 1997.

## T

**6.22 Course: Auction Theory [T-WIWI-102613]**

**Responsible:** Prof. Dr. Karl-Martin Ehrhart  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-101453 - Angewandte strategische Entscheidungen](#)  
[M-WIWI-101500 - Microeconomic Theory](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2520408	<a href="#">Auktionstheorie</a>	2 SWS	Lecture (V)	Ehrhart
WS 18/19	2520409	<a href="#">Übungen zu Auktionstheorie</a>	1 SWS	Practice (Ü)	Ehrhart
Exams					
WS 18/19	7900222	<a href="#">Auction Theory</a>		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

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

## V

**Auktionstheorie**

2520408, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

This course deals with the analysis and modeling of auction which are based on game theory. This also includes aspects of applying and designing auctions as well as experiences with auctions. Main topics are:

- Single- and multi-unit auctions
- Selling and procurement auctions
- Electronic auctions (e.g. eBay, C2C, B2B)
- Multi-attributive auctions.

**Annotation**

We suggest to attend either Game Theory I or Decision Theory beforehand.

**Workload**

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

**Literature**

- Ehrhart, K.-M. und S. Seifert: Auktionstheorie, Skript zur Vorlesung, KIT, 2011
- Krishna, V.: Auction Theory, Academic Press, Second Edition, 2010
- Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2004
- Ausubel, L.M. und P. Cramton: Demand Reduction and Inefficiency in Multi-Unit Auctions, University of Maryland, 1999

## T

**6.23 Course: Automated Financial Advisory [T-WIWI-106495]**

**Responsible:** Prof. Dr Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103261 - Disruptive Finanz-technologische Innovationen](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
WS 18/19	2500002	<a href="#">Automated Financial Advisory</a>	2 SWS	Seminar (S)	Ulrich
SS 2019	2530372	<a href="#">Automated Financial Advisory</a>	2 SWS	Seminar (S)	Ulrich
Exams					
WS 18/19	7900290	<a href="#">Automated Financial Advisory</a>		Prüfung (PR)	Ulrich
SS 2019	7900124	<a href="#">Automated Financial Advisory</a>		Prüfung (PR)	Ulrich

**Competence Certificate**

The grade consists of a written thesis and an oral presentation.

**Prerequisites**

There are two conditions for taking this course:

1. This course is only open for registered students of the module “Disruptive FinTech Innovations”.
2. Registered students do also attend in the same semester the lecture “Engineering FinTech Solutions” and the programming internship “Computational FinTech with Python and C++”.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-106193 - Engineering FinTech Solutions](#) must have been started.
2. The course [T-WIWI-106496 - Computational FinTech with Python and C++](#) must have been started.

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

## V

**Automated Financial Advisory**

2500002, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Learning Content**

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

**Workload**

The total workload for this course is approximately 90 hours.

**Literature**

Literature will be distributed during the first lecture.

## V

**Automated Financial Advisory**

2530372, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Learning Content**

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

**Workload**

The total workload for this course is approximately 90 hours.

**Literature**

Literature will be distributed during the first lecture.

## T

**6.24 Course: Automated Manufacturing Systems [T-MACH-102162]**

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

**Part of:** [M-MACH-101298 - Automatisierte Produktionsanlagen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each summer term	2

Events					
SS 2019	2150904	<a href="#">Automated Manufacturing Systems</a>	6 SWS	Lecture / Practice (VÜ)	Fleischer
Exams					
WS 18/19	76-T-MACH-102162	<a href="#">Automated Manufacturing Systems</a>		Prüfung (PR)	Fleischer
WS 18/19	76-T-MACH-102162-MIT	<a href="#">Automated Manufacturing Systems</a>		Prüfung (PR)	Fleischer

**Competence Certificate**  
written exam (120 minutes)

**Prerequisites**  
"T-MACH-108844 - Automatisierte Produktionsanlagen" must not be commenced.

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

## V

**Automated Manufacturing Systems**

2150904, 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**

The lecture provides an overview of the structure and functioning of automated manufacturing systems. In the introduction chapter the basic elements for the realization of automated manufacturing systems are given. This includes:

- Drive and control technology
- Handling technology for handling work pieces and tools
- Industrial Robotics
- Quality assurance in automated manufacturing
- automatic machines, cells, centers and systems for manufacturing and assembly
- structures of multi-machine systems
- planning of automated manufacturing systems

An interdisciplinary view of these subareas enables Industry 4.0 solutions.

In the second part of the lecture, the basics are illustrated using implemented manufacturing processes for the production of automotive components (chassis and drive technology). The analysis of automated manufacturing systems for manufacturing of defined components is also included.

In the field of vehicle power train both, the automated manufacturing process for the production of the conventional internal-combustion engine and the automated manufacturing process for the production of the prospective electric power train

(electric motor and battery) are considered. In the field of car body, the focus is on the analysis of the process chain for the automated manufacturing of conventional sheet metal body parts, as well as for automated manufacturing of body components made out of fiber-reinforced plastics.

Within tutorials, the contents from the lecture are advanced and applied to specific problems and tasks.

**Annotation**

None

**Workload****MACH:**

regular attendance: 63 hours

self-study: 177 hours

**WING/TWVL:**

regular attendance: 63 hours

self-study: 207 hours

**Literature**

Lecture Notes

## T

**6.25 Course: Automation of Discrete Event and Hybrid Systems [T-ETIT-100981]**

**Responsible:** Prof. Dr.-Ing. Sören Hohmann  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-ETIT-101157 - Regelungstechnik II](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2303160	<a href="#">Automatisierung ereignisdiskreter und hybrider Systeme</a>	2 SWS	Lecture (V)	Kluwe
Exams					
WS 18/19	7303160	<a href="#">Automation of Discrete Event and Hybrid Systems</a>		Prüfung (PR)	Kluwe

**Prerequisites**

none

## T

**6.26 Course: Automotive Logistics [T-MACH-105165]**

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

**Part of:** [M-MACH-101263 - Einführung in die Logistik](#)  
[M-MACH-101277 - Materialfluss in Logistiksystemen](#)  
[M-MACH-101278 - Materialfluss in vernetzten Logistiksystemen](#)  
[M-MACH-101280 - Logistik in Wertschöpfungsnetzwerken](#)  
[M-MACH-101282 - Globale Produktion und Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Events					
SS 2019	2118085	<a href="#">Automotive Logistics</a>	2 SWS	Lecture (V)	Furmans
Exams					
WS 18/19	76-T-MACH-105165	<a href="#">Automotive Logistics</a>		Prüfung (PR)	Furmans, Mittwollen
SS 2019	76-T-MACH-105165	<a href="#">Automotive Logistics</a>		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

## 6.27 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-101511 - Vertiefung Finanzwissenschaft](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2560134	<a href="#">Basics of German Company Tax Law and Tax Planning</a>	3 SWS	Lecture (V)	Wigger, Gutekunst
Exams					
WS 18/19	790unbe	<a href="#">Basics of German Company Tax Law and Tax Planning</a>		Prüfung (PR)	Wigger
SS 2019	790unbe	<a href="#">Basics of German Company Tax Law and Tax Planning</a>		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

**6.28 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-101263 - Einführung in die Logistik](#)  
[M-MACH-101279 - Technische Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each winter term	4

Events					
WS 18/19	2117095	<a href="#">Basics of Technical Logistics</a>	4 SWS	Lecture / Practice (VÜ)	Mittwollen, Oellerich
Exams					
WS 18/19	76-T-MACH-102163	<a href="#">Basics of Technical Logistics</a>		Prüfung (PR)	Mittwollen
SS 2019	76-T-MACH-102163	<a href="#">Basics of Technical Logistics</a>		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

## 6.29 Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I [T-MACH-100966]

**Responsible:** Prof. Dr. Andreas Guber  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101290 - BioMEMS](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	2

Events					
WS 18/19	2141864	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I</a>	2 SWS	Lecture (V)	Guber
Exams					
WS 18/19	76-T-MACH-100966	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I</a>		Prüfung (PR)	Guber
SS 2019	76-T-MACH-100966	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I</a>		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 I

2141864, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

**Description**  
**Media:**

Lecture script

#### Learning Content

Introduction into various microtechnical manufacturing methods: LIGA, Micro milling, Silicon Micromachining, Laser Microstructuring,  $\mu$ EDM, Metal-Etching  
 Biomaterials, Sterilisation.  
 Examples of use in the life science sector: basic micro fluidic structures: micro channels, micro filters, micromixers, micropumps, microvalves, Micro and nanotiter plates, Microanalysis systems ( $\mu$ TAS),  
 Lab-on-chip applications.

#### Annotation

The exam is held during the semester break. The date will be announced at the beginning of the semester.

#### 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

M. Madou

Fundamentals of Microfabrication

Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T

## 6.30 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-101290 - BioMEMS](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2142883	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II</a>	2 SWS	Lecture (V)	Guber
Exams					
WS 18/19	76-T-MACH-100967	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II</a>		Prüfung (PR)	Guber
SS 2019	76-T-MACH-100967	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II</a>		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

## 6.31 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-101290 - BioMEMS](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2142879	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III</a>	2 SWS	Lecture (V)	Guber
Exams					
WS 18/19	76-T-MACH-100968	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III</a>		Prüfung (PR)	Guber
SS 2019	76-T-MACH-100968	<a href="#">BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III</a>		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

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

**6.32 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-101290 - BioMEMS](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-MACH-101294 - Nanotechnologie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2142140	<a href="#">Bionics for Engineers and Natural Scientists</a>	2 SWS	Lecture (V)	Hölscher, Walheim, Greiner
Exams					
WS 18/19	76-T-MACH-102172	<a href="#">Bionics for Engineers and Natural Scientists</a>		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

**6.33 Course: Blockchains & Cryptofinance [T-WIWI-108880]**

- Responsible:** Dr. Philipp Schuster  
Prof. Dr. Marliese Uhrig-Homburg
- Organisation:** KIT Department of Economics and Management
- Part of:** [M-WIWI-101409 - Electronic Markets](#)  
[M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-101511 - Vertiefung Finanzwissenschaft](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2530567	<a href="#">Blockchains &amp; Cryptofinance</a>	2 SWS	Lecture (V)	Schuster, Uhrig-Homburg
WS 18/19	2530568	<a href="#">Übung zu Blockchains &amp; Cryptofinance</a>	1 SWS	Practice (Ü)	Müller
Exams					
WS 18/19	7900028	<a href="#">Blockchains &amp; Cryptofinance</a>		Prüfung (PR)	Uhrig-Homburg

**Competence Certificate**

The assessment consists of a written exam (75 min) (§4(2), 1 of the examination regulations).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

New course starting winter term 2018/2019.

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

## V

**Blockchains & Cryptofinance**

2530567, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Workload**

Gesamtaufwand bei 4,5 Leistungspunkten: ca. 135.0 Stunden

Präsenzzeit: 30 Stunden

Vor – und Nachbereitung der LV: 45.0 Stunden

Prüfung und Prüfungsvorbereitung: 60.0 Stunden

T

**6.34 Course: Building Intelligent and Robo-Advised Portfolios [T-WIWI-106442]**

**Responsible:** Prof. Dr Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103247 - Intelligente Risiko- und Investitionsberatung](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each summer term	1

**Competence Certificate**

No exam in winter semester 2018/2019.

The exam tests the material of the current semester and takes place during the lecture-free period. Students who don't pass the exam are allowed to re-take the exam.

Details of the grade formation will be announced at the beginning of the event.

**Prerequisites**

None.

**Recommendation**

Good skills in applied math modeling (differential equations).

**Annotation**

The course is not offered regularly.



## T 6.35 Course: Building Laws [T-BGU-103429]

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101884 - Lean Management im Bauwesen](#)  
[M-BGU-101888 - Projektmanagement im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	6241803	<a href="#">Baurecht</a>	2 SWS	Lecture (V)	Miernik, Kohlhammer
Exams					
WS 18/19	8240103429	<a href="#">Building Laws</a>		Prüfung (PR)	Haghsheno

### Prerequisites

None

### Recommendation

None

### Annotation

None

T

## 6.36 Course: Business Administration for Engineers and IT professionals [T-MACH-109933]

**Responsible:** Dipl.-Ing. Thomas Maier  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
SS 2019	2122303	<a href="#">Business Administration for Engineers and IT professionals</a>	2 SWS	Seminar (S)	Sebregondi

### Competence Certificate

Assessment of another type. Two presentations and six written compositions in team work. Grading: each composition 1/8 and each presentation 1/8.

### Prerequisites

None

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

V

## Business Administration for Engineers and IT professionals

2122303, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)

### Notes

Number of participants limited to 30 people.

T

## 6.37 Course: Business Administration in Information Engineering and Management [T-WIWI-102886]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101409 - Electronic Markets](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2540500	<a href="#">Business Administration in Information Engineering and Management</a>	2 SWS	Lecture (V)	Geyer-Schulz
SS 2019	2540501	<a href="#">Übungen zu BWL der Informationsunternehmen</a>	1 SWS	Practice (Ü)	Nazemi
Exams					
WS 18/19	7979537	<a href="#">Business Administration in Information Engineering and Management</a>		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

Basic knowledge from Operations Research (linear programming) and from decision theory are expected.

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

V

## Business Administration in Information Engineering and Management

2540500, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

In this lecture, classical Business Administration is applied to businesses in an information- and communication technological environment. The process to extract relevant data for decision making from operational accounting systems receives special attention. In order to do so, topics such as activity-based costing and transaction costs models are addressed. The automatization of the decision making process in businesses by data bases is another focus of the module. To solve such issues within a company, relevant methods such as decision theory and game theory are lectured. Finally, complex business relevant questions in a dynamically changing environment are addressed by presenting models and methods from system dynamics.

**Workload**

The total workload for this course is approximately 150 hours (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: 40h 00m
- Preparation of the examination: 31h 00m

**Sum: 150h 00m**

**Literature**

- G. Bamberg und A. G. Coenenberg (2006). Betriebswirtschaftliche Entscheidungslehre. (13. edition), chapter 1 - 8, pages 1 - 270.
- Russell, S. and Norvig, P. (1995). Artificial Intelligence: A Modern Approach The Intelligent Agent Book. Prentice-Hall, Upper Saddle River. chapter 2, pages 31 - 37.
- Porter, M. E. (1998a). Competitive Advantage: Creating and Sustaining Superior Performance. The Free Press, New York, 2 edition. chapter 1, pages 1 - 30
- Porter, M. E. (1998b). Competitive Strategy: Techniques for Analyzing Industries and Competitors. The Free Press, New York, 2 edition. chapters 1+2, pages 1 - 46
- Horngren, C. T., Datar, S. M., and Foster, G. (2003). Cost Accounting: A Managerial Emphasis. Prentice-Hall, Upper Saddle River, 11 edition. chapter 13, pages 446 - 460
- Cooper, W.W., Seiford, L. M., and Tone, K. (2000). Data Envelopment Analysis. Kluwer Academic Publishers, Boston. chapter 2, pages 21- 25
- Copeland, T. and Weston, F. (1988). Financial Theory and Corporate Policy. Addison-Wesley, Reading, 3 edition. pages 18 - 41 and chapter 4.E, pages 92 - 95].
- Myerson, R. B. (1997). Game Theory. Harvard University Press, London, 3 edition. pages 99-105.
- Milgrom, P. and Roberts, J. (1992). Economics, Organization and Management. Prentice Hill [Chapter 2, pp. 25-39].

## T

**6.38 Course: Business and IT Service Management [T-WIWI-102881]**

**Responsible:** Prof. Dr. Gerhard Satzger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101448 - Service Management](#)  
[M-WIWI-102754 - Service Economics and Management](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2595484	<a href="#">Business and IT Service Management</a>	2 SWS	Lecture (V)	Satzger
WS 18/19	2595485	<a href="#">Übungen zu Business and IT Service Management</a>	1 SWS	Practice (Ü)	Enders, Seebacher
Exams					
WS 18/19	7900242	<a href="#">Business and IT Service Management</a>		Prüfung (PR)	Satzger

**Competence Certificate**

The assessment of this course is a written examination (60 min.) (following §4(2), 1 SPOs) and by submitting written papers as part of the exercise (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

**Prerequisites**

None

**Recommendation**

None

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

## V

**Business and IT Service Management**

2595484, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The rapid development of information and communication technology transforms many enterprises towards service-oriented structures, comprising new digital services, new business models and SOA-based process structures within larger service networks. Thus, strategic and operative management of service-oriented enterprises increasingly gains importance. In this course, we want to systematically acquire relevant know-how and apply this to real word examples. Focus will be placed on the interdependencies of business, IT aspects and concepts.

The course will be taught in English. It should provide ample opportunity for active participation of students. The course will integrate presentations of experts from business practice as well as a comprehensive case study ('en bloc' for 1-2 days) in which students will actively work on the strategic service-oriented shift of an enterprise.

**Annotation**

The credits have been changed from 5 to 4,5.

**Workload**

The total workload for this course is approximately 135 hours. For further information see German version.

**Literature**

Fitzsimmons J./Fitzsimmons, M., Service Management, Operations, Strategy and Information Technology, 6. ed., 2007

Maister, David H., Managing The Professional Service Firm, 1997

Teboul, J. , Service is Front Stage: Positioning services for value advantage, 2006

Grönroos, Service Management and Marketing, 2007

Cardoso et al. (Hrsg.) (2015), Fundamentals on Service Systems

Böhmman et al. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79

Vargo, S./Lusch, R. (2004) Evolving to a New Dominant Logic for Marketing, in: JoM68 (1),1-17

Schüritz et al., (2017):Datatization as the Next Frontier of Servitization, ICIS Proceedings

## T

**6.39 Course: Business Dynamics [T-WIWI-102762]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101409 - Electronic Markets](#)  
[M-WIWI-101470 - Data Science: Advanced CRM](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2540531	<a href="#">Business Dynamics</a>	2 SWS	Lecture (V)	Geyer-Schulz, Glenn
WS 18/19	2540532	<a href="#">Exercise Business Dynamics</a>	1 SWS	Practice (Ü)	Geyer-Schulz, Glenn
Exams					
WS 18/19	7979777	<a href="#">Business Dynamics</a>		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**

None

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

## V

**Business Dynamics**

2540531, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Corporate growth, the diffusion of new technologies, business processes, project management, product development, service quality management – all these are examples for application areas of business dynamics. They all are dynamic systems that are characterized by feedback loops between many different variables. By means of the tools of business dynamics such systems can be modelled. Simulations of complex systems allow the analysis, the goal centered design, as well as the optimization of markets, business processes, policies, and organizations.

**Annotation**

The course is generally held as block course.

**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**

John D. Sterman. Business Dynamics: Systems Thinking and Modeling for a Complex World. McGraw-Hill, 2000.



## T

**6.40 Course: Business Intelligence Systems [T-WIWI-105777]**

<b>Responsible:</b>	Prof. Dr. Alexander Mädche Mario Nadj Peyman Toreini
<b>Organisation:</b>	KIT Department of Economics and Management
<b>Part of:</b>	<a href="#">M-WIWI-101506 - Service Analytics</a> <a href="#">M-WIWI-101510 - Cross-Functional Management Accounting</a> <a href="#">M-WIWI-104068 - Information Systems in Organizations</a> <a href="#">M-WIWI-104900 - Betriebswirtschaftslehre</a>

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

Events					
WS 18/19	2540422	<a href="#">Business Intelligence Systems</a>	2 + 1 SWS	Lecture (V)	Mädche, Nadj
Exams					
WS 18/19	7900224	<a href="#">Business Intelligence Systems</a>		Prüfung (PR)	Mädche

**Competence Certificate**

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

Students receive one aggregated grade consisting of a written exam (60%) and the Business Intelligence System challenge (40%). The exam and the Business Intelligence System challenge need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the Business Intelligence System challenge.

**Prerequisites**

None

**Recommendation**

Basic knowledge on database systems is helpful.

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

## V

**Business Intelligence Systems**

2540422, WS 18/19, 2 + 1 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

In most modern enterprises, Business Intelligence Systems represent a core enabler of managerial decision making in that they are supplying up-to-date and accurate information about all relevant aspects of a company's planning and operations: from stock levels to sales volumes, from process cycle times to key indicators of corporate performance.

The aim of this course is to introduce theoretical foundations, concepts, tools, and current practice of Business Intelligence Systems from a managerial and technical perspective. The lecture is complemented with a Business Intelligence System challenge, where students work with real-world data and enable system-based decision making using commercial Business Intelligence software packages.

**Learning Content**

- Conceptual Foundations
- Provisioning: ETL Process, Metadata, Data Warehouse & Data Marts and Big Data Technologies
- Consumption: Reporting, Dashboards and its relation to (Big Data) Analytics
- BI Strategy & Governance
- BI Implementation & Post-Implementation Management
- Business Intelligence System Challenge (in cooperation with industry partner)

**Literature**

Turban, E., Aronson, J., Liang T.-P., Sharda, R. 2008. "Decision Support and Business Intelligence Systems". Pearson.

Watson, H. J. 2014. "Tutorial: Big Data Analytics: Concepts, Technologies, and Applications," Communications of the Association for Information Systems (34), p. 24.

Arnott, D., and Pervan, G. 2014. "A critical analysis of decision support systems research revisited: The rise of design science," Journal of Information Technology (29:4), Nature Publishing Group, pp. 269–293 (doi: 10.1057/jit.2014.16).

Carlo, V. (2009). "Business intelligence: data mining and optimization for decision making". Editorial John Wiley and Sons, 308-317.

Chen, H., Chiang, R. H. L, and Storey, V. C. 2012. „Business Intelligence and Analytics: From Big Data to Big Impact,“ MIS Quarterly (36:4), pp. 1165-1188.

Davenport, T. 2014. Big Data @ Work, Boston, MA: Harvard Business Review.

Economist Intelligence Unit. 2015 "Big data evolution: Forging new corporate capabilities for the long term"

Power, D. J. 2008. "Decision Support Systems: A Historical Overview," Handbook on Decision Support Systems, pp. 121–140 (doi: 10.1007/978-3-540-48713-5\_7).

Sharma, R., Mithras, S., and Kankanhalli, A. 2014. „Transforming decision-making processes: a research agenda for understanding the impact of business analytics on organisations,“ European Journal of Information Systems (23:4), pp. 433-441.

Silver, M. S. 1991. "Decisional Guidance for Computer-Based Decision Support," MIS Quarterly (15:1), pp. 105-122.

## T

## 6.41 Course: Business Models in the Internet: Planning and Implementation [T-WIWI-102639]

**Responsible:** Prof. Dr. Christof Weinhardt

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101410 - Business & Service Engineering](#)  
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2540456	<a href="#">Internet Business Models</a>	2 SWS	Lecture (V)	Weinhardt, Peukert, Dann
SS 2019	2540457	<a href="#">Übungen zu Geschäftsmodelle im Internet: Planung und Umsetzung</a>	1 SWS	Practice (Ü)	Peukert, Dann

### Competence Certificate

The assessment consists of a written exam (60 min) (according to §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). 50% of the final grade is based on the written exam and 50% is based on assignments from the exercises. Successful completion of the exercises is a prerequisite for admission to the written exam. The points obtained in the exercises only apply to the first and second exam of the semester in which they were obtained.

### Prerequisites

None

### Recommendation

None

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

## V

### Internet Business Models

2540456, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Description

The emergence of internet economy has resulted in an accelerated evolution of commerce models in eBusiness. Early adopters have experimented with a variety of new business models, technologies and application designs. At the same time, there has been a growing demand for new standards to facilitate the exchange of information, catalogue content and transactions between buyers and sellers. But the true understanding of how to bring buyers and sellers together is still widely missing, leading to multiple cases of costly missed investments. This course focuses on the design and implementation of successful business models for eBusiness applications for the World Wide Web (WWW), imparting the basic knowledge for building successful eBusiness applications. We consider not only technical foundations of eBusiness applications but also economical aspects. In small groups, students develop and implement an eBusiness model that is eventually discussed with a representative from the venture capitalist industry.

### Learning Content

The emergence of internet economy has resulted in an accelerated evolution of commerce models in eBusiness. Early adopters have experimented with a variety of new business models, technologies and application designs. At the same time, there has been a growing demand for new standards to facilitate the exchange of information, catalogue content and transactions between buyers and sellers. But the true understanding of how to bring buyers and sellers together is still widely missing, leading to multiple cases of costly missed investments. This course focuses on the design and implementation of successful business models for eBusiness applications for the World Wide Web (WWW), imparting the basic knowledge for building successful eBusiness applications. We consider not only technical foundations of eBusiness applications but also economical aspects. In small groups, students develop and implement an eBusiness model that is eventually discussed with a representative from the venture capitalist industry.

**Workload**

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

**Literature**

Will be announced within the course.

## T

**6.42 Course: Business Planning [T-WIWI-102865]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2545007	<a href="#">Business Planning for Founders (ENTECH)</a>	2 SWS	Seminar (S)	Wohlfeil, Bauman, Terzidis
SS 2019	2545005	<a href="#">Geschäftsplanung für Gründer (Track 1)</a>	2 SWS	Seminar (S)	Terzidis, Tittel, Ntagiakou
Exams					
WS 18/19	7900023	<a href="#">Business Planning for Founders</a>		Prüfung (PR)	Terzidis

**Competence Certificate**

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

**Prerequisites**

None

**Recommendation**

None

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

## V

**Geschäftsplanung für Gründer (Track 1)**

2545005, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Description**

This seminar introduces basic concepts of business planning for entrepreneurs to the participants. It focusses on practical concepts and hands-on methods on how to turn business ideas into solid businesses (e.g. Business Modelling, Market Potential, Planning of Resources, and further more) and on the creation of a realistic and viable Business Plan (with or without Venture Capital)

## T

**6.43 Course: Business Process Modelling [T-WIWI-102697]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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 winter term	1

Events					
WS 18/19	2511210	<a href="#">Business Process Modelling</a>	2 SWS	Lecture (V)	Drescher, Oberweis
WS 18/19	2511211	<a href="#">Übung zu Modellierung von Geschäftsprozessen</a>	1 SWS	Practice (Ü)	Drescher, Koschmider
Exams					
WS 18/19	7900015	<a href="#">Business Process Modelling</a>		Prüfung (PR)	Oberweis
SS 2019	7900047	<a href="#">Business Process Modelling</a>		Prüfung (PR)	Oberweis

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**

None

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

## V

**Business Process Modelling**

2511210, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The proper modeling of relevant aspects of business processes is essential for an efficient and effective design and implementation of processes. This lecture presents different classes of modeling languages and discusses the respective advantages and disadvantages of using actual application scenarios. For that simulative and analytical methods for process analysis are introduced. In the accompanying exercise the use of process modeling tools is practiced.

**Workload**

Lecture 30h

Exercise 15h

Preparation of lecture 30h

Preparation of exercises 30h

Exam preparation 44h

Exam 1h

Total: 150h

**Literature**

- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer 2012.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karl: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.

Further Literature will be given in the lecture.

## T

**6.44 Course: Business Strategies of Banks [T-WIWI-102626]**

**Responsible:** Prof. Dr. Wolfgang Müller  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2530299	<a href="#">Business Strategies of Banks</a>	2 SWS	Lecture (V)	Müller
Exams					
WS 18/19	7900064	<a href="#">Business Strategies of Banks</a>		Prüfung (PR)	Müller, Ruckes
SS 2019	7900079	<a href="#">Business Strategies of Banks</a>		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

**6.45 Course: Case Studies in Sales and Pricing [T-WIWI-102834]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101487 - Sales Management](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each winter term	3

Events					
WS 18/19	2572182	<a href="#">Case Studies in Sales and Pricing</a>	1 SWS	Block (B)	Klarmann, Assistenten
Exams					
WS 18/19	7900153	<a href="#">Case Studies in Sales and Pricing</a>		Prüfung (PR)	Klarmann

**Competence Certificate**

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015). The assessment consists of a group presentation with a subsequent round of questions totalling 30 minutes.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing & Sales ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)). Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed. For further information please contact Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)). Please note that only one of the 1.5-ECTS courses can be attended in this module.

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

## V

**Case Studies in Sales and Pricing**

2572182, WS 18/19, 1 SWS, [Open in study portal](#)

**Block (B)**

**Learning Content**

Students work in groups on case studies from the field of sales and pricing. The case studies contain quantitative calculations in the context of sales and pricing as well as tasks which are to be solved by logical reasoning. When solving the case studies, theoretical sales and pricing content is applied to practical problems. Finally, the results are presented by the group and discussed.

**Annotation**

- The final presentations can be held in German or English.
- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in winter term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)) shortly before the lecture period in winter term starts.
- Please note that only one of the 1.5-ECTS courses can be chosen in the Sales Management Module.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1,5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

**Workload**

Total work load for 1.5 ECTS: ca. 45 hours

**Literature**

Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

## T

**6.46 Course: Case Studies Seminar: Innovation Management [T-WIWI-102852]**

**Responsible:** Prof. Dr. Marion Weissenberger-Eibl  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	1

Events					
WS 18/19	2545105	<a href="#">Case studies seminar: Innovation management</a>	2 SWS	Seminar (S)	Weissenberger-Eibl
Exams					
WS 18/19	7900237	<a href="#">Case Studies Seminar: Innovation Management</a>		Prüfung (PR)	Weissenberger-Eibl

**Competence Certificate**

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

**Prerequisites**

None

**Recommendation**

Prior attendance of the course *Innovation Management* [2545015] is recommended.

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

## V

**Case studies seminar: Innovation management**

2545105, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Learning Content**

The objective of the seminar is to master selected concepts and methods of innovation management and then to apply these practically. Working in groups, the students apply the described concepts and methods of innovation management to a case study from the automotive industry to answer specific questions. Accordingly, the block seminar involves a switch from input to the application of this input. At the end, the results of the group work are presented in the form of a seminar paper and discussed by the whole course.

A short introduction to presentation techniques is planned to help students prepare the seminar papers.

**Workload**

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

## T

**6.47 Course: CATIA Advanced [T-MACH-105312]**

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

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
WS 18/19	2123380	<a href="#">CATIA für Fortgeschrittene</a>	3 SWS	Project (PRO)	Ovtcharova, Mitarbeiter
SS 2019	2123380	<a href="#">CATIA advanced</a>	3 SWS	Project (PRO)	Ovtcharova, Mitarbeiter

**Competence Certificate**

Assessment of another type. Design project and written documentation in team work and final presentation. Grading: Project work 3/5, documentation 1/5 and presentation 1/5.

**Prerequisites**

none

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

## V

**CATIA advanced**

2123380, SS 2019, 3 SWS, [Open in study portal](#)

**Project (PRO)**

**Learning Content**

- Use of advanced CAD techniques and CATIA functionalities
- Management of data using the PLM system SmarTeam
- Design engineering with CAD
- Integration of partial solutions into the overall solution
- Ensuring the reusability of CAD models through parameterization and cataloging
- Validation, strength tests (FEM analysis)
- Kinematic simulation with the digital mockup (DMU Kinematics)
- Production with integrated CAM tool
- Animations
- Presentation of results at the end of the semester

**Annotation**

For the workshop compulsory attendance exists.

**Workload**

regular attendance: 21 hours, self-study: 35 hours

## T

## 6.48 Course: CATIA CAD Training Course [T-MACH-102185]

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

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung praktisch	2	Each term	2

Events					
WS 18/19	2123358	<a href="#">CATIA CAD training course</a>	2 SWS	Practical course (P)	Ovtcharova, Mitarbeiter
SS 2019	2123358	<a href="#">CATIA CAD training course</a>	3 SWS	Practical course (P)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102185	<a href="#">CATIA CAD Training Course</a>		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 attendance is compulsory.

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

## V

**CATIA CAD training course**

2123358, WS 18/19, 2 SWS, [Open in study portal](#)

**Practical course (P)**

**Learning Content**

The participant will learn the following knowledge:

- Basics of CATIA such as user interface, handling etc.
- Production and processing of different model types
- Production of basic geometries and parts
- Generation of detailed drawings
- Integration of partial solutions in modules
- Working with constrains
- Strength analysis with FEM
- Kinematic simulation with DMU
- Dealing with CATIA Knowledgeware

**Annotation**

For the practical course attendance is compulsory.

**Workload**

Regular attendance: 35 hours,  
self-study: 12 hours

**Literature**

practical course skript

**V****CATIA CAD training course**

2123358, SS 2019, 3 SWS, [Open in study portal](#)

**Practical course (P)****Learning Content**

The participant will learn the following knowledge:

- Basics of CATIA such as user interface, handling etc.
- Production and processing of different model types
- Production of basic geometries and parts
- Generation of detailed drawings
- Integration of partial solutions in modules
- Working with constrains
- Strength analysis with FEM
- Kinematic simulation with DMU
- Dealing with CATIA Knowledgeware

**Annotation**

For the practical course attendance is compulsory.

**Workload**

Regular attendance: 35 hours,  
self-study: 12 hours

**Literature**

practical course skript

## T

**6.49 Course: Challenges in Supply Chain Management [T-WIWI-102872]**

**Responsible:** Esther Mohr  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102805 - Service Operations](#)  
[M-WIWI-102808 - Digital Service Systems in Industry](#)  
[M-WIWI-104899 - Operations Research](#)

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

Events					
SS 2019	2550494	<a href="#">Challenges in Supply Chain Management</a>	3 SWS	Lecture (V)	Mohr

**Competence Certificate**

The assessment consists of a written paper and an oral exam of ca. 30-40 min (non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015)).

**Prerequisites**

None

**Recommendation**

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

**Annotation**

The number of course participants is limited to 12 participants due to joint work in BASF project teams. Due to these capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is offered irregularly. 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

**Challenges in Supply Chain Management**

2550494, SS 2019, 3 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The course consists of case studies of BASF which cover future challenges of supply chain management. Thus, the course aims at a case-study based presentation, critical evaluation and exemplary discussion of recent questions in supply chain management. The focus lies on future challenges and trends, also with regard to their applicability in practical cases (especially in the chemical industry).

The main part of the course is working on a project together with BASF in Ludwigshafen. The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the project topic.

This course will include working on cutting edge supply chain topics like Industry 4.0 / "Internet of Everything in production", supply chain analytics, risk management, procurement and production in SCM. The team essays / project reports will be linked to industry-related challenges as well as to upcoming theoretical concepts. The topics of the seminar will be announced at the beginning of the term in a preliminary meeting.

**Annotation**

The number of course participants is limited to 12 participants due to joint work in BASF project teams. Due to these capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is offered 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.

**Literature**

To be defined depending on the topic.



T

**6.50 Course: Characteristics of Transportation Systems [T-BGU-106609]**

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	6232806	<a href="#">Eigenschaften von Verkehrsmitteln</a>	2 SWS	Lecture (V)	Vortisch
Exams					
WS 18/19	8240106609	<a href="#">Characteristics of Transportation Systems</a>		Prüfung (PR)	Vortisch

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

T

**6.51 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	<a href="#">Combustion Engines I</a>	4 SWS	Lecture / Practice (VÜ)	Koch
Exams					
WS 18/19	76-T-MACH-102194	<a href="#">Combustion Engines I</a>		Prüfung (PR)	Kubach, Koch
SS 2019	76-T-MACH-102194	<a href="#">Combustion Engines I</a>		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

**6.52 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	<a href="#">Combustion Engines II</a>	3 SWS	Lecture / Practice (VÜ)	Koch
Exams					
WS 18/19	76-T-MACH-104609	<a href="#">Combustion Engines II</a>		Prüfung (PR)	Kubach, Koch
SS 2019	76-T-MACH-104609	<a href="#">Combustion Engines II</a>		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

**6.53 Course: Communication Systems and Protocols [T-ETIT-101938]****Responsible:** Prof. Dr.-Ing. Jürgen Becker**Organisation:** KIT Department of Electrical Engineering and Information Technology**Part of:** [M-MACH-101295 - Optoelektronik und Optische Kommunikationstechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2311616	<a href="#">Communication Systems and Protocols</a>	2 SWS	Lecture (V)	Becker, Becker
SS 2019	2311618	<a href="#">Übungen zu 2311616 Communication Systems and Protocols</a>	1 SWS	Practice (Ü)	Nidhi
Exams					
WS 18/19	7311616	<a href="#">Communication Systems and Protocols</a>		Prüfung (PR)	Becker

**Prerequisites**

none

## T

**6.54 Course: Competition in Networks [T-WIWI-100005]**

**Responsible:** Prof. Dr. Kay Mitusch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101406 - Netzwerkökonomie](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	2

Events					
WS 18/19	2561204	<a href="#">Competition in Networks</a>	2 SWS	Lecture (V)	Mitusch
WS 18/19	2561205	<a href="#">Übung zu Wettbewerb in Netzen</a>	1 SWS	Practice (Ü)	Wisotzky
Exams					
WS 18/19	7900268	<a href="#">Competition in Networks</a>		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

**6.55 Course: Computational Economics [T-WIWI-102680]**

**Responsible:** Dr. rer. nat. Pradyumn Kumar Shukla  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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 winter term	2

Events					
WS 18/19	2590458	<a href="#">Computational Economics</a>	2 SWS	Lecture (V)	Shukla
WS 18/19	2590459	<a href="#">Übungen zu Computational Economics</a>	1 SWS	Practice (Ü)	Shukla
Exams					
WS 18/19	7900005	<a href="#">Computational Economics</a>		Prüfung (PR)	Shukla
SS 2019	7900030	<a href="#">Computational Economics</a>		Prüfung (PR)	Shukla

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulation). 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). The bonus only applies to the first and second exam of the semester in which it was obtained.

**Prerequisites**

None

**Annotation**

The credits have been changed to 5 starting summer term 2016.

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

## V

**Computational Economics**

2590458, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Examining complex economic problems with classic analytical methods usually requires making numerous simplifying assumptions, for example that agents behave rationally or homogeneously. Recently, widespread availability of computing power gave rise to a new field in economic research that allows the modeling of heterogeneity and forms of bounded rationality: Computational Economics. Within this new discipline, computer based simulation models are used for analyzing complex economic systems. In short, an artificial world is created which captures all relevant aspects of the problem under consideration. Given all exogenous and endogenous factors, the modelled economy evolves over time and different scenarios can be analyzed. Thus, the model can serve as a virtual testbed for hypothesis verification and falsification.

**Literature**

- R. Axelrod: "Advancing the art of simulation in social sciences". R. Conte u.a., Simulating Social Phenomena, Springer, S. 21-40, 1997.
- R. Axtel: "Why agents? On the varied motivations for agent computing in the social sciences". CSED Working Paper No. 17, The Brookings Institution, 2000.
- K. Judd: "Numerical Methods in Economics". MIT Press, 1998, Kapitel 6-7.
- A. M. Law and W. D. Kelton: "Simulation Modeling and Analysis", McGraw-Hill, 2000.
- R. Sargent: "Simulation model verification and validation". Winter Simulation Conference, 1991.
- L. Tesfatsion: "Notes on Learning", Technical Report, 2004.
- L. Tesfatsion: "Agent-based computational economics". ISU Technical Report, 2003.

**Elective literature:**

- Amman, H., Kendrick, D., Rust, J.: "Handbook of Computational Economics". Volume 1, Elsevier North-Holland, 1996.
- Tesfatsion, L., Judd, K.L.: "Handbook of Computational Economics". Volume 2: Agent-Based Computational Economics, Elsevier North-Holland, 2006.
- Marimon, R., Scott, A.: "Computational Methods for the Study of Dynamic Economies". Oxford University Press, 1999.
- Gilbert, N., Troitzsch, K.: "Simulation for the Social Scientist". Open University Press, 1999.

## T

**6.56 Course: Computational FinTech with Python and C++ [T-WIWI-106496]**

**Responsible:** Prof. Dr Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103261 - Disruptive Finanz-technologische Innovationen](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each summer term	1

Events					
WS 18/19	2500003	<a href="#">Computational FinTech with Python and C++</a>	1,5 SWS	Practical course (P)	Ulrich
SS 2019	2530373	<a href="#">Computational FinTech with Python and C++</a>	1 SWS	Practical course (P)	Ulrich
Exams					
WS 18/19	7900289	<a href="#">Computational FinTech with Python and C++</a>		Prüfung (PR)	Ulrich
SS 2019	7900123	<a href="#">Computational FinTech with Python and C++</a>		Prüfung (PR)	Ulrich

**Competence Certificate**

The grade is based on a larger or several smaller programming exercises.

**Prerequisites**

There are two conditions for taking this course:

1. This course is only open for registered students of the module “Disruptive FinTech Innovations”.
2. Registered students do also attend in the same semester the lecture “Engineering FinTech Solutions” and the seminar “Automated Financial Advisory”.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-106193 - Engineering FinTech Solutions](#) must have been started.
2. The course [T-WIWI-106495 - Automated Financial Advisory](#) must have been started.

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

## V

**Computational FinTech with Python and C++**

2500003, WS 18/19, 1,5 SWS, [Open in study portal](#)

**Practical course (P)**

**Learning Content**

At the beginning of the semester, each student receives a personalized set of programming tasks .

**Workload**

Roughly 45 hours.

## V

**Computational FinTech with Python and C++**

2530373, SS 2019, 1 SWS, [Open in study portal](#)

**Practical course (P)**

**Learning Content**

At the beginning of the semester, each student receives a personalized set of programming tasks .

**Workload**

Roughly 45 hours.



T

**6.57 Course: Computational Risk and Asset Management I [T-WIWI-107032]**

**Responsible:** Prof. Dr Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103247 - Intelligente Risiko- und Investitionsberatung](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

**Competence Certificate**

No exam in winter semester 2018/2019.

The grade consists of an exam and seven problem sets, which are distributed throughout the semester. All problem sets count equally and make up in total 25% of the final grade. The exam accounts for the remaining 75%. The exam is based on all the material that is taught in the current semester. The exam takes place in the last week of the lecture period. Students who fail the exam are allowed to retake the exam.

**Prerequisites**

None.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-102878 - Computational Risk and Asset Management](#) must not have been started.

**Recommendation**

None

T

**6.58 Course: Computational Risk and Asset Management II [T-WIWI-106494]**

**Responsible:** Prof. Dr Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103247 - Intelligente Risiko- und Investitionsberatung](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

**Competence Certificate**

No exam in winter term 2018/2019.

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation and 6 problem sets, which are distributed throughout the semester. All problem sets count equally and make up in total 25% of the final grade. The exam accounts for the remaining 75%. The exam is based on all the material that is taught in the current semester. The exam takes place in the last week of the lecture period. Students who fail the exam are allowed to retake the exam.

**Prerequisites**

None.

**Recommendation**

It is recommend that students have studied the material of „Computational Risk and Asset Management I“.

**Annotation**

New course starting winter term 2017/2018.

T

**6.59 Course: Computer Aided Data Analysis [T-GEISTSOZ-104565]**

**Responsible:** Prof. Dr. Gerd Nollmann  
**Organisation:** KIT Department of Humanities and Social Sciences  
**Part of:** [M-GEISTSOZ-101169 - Soziologie](#)  
[M-WIWI-104906 - Geistes- und Sozialwissenschaften](#)

Type	Credits	Version
Studienleistung	0	1

Events					
WS 18/19	5011009	<a href="#">Computergestützte Datenauswertung: Chatbots und Robo-Journalisten: Natural Language Processing mit Deep Learning</a>	2 SWS	Course (Ku)	Nollmann
Exams					
WS 18/19	7400353	<a href="#">Computer Aided Data Analysis</a>		Prüfung (PR)	Nollmann

## T

**6.60 Course: Computer Contract Law [T-INFO-102036]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Recht des Geistigen Eigentums](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
WS 18/19	2411604	<a href="#">Computer Contract Law</a>	2 SWS	Lecture (V)	Bartsch, Harnischmacher
Exams					
WS 18/19	7500065	<a href="#">Computer Contract Law</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500066	<a href="#">Computer Contract Law</a>		Prüfung (PR)	Dreier, Matz

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

## V

**Computer Contract Law**

2411604, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

The course deals with contracts from the following areas:

- Contracts of programming, licencing and maintaining software
- Contracts in the field of IT employment law
- IT projects and IT Outsourcing
- Internet Contracts

From these areas single contracts will be chosen and discussed (e.g. software maintenance, employment contract with a software engineer). Concerning the respective contract the technical features, the economic background and the subsumption in the national law of obligation (BGB-Schuldrecht) will be discussed. As a result different contractual clauses will be developed by the students. Afterwards typical contracts and conditions will be analysed with regard to their legitimacy as standard business terms (AGB). It is the aim to show the effects of the german law of standard business terms (AGB-Recht) and to point out that contracts are a means of drafting business concepts and market appearance.

**Learning Content**

It is the aim of this course to provide students with knowledge in the area of contract formation and formulation in practice that builds upon the knowledge the students have already acquired concerning the legal protection of computer programs. Students shall understand how the legal rules depend upon, and interact with, the economic background and the technical features of the subject. The contract drafts shall be prepared by the students and will be corporately completed during the lecture. It is the aim of the course that students will be able to formulate contracts by themselves.

**Literature**

- Langenfeld, Gerrit Vertragsgestaltung Verlag C.H.Beck, III. Aufl. 2004
- Heussen, Benno Handbuch Vertragsverhandlung und Vertragsmanagement Verlag C.H.Beck, II. Aufl. 2002
- Schneider, Jochen Handbuch des EDV-Rechts Verlag Dr. Otto Schmidt KG, III. Aufl. 2002

**Elective Literature**

tba in the transparencies

## T

**6.61 Course: Construction Equipment [T-BGU-101845]**

**Responsible:** Prof. Dr.-Ing. Sascha Gentes  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101110 - Verfahrenstechnik im Baubetrieb](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	6243701	<a href="#">Maschinentchnik</a>	2 SWS	Lecture (V)	Gentes, Dörfler
Exams					
WS 18/19	8240101845	<a href="#">Construction Equipment</a>		Prüfung (PR)	Gentes

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

## T

**6.62 Course: Control of Linear Multivariable Systems [T-ETIT-100666]**

**Responsible:** Prof. Dr.-Ing. Sören Hohmann  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-ETIT-101157 - Regelungstechnik II](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each winter term	1

Events					
WS 18/19	2303177	<a href="#">Control of Linear Multivariable Systems</a>	3 SWS	Lecture (V)	Kluwe
WS 18/19	2303179	<a href="#">Übungen zu 2303177 Regelung linearer Mehrgrößensysteme</a>	1 SWS	Practice (Ü)	Köpf
Exams					
WS 18/19	7303177	<a href="#">Control of Linear Multivariable Systems</a>		Prüfung (PR)	Kluwe

**Prerequisites**

none

## T

**6.63 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	<a href="#">Control Technology</a>	2 SWS	Lecture (V)	Gönzheimer
Exams					
WS 18/19	76-T-MACH-105185	<a href="#">Control Technology</a>		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

**6.64 Course: Convex Analysis [T-WIWI-102856]**

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
SS 2019	2550120	<a href="#">Konvexe Analysis</a>	SWS	Lecture (V)	Stein

**Competence Certificate**

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

**Prerequisites**

None

**Recommendation**

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**

The lecture is offered irregularly. The curriculum of the next three years is available online ([www.ior.kit.edu](http://www.ior.kit.edu)).

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

## V

**Konvexe Analysis**

2550120, SS 2019, SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Convex Analysis deals with properties of convex functions and convex sets, in particular with respect to the minimization of convex functions over convex sets. That the involved functions are not necessarily assumed to be differentiable allows a number of applications which are not covered by techniques from smooth optimization, e.g. approximation problems with respect to the Manhattan or maximum norms, classification problems or the theory of statistical estimates. The lecture develops along another, geometrically simple example, where a nonsmooth obstacle set is to be described by a single smooth convex constraint such that minimal and maximal distances to the obstacle can be computed. The lecture is structured as follows:

- Introductory examples and terminology
- Convex subdifferential, Lipschitz continuity and the safety margin
- Normal cones, error bounds and the maximal distance

**Literature****Elective literature:**

- J. Borwein, A. Lewis, Convex Analysis and Nonlinear Optimization: Theory and Examples (2 ed.), Springer, 2006.
- S. Boyd, L. Vandenberghe, Convex Optimization, Cambridge University Press, 2004.
- O. Güler, Foundations of Optimization, Springer, 2010.
- J.-B. Hiriart-Urruty, C. Lemarechal, Fundamentals of Convex Analysis, Springer, 2001.
- R.T. Rockafellar, Convex Analysis, Princeton University Press, 1970.
- R.T. Rockafellar, R.J.B. Wets, Variational Analysis, Springer, Berlin, 1998.



## T

**6.65 Course: Conveying Technology and Logistics [T-MACH-102135]**

**Responsible:** Prof. Dr.-Ing. Kai Furmans  
Paolo Pagani

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-WIWI-101808 - Seminarmodul](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	2119100	<a href="#">Fördertechnik und Logistiksysteme</a>	SWS	Seminar (S)	Furmans, Pagani
Exams					
WS 18/19	76-T-MACH-102135	<a href="#">Conveying Technology and Logistics</a>		Prüfung (PR)	Furmans
SS 2019	76-T-MACH-102135	<a href="#">Conveying Technology and Logistics</a>		Prüfung (PR)	Furmans

**Competence Certificate**

alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

**Prerequisites**

none

T

**6.66 Course: Copyright [T-INFO-101308]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Recht des Geistigen Eigentums](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
WS 18/19	24121	<a href="#">Copyright</a>	2 SWS	Lecture (V)	Dreier
Exams					
WS 18/19	7500064	<a href="#">Copyright</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500064	<a href="#">Copyright</a>		Prüfung (PR)	Dreier, Matz

T

**6.67 Course: Corporate Compliance [T-INFO-101288]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101242 - Governance, Risk & Compliance](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2400087	<a href="#">Corporate Compliance</a>	2 SWS	Lecture (V)	Herzig
Exams					
WS 18/19	7500063	<a href="#">Corporate Compliance</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500063	<a href="#">Corporate Compliance</a>		Prüfung (PR)	Dreier, Matz

## T

**6.68 Course: Corporate Financial Policy [T-WIWI-102622]**

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101453 - Angewandte strategische Entscheidungen](#)  
[M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Exams				
WS 18/19	7900058	<a href="#">Corporate Financial Policy</a>	Prüfung (PR)	Ruckes
SS 2019	7900073	<a href="#">Corporate Financial Policy</a>	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

**Annotation**

The course will not be offered in summer term 2019. However, the exam can be written on the regular date at the end of the semester.

## T

**6.69 Course: Corporate Risk Management [T-WIWI-109050]**

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	2

Events					
SS 2019	2530218	<a href="#">Corporate Risk Management</a>	SWS	Lecture (V)	Ruckes, Hoang
SS 2019	2530219	<a href="#">Übung zu Corporate Risk Management</a>	SWS	Practice (Ü)	Silbereis, Ruckes, Hoang
Exams					
WS 18/19	7900136	<a href="#">Corporate Risk Management</a>		Prüfung (PR)	Ruckes

**Competence Certificate**

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The exam is offered each semester. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The course is offered as a block course in the summer term.

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

## V

**Corporate Risk Management**

2530218, SS 2019, SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

- Stochastic basics
- Firm decisions under risk - expected utility theory
- The value motive for corporate risk management
- Common risk measures from practice (e.g. Cash-flow at Risk)
- Operational and financial risk management instruments
- The risk management organization (central vs. decentral)
- External risk reporting (e.g. obligations and incentives)

**Workload**

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

**Literature**

- Friberg, Richard. *Managing Risk and Uncertainty: A Strategic Approach*. Cambridge, MA: Managing Risk and Uncertainty, 2015.
- Stulz, René M. *Risk Management & Derivatives*. Mason, Ohio: Cengage Learning, Inc, 2002.
- Jorion, Philippe. *Value at Risk, 3rd Ed: The new Benchmark for Managing Financial Risk*. 3 ed. New York: General Finance & Investing, 2006.

**V****Übung zu Corporate Risk Management**2530219, SS 2019, SWS, [Open in study portal](#)**Practice (Ü)****Learning Content**

- Stochastic basics
- Firm decisions under risk - expected utility theory
- The value motive for corporate risk management
- Common risk measures from practice (e.g. Cash-flow at Risk)
- Operational and financial risk management instruments
- The risk management organization (central vs. decentral)
- External risk reporting (e.g. obligations and incentives)

**Workload**

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

**Literature**

- Friberg, Richard. *Managing Risk and Uncertainty: A Strategic Approach*. Cambridge, MA: Managing Risk and Uncertainty, 2015.
- Stulz, René M. *Risk Management & Derivatives*. Mason, Ohio: Cengage Learning, Inc, 2002.
- Jorion, Philippe. *Value at Risk, 3rd Ed: The new Benchmark for Managing Financial Risk*. 3 ed. New York: General Finance & Investing, 2006.

## T

**6.70 Course: Country Manager Simulation [T-WIWI-106137]**

**Responsible:** Dr. Sven Feurer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101487 - Sales Management](#)  
[M-WIWI-101490 - Marketing Management](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each winter term	1

Events					
WS 18/19	2572172	<a href="#">Country Manager Simulation</a>	SWS	Block (B)	Feurer
Exams					
WS 18/19	7900154	<a href="#">Country Manager Simulation</a>		Prüfung (PR)	Klarmann

**Competence Certificate**

Alternative exam assessment (30 minutes presentation) according to § 4 paragraph 2 Nr. 3 of the examination regulation SPO 2015.

**Annotation**

The course language is English. In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in winter term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)) shortly before the lecture period in winter term starts.

Please note that only one of the 1.5-ECTS courses can be chosen in this Module.

Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1,5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

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

## V

**Country Manager Simulation**

2572172, WS 18/19, SWS, [Open in study portal](#)

**Block (B)****Learning Content**

Understanding Culture  
 Understanding International Buyer Behavior  
 Market Entry Decisions  
 International Marketing and Sales Management (adaptation vs. differentiation)

**Annotation**

- The course language is English.
- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in winter term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)) shortly before the lecture period in winter term starts.
- Please note that only one of the following courses can be chosen in the Sales Management Module: Country Manager Simulation, Case Studies in Sales and Pricing or Preisverhandlungen und Verkaufspräsentationen.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1,5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

**Workload**

Total workload for 1.5 ECTS: ca. 45 hours

**Literature**

Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.



## T

**6.71 Course: Credit Risk [T-WIWI-102645]**

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2530565	<a href="#">Credit Risk</a>	3 SWS	Lecture / Practice (VÜ)	Uhrig-Homburg, Hofmann
Exams					
WS 18/19	7900055	<a href="#">Credit Risk</a>		Prüfung (PR)	Uhrig-Homburg

**Competence Certificate**

The assessment consists of a written exam (75 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation and may be supplemented by a non exam assessment according to § 4 paragraph 2 Nr. 3. The examination is offered every semester and can be repeated at every regular examination date.

**Prerequisites**

None

**Recommendation**

See German version.

**Annotation**

See German version.

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

## V

**Credit Risk**

2530565, WS 18/19, 3 SWS, [Open in study portal](#)

**Lecture / Practice (VÜ)**

**Description**

The lecture deals with the diverse issues arising in the context of measuring and controlling credit risk. At first, the theoretical and empirical relations between ratings, probabilities of default, and credit spreads are analysed. After that, the focus is on the valuation of credit risk. Finally, the management of credit risk, e.g. using credit derivatives and credit portfolio analysis, is examined, and the legal framework and its implications are discussed

**Learning Content**

The lecture deals with the diverse issues arising in the context of measuring and controlling credit risk. At first, the theoretical and empirical relations between ratings, probabilities of default, and credit spreads are analysed. After that, the focus is on the valuation of credit risk. Finally, the management of credit risk, e.g. using credit derivatives and credit portfolio analysis, is examined, and the legal framework and its implications are discussed

**Workload**

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

**Literature**

- Lando, D., Credit risk modeling: Theory and Applications, Princeton Univ. Press, (2004).
- Uhrig-Homburg, M., Fremdkapitalkosten, Bonitätsrisiken und optimale Kapitalstruktur, Beiträge zur betriebswirtschaftlichen Forschung 92, Gabler Verlag, (2001).

**Elective literature:**

- Bluhm, C., Overbeck, L., Wagner, C. , Introduction to Credit Risk Modelling, 2nd Edition, Chapman & Hall, CRC Financial Mathematics Series, (2010).
- Duffie, D., Singleton, K.J., Credit Risk: Pricing, Measurement and Management, Princeton Series of Finance, Prentice Hall, (2003).

## T

## 6.72 Course: Critical Information Infrastructures [T-WIWI-109248]

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	5	Each winter term	3

Events					
WS 18/19	2511400	<a href="#">Critical Information Infrastructures</a>	2 SWS	Lecture (V)	Sunyaev
WS 18/19	2511401	<a href="#">Übungen zu Critical Information Infrastructures</a>	1 SWS	Practice (Ü)	Sunyaev
Exams					
WS 18/19	7900067	<a href="#">Critical Information Infrastructures</a>		Prüfung (PR)	Sunyaev
SS 2019	7900061	<a href="#">Critical Information Infrastructures</a>		Prüfung (PR)	Sunyaev

**Competence Certificate**

The alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- the preparation of a written elaboration as well as
- an oral examination as part of a presentation of the work.

Details of the grades will be announced at the beginning of the course.

**Prerequisites**

None.

**Annotation**

New lecture from winter semester 2018/2019.

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

## V

**Critical Information Infrastructures**

2511400, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

The lecture critical information infrastructures introduces students to the world of these complex sociotechnical systems that permeate societies on a global scale. Students will learn to handle the complexities involved in the design, development, operation and evaluation of critical information infrastructures. In the beginning of the lecture, critical information infrastructures will be introduced on a general level. The following sessions will focus on an in-depth exploration of selected cases that represent current challenges in research and practice. For example, students will learn how to continuously monitor and audit critical information infrastructures to ensure reliability and security. Likewise, students will get to know how to deal with cascading failures in interconnected infrastructures.

T

**6.73 Course: Current Issues in Innovation Management [T-WIWI-102873]**

**Responsible:** Prof. Dr. Marion Weissenberger-Eibl  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Irregular	1

Exams			
WS 18/19	7900041	<a href="#">Current Issues in Innovation Management</a>	Prüfung (PR) Weissenberger-Eibl

**Competence Certificate**

Non exam assessment (following §4(2) 3 of the examination regulation).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

Please note that the seminars we offer vary from semester to semester. Information about the currently offered seminars can be found in the Wiwi-Portal and on the iTM Website.

## T

**6.74 Course: Current Topics on BioMEMS [T-MACH-102176]**

**Responsible:** Prof. Dr. Andreas Guber  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101290 - BioMEMS](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	2

Events					
WS 18/19	2143873	<a href="#">Actual topics of BioMEMS</a>	2 SWS	Seminar (S)	Guber
SS 2019	2143873	<a href="#">Actual topics of BioMEMS</a>	2 SWS	Seminar (S)	Guber
Exams					
WS 18/19	76-T-MACH-102176	<a href="#">Current Topics on BioMEMS</a>		Prüfung (PR)	Guber
SS 2019	76-T-MACH-102176	<a href="#">Current Topics on BioMEMS</a>		Prüfung (PR)	Guber

**Competence Certificate**

active participation and own presentation (30 Min.)

**Prerequisites**

none

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

## V

**Actual topics of BioMEMS**

2143873, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Description****Media:**

Written preparations from the participants.

**Workload**

Active participation on the seminary and preparation of an own presentation of a topic in BioMEMS.

Lecture time: 21 h

Preparation: 40 h

Preparation of own preparation: 60 h

## V

**Actual topics of BioMEMS**

2143873, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Description****Media:**

Written preparations from the participants.

**Workload**

Active participation on the seminary and preparation of an own presentation of a topic in BioMEMS.

Lecture time: 21 h

Preparation: 40 h

Preparation of own preparation: 60 h

T

## 6.75 Course: Data Mining and Applications [T-WIWI-103066]

**Responsible:** Rheza Nakhaeizadeh  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101638 - Ökonometrie und Statistik I](#)  
[M-WIWI-101639 - Ökonometrie und Statistik II](#)  
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	Each summer term	2

Events					
SS 2019	2520375	<a href="#">Data Mining and Applications</a>	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

**6.76 Course: Data Protection by Design [T-INFO-108405]**

**Responsible:** PD Dr. Oliver Raabe  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101242 - Governance, Risk & Compliance](#)  
[M-WIWI-104903 - Recht](#)  
[M-WIWI-104909 - Informatik \(KIT-Fakultät für Informatik\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	2

Events					
WS 18/19	2400052	<a href="#">Data protection by design</a>	2 SWS	Lecture (V)	Raabe
Exams					
WS 18/19	7500071	<a href="#">Data Protection by Design</a>		Prüfung (PR)	Raabe
SS 2019	7500223	<a href="#">Data protection by design</a>		Prüfung (PR)	Raabe



T

**6.77 Course: Data Protection Law [T-INFO-101303]**

**Responsible:** Prof. Dr. Nikolaus Marsch  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101217 - Öffentliches Wirtschaftsrecht](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	24018	<a href="#">Datenschutzrecht</a>	2 SWS	Lecture (V)	Marsch
Exams					
WS 18/19	7500162	<a href="#">Data Protection Law</a>		Prüfung (PR)	Marsch
SS 2019	7500083	<a href="#">Data Protection Law</a>		Prüfung (PR)	Marsch

## T

**6.78 Course: Database Systems and XML [T-WIWI-102661]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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 winter term	1

Events					
WS 18/19	2511202	<a href="#">Database Systems and XML</a>	2 SWS	Lecture (V)	Oberweis, Schiefer
WS 18/19	2511203	<a href="#">Übungen zu Datenbanksysteme und XML</a>	1 SWS	Practice (Ü)	Oberweis, Schiefer, Fritsch
Exams					
WS 18/19	7900007	<a href="#">Database Systems and XML</a>		Prüfung (PR)	Oberweis
SS 2019	7900046	<a href="#">Database Systems and XML</a>		Prüfung (PR)	Oberweis

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**

None

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

## V

**Database Systems and XML**

2511202, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Databases are a proven technology for managing large amounts of data. The oldest database model, the hierarchical model, was replaced by different models such as the relational or the object-oriented data model. The hierarchical model became particularly more important with the emergence of the extensible Markup Language XML. XML is a data format for structured, semi-structured, and unstructured data. In order to store XML documents consistently and reliably, databases or extensions of existing data base systems are required. Among other things, this lecture covers the data model of XML, concepts of XML query languages, aspects of storage of XML documents, and XML-oriented database systems.

**Workload**

Lecture 30h  
 Exercise 15h

Preparation of lecture 30h  
 Preparation of exercises 30h  
 Exam preparation 44h  
 Exam 1h

Total: 150h

**Literature**

- M. Klettke, H. Meyer: XML & Datenbanken: Konzepte, Sprachen und Systeme. dpunkt.verlag 2003
- H. Schöning: XML und Datenbanken: Konzepte und Systeme. Carl Hanser Verlag 2003
- W. Kazakos, A. Schmidt, P. Tomchyk: Datenbanken und XML. Springer-Verlag 2002
- R. Elmasri, S. B. Navathe: Grundlagen der Datenbanksysteme. 2009
- G. Vossen: Datenbankmodelle, Datenbanksprachen und Datenbankmanagementsysteme. Oldenbourg 2008

Further literature will be given individually.

## T

**6.79 Course: Derivatives [T-WIWI-102643]**

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101482 - Finance 1](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2530550	<a href="#">Derivatives</a>	2 SWS	Lecture (V)	Uhrig-Homburg
SS 2019	2530551	<a href="#">Übungen zu Derivate</a>	1 SWS	Practice (Ü)	Uhrig-Homburg, Eska
Exams					
WS 18/19	7900051	<a href="#">Derivatives</a>		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

**6.80 Course: Design Thinking [T-WIWI-102866]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2545009	<a href="#">Design Thinking (Track 2)</a>	2 SWS	Seminar (S)	Haller, Terzidis
SS 2019	2545008	<a href="#">Design Thinking (Track 1)</a>	2 SWS	Seminar (S)	Terzidis, Jochem, Lau
Exams					
WS 18/19	7900025	<a href="#">Design Thinking (Track 2)</a>		Prüfung (PR)	Terzidis

**Competence Certificate**

Alternative exam assessments (§4(2), 3 SPO).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The seminar content will be published on the website of the institute.

T

## 6.81 Course: Developing Business Models for the Semantic Web [T-WIWI-102851]

**Responsible:** Prof. Dr. Rudi Studer

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	1

### Competence Certificate

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

### Prerequisites

None

### Recommendation

As a recommendation to attending the seminar, basic knowledge about semantic technologies and concepts should be available. This may be acquired by attending one of the following lectures – Wissensmanagement, Semantic Web Technologies 1, Semantic Web Technologies 2 or by studying related literature. Furthermore the topic entrepreneurship should be of interest.

## T 6.82 Course: Digital Health [T-WIWI-109246]

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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	4	Each winter term	1

Events					
WS 18/19	2511402	<a href="#">Digital Health</a>	2 SWS	Lecture (V)	Sunyaev, Kromat
Exams					
WS 18/19	7900068	<a href="#">Digital Health</a>		Prüfung (PR)	Sunyaev
SS 2019	7900062	<a href="#">Digital Health</a>		Prüfung (PR)	Sunyaev

### 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

New lecture from winter semester 2018/2019.

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

V

### Digital Health

2511402, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

### Description

The lecture "Digital Health" has a twofold purpose: first, to introduce theoretical foundations of various topics in digital health (they include, for instance, eHealth, health information systems, ambient assisted living, and smart homes in health care); and second, to introduce current topics in research on digital health (this includes for example genomics, gamification in health care, mobile health, and information privacy) by presenting papers and research projects the research group is working on. In addition, students are given the opportunity to combine the theoretical knowledge with real problems through a practical lecture.

### Workload

4 ECTS = approx. 120 h.

## T

**6.83 Course: Digital Marketing and Sales in B2B [T-WIWI-106981]**

**Responsible:** Anja Konhäuser  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101487 - Sales Management](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each winter term	1

Events					
WS 18/19	2572176	<a href="#">Digital Marketing and Sales in B2B</a>	1 SWS	Others (sonst.)	Konhäuser
Exams					
WS 18/19	7900169	<a href="#">Digital Marketing and Sales in B2B</a>		Prüfung (PR)	Klarmann

**Competence Certificate**

Alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation. (team presentation of a case study with subsequent discussion totalling 30 minutes).

**Prerequisites**

None.

**Annotation**

Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing and Sales ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)).

Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed.

For further information please contact Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)).

Please note that only one of the 1.5-ECTS courses can be attended in this module.

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

## V

**Digital Marketing and Sales in B2B**

2572176, WS 18/19, 1 SWS, [Open in study portal](#)

**Others (sonst.)**

**Learning Content**

Learning Sessions:

The class gives insights into digital marketing strategies as well as the effects and potential of different channels (e.g., SEO, SEA, Social Media). After an overview of possible activities and leverages in the digital marketing field, including their advantages and limits, the focus will turn to the B2B markets. There are certain requirements in digital strategy specific to the B2B market, particularly in relation to the value chain, sales management and customer support. Therefore, certain digital channels are more relevant for B2B marketing than for B2C marketing.

Once the digital marketing and tactics for the B2B markets are defined, further insights will be given regarding core elements of a digital strategy: device relevance (mobile, tablet), usability concepts, website appearance, app decision, market research and content management. A major advantage of digital marketing is the possibility of being able to track many aspects of user reactions and user behaviour. Therefore, an overview of key performance indicators (KPIs) will be discussed and relationships between these KPIs will be explained. To measure the effectiveness of digital activities, a digital report should be set up and connected to the performance numbers of the company (e.g. product sales) – within the course the setup of the KPI dashboard and combination of digital and non-digital measures will be shown to calculate the Return on Investment (RoI).

Presentation Sessions:

After the learning sessions, the students will form groups and work on digital strategies within a case study format. The presentation of the digital strategy will be in front of the class whereas the presentation will take 20 minutes followed by 10 minutes questions and answers.



**Workload**

time of presentness = 15 hrs.

private study = 30 hrs.

**Literature**

-

## T

**6.84 Course: Digital Service Design [T-WIWI-105773]**

**Responsible:** Prof. Dr. Alexander Mädche  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102806 - Service Innovation, Design & Engineering](#)  
[M-WIWI-104080 - Designing Interactive Information Systems](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2540420	<a href="#">Digital Service Design</a>	2 SWS	Lecture (V)	Mädche, Liu, Toreini
Exams					
WS 18/19	7900210	<a href="#">Digital Service Design</a>		Prüfung (PR)	Mädche

**Competence Certificate**

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation. Students receive one aggregated grade consisting of a written exam (60%) and the Digital Service Design challenge (40%). The exam and the Digital Service Design challenge need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the Digital Service Design challenge.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The course is held in English.

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

## V

**Digital Service Design**2540420, WS 18/19, 2 SWS, [Open in study portal](#)**Lecture (V)****Description**

Designing services is different from designing products. In contrast to products being discrete and tangible objects, services are co-produced by people and only provide value when they are actually used. Digital services represent a specific category of services and specifically leverage and integrate information technology in the service delivery process.

The aim of this course is to introduce key concepts and theoretical foundations of digital service design. Furthermore, a management perspective looking at the entire service lifecycle, covering the organizational and team level as well as state-of-the-art digital service design processes (e.g. agile, lean, continuous delivery) is provided. Finally, an introduction of important digital service design practices and tools supporting user research, conceptualization & prototyping as well as evaluation is given.

The lecture is complemented with a Digital Service Design challenge, where students leverage practices and tools from the lecture to suggest improvements for an existing digital service. The challenge is carried out in cooperation with practice partners (e.g. Commerzbank).

**Learning Content**

- Definition and key concepts of digital service design and related terms
- Introduction to the business and design perspective of a service design project
- The digital service design process from strategy through planning and prototyping to launching the digital service.
- Practice-oriented capstone project focusing on the design of a real-world digital service

**Literature**

Benyon, D. (2014). *Designing interactive systems: A comprehensive guide to HCI, UX and interaction design* (3. ed.). Harlow: Pearson.

Williams, Kevin, Samir Chatterjee, and Matti Rossi. 2008. "Design of Emerging Digital Services: A Taxonomy." *European Journal of Information Systems* 17(5): 505–17

Hill, T.P. 1977. "On Goods and Services." *The review of income and wealth* 23(4): 315–38.

Werder K, Zobel B, Maedche A (2016) PDISC -- Towards a Method for Software Product DIScovery. In: Maglyas A, Lamprecht A-L (eds) *Softw. Bus. 7th Int. Conf. ICSOB 2016*, Ljubljana, Slov. June 13-14, 2016, Proc. Springer International Publishing, Cham, pp 47–62

Pichler R (2016) *Strategize: Product Strategy and Product Roadmap Practices for the Digital Age*. Pichler Consulting

Liu, X., Werder, K., & Maedche, A. (2016). A Taxonomy of Digital Service Design Techniques. In *Proceedings of the 2016 International Conference on Information Systems*

T

**6.85 Course: Digital Transformation and Business Models [T-WIWI-108875]**

**Responsible:** Dr. Daniel Jeffrey Koch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Exams			
SS 2019	7900284	<a href="#">Digital Transformation and Business Models</a>	Prüfung (PR) Weissenberger-Eibl

**Competence Certificate**

Non exam assessment (following §4(2) 3 of the examination regulation).

The final grade is composed 75% of the grade of the written paper and 25% of the presentation.

**Prerequisites**

None

**Recommendation**

Prior attendance of the course Innovation Management [2545015] is recommended.

## T

**6.86 Course: Digital Transformation of Organizations [T-WIWI-106201]**

**Responsible:** Prof. Dr. Alexander Mädche  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101410 - Business & Service Engineering](#)  
[M-WIWI-101448 - Service Management](#)  
[M-WIWI-102754 - Service Economics and Management](#)  
[M-WIWI-102808 - Digital Service Systems in Industry](#)  
[M-WIWI-104068 - Information Systems in Organizations](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2540556	<a href="#">Digital Transformation and Organizations</a>	3 SWS	Lecture (V)	Mädche
Exams					
WS 18/19	7900230	<a href="#">Digital Transformation of Organizations</a>		Prüfung (PR)	Mädche

**Competence Certificate**

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

Students receive one aggregated grade consisting of a written exam (60%) and case study deliverable (40%). The exam and the case study need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the case study.

**Prerequisites**

None

**Annotation**

The course will be held in English.

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

## V

**Digital Transformation and Organizations**

2540556, SS 2019, 3 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

During the last decades we witnessed a growing importance of Information Technology (IT) in the business world along with faster and faster innovation cycles. IT has become core for businesses from an operational company-internal and external customer perspective. Today, IT is considered as key enabler of operational excellence ranging from the enrichment of routine working tasks (e.g., enterprise resource planning systems) to e-enabled integration of entire business eco-systems (e.g., e-supply chains). Complementing this primarily company-internal perspective on IT, we have recently have seen a massive growth of digital extensions of existing products and services across all industries. The disruptive potential of IT has already transformed selected key industries, e.g. media or retail, and its impact is continuously growing in all areas of business and society.

Large-scale information systems (IS) in organizations strongly interplay with work practices of individual employees as well as organizational structures shaping and being shaped by individuals' behavior. Thus, successful implementation of IS requires dealing with transformation beyond technology. The ability to implement and use IS in a way supporting its overall value proposition has become a central success determinant. Accordingly, the course "Management of Information Systems" course is designed to provide a comprehensive insight into theoretical foundations, concepts, tools, and current practice of IS. The lecture is complemented with a case study. Students get the opportunity to analyze and propose solutions for a selected real-world IS implementation.

**Learning Content**

- Definition and key concepts of Information Systems
- Introduction of different types of application systems (organizational process & information-centric systems, customer-centric systems, supplier-centric systems and people-centric systems) and their characteristics
- The digital transformation process: The pre-implementation, implementation and post-implementation phase covering facets such as business/IT alignment, packaged software selection, IS implementation projects, as well as adoption & use of IS
- Practice-oriented case study focusing on real-world IS scenarios

**Literature**

Daft, R. L. (2009). Organization theory and design. Cengage learning.

Laudon, K. C. and Laudon, J. P. (2014). Management Information Systems: Managing the Digital Firm, 13th Edition, Pearson.

Sambamurthy, V and Zmud, R. Z. (2012). Guiding the Digital Transformation of Organizations. Legerity Digital Press, ISBN 978-0-9857955-0-4.

T

## 6.87 Course: Digitalization of Products, Services & Production [T-MACH-108491]

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
WS 18/19	2122310	<a href="#">Digitalization of Products, Services &amp; Production</a>	2 SWS	Seminar (S)	Pätzold
SS 2019	2122310	<a href="#">Digitalization of Products, Services &amp; Production</a>	2 SWS	Seminar (S)	Pätzold
Exams					
WS 18/19	76-T-MACH-108491	<a href="#">Digitalization of Products, Services &amp; Production</a>		Prüfung (PR)	Pätzold

### Competence Certificate

Assessment of another type. Two presentations in team work and two written compositions. Grading: each composition 1/6 and each presentation 2/3.

### Prerequisites

none

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

V

### Digitalization of Products, Services & Production

2122310, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)**

### Learning Content

- Digitalization of products, services and production in the context of Industry 4.0 .
- Key drivers for ongoing digitalization and their impact on future product development and manufacturing.
- Methods and procedures to design the according transformation process.
- Intensive group discussions of use-case scenarios using practical examples from the industry.

V

### Digitalization of Products, Services & Production

2122310, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)**

### Learning Content

- Digitalization of products, services and production in the context of Industry 4.0 .
- Key drivers for ongoing digitalization and their impact on future product development and manufacturing.
- Methods and procedures to design the according transformation process.
- Intensive group discussions of use-case scenarios using practical examples from the industry.

T

**6.88 Course: Disassembly Process Engineering [T-BGU-101850]**

**Responsible:** Prof. Dr.-Ing. Sascha Gentes  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101110 - Verfahrenstechnik im Baubetrieb](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	6243803	<a href="#">Verfahrenstechniken der Demontage</a>	2 SWS	Lecture / Practice (VÜ)	Gentes
Exams					
WS 18/19	8240101850	<a href="#">Disassembly Process Engineering</a>	Prüfung (PR)		Gentes

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None



## T

**6.89 Course: Discrete-Event Simulation in Production and Logistics [T-WIWI-102718]****Responsible:** Prof. Dr. Stefan Nickel**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-102805 - Service Operations](#)  
[M-WIWI-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-104899 - Operations Research](#)

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

Events					
SS 2019	2550488	<a href="#">Ereignisdiskrete Simulation in Produktion und Logistik</a>	3 SWS	Lecture (V)	Spieckermann

**Competence Certificate**

The assessment consists of a written paper and an oral exam of about 30-40 min (non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015)).

**Prerequisites**

None

**Recommendation**

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

**Annotation**

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is planned to be held 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

**Ereignisdiskrete Simulation in Produktion und Logistik**2550488, SS 2019, 3 SWS, [Open in study portal](#)**Lecture (V)****Learning Content**

Simulation of production and logistics systems is an interdisciplinary subject connecting expert knowledge from production management and operations research with mathematics/statistics as well as computer science and software engineering. With completion of this course, students know statistical foundations of discrete simulation, are able to classify and apply related software applications, and know the relation between simulation and optimization as well as a number of application examples. Furthermore, students are enabled to structure simulation studies and are aware of specific project scheduling issues.

**Annotation**

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Besides knowledge of Operations Research students are assumed to be familiar with the following topics:

- Introduction in Statistics
- Programming basics (algorithms and data structures)
- Basic knowledge in production and logistics

**Workload**

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

**Literature**

- Banks J., Carson II J. S., Nelson B. L., Nicol D. M. (2010) Discrete-event system simulation, 5.Aufl., Pearson, Upper Saddle River.
- Eley, M. (2012): Simulation in der Logistik - Einführung in die Erstellung ereignisdiskreter Modelle unter Verwendung des Werkzeuges "Plant Simulation", Springer, Berlin und Heidelberg
- Kosturiak, J. und M. Gregor (1995): Simulation von Produktionssystemen. Springer, Wien und New York.
- Law, A. M. (2015): Simulation Modeling and Analysis. 5th Edition, McGraw-Hill, New York usw.
- Liebl, F. (1995): Simulation. 2. Auflage, Oldenbourg, München.
- Noche, B. und S. Wenzel (1991): Marktspiegel Simulationstechnik. In: Produktion und Logistik. TÜV Rheinland, Köln.
- Pidd, M. (2004): Computer Simulation in Management Science. 5th Edition, Wiley, Chichester.
- Robinson S (2004) Simulation: the practice of model development and use. John Wiley & Sons, Chichester
- VDI (2014): Simulation von Logistik-, Materialfluß- und Produktionssystemen. VDI Richtlinie 3633, Blatt 1, VDI-Verlag, Düsseldorf.

## T

**6.90 Course: Dynamic Macroeconomics [T-WIWI-109194]**

**Responsible:** Prof. Dr. Johannes Brumm  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101478 - Innovation und Wachstum](#)  
[M-WIWI-101496 - Wachstum und Agglomeration](#)  
[M-WIWI-101497 - Agglomeration und Innovation](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Events					
WS 18/19	2560402	<a href="#">Dynamic Macroeconomics</a>	2 SWS	Lecture (V)	Brumm
WS 18/19	2560403	<a href="#">Übung zu Dynamic Macroeconomics</a>	1 SWS	Practice (Ü)	Krause
Exams					
WS 18/19	7900261	<a href="#">Dynamic Macroeconomics</a>		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**

None.

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

## V

**Dynamic Macroeconomics**

2560402, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

The course Dynamic Macroeconomics addresses macroeconomic questions on an advanced level. The main focus of this course is on dynamic programming and its fundamental role in modern macroeconomics. After starting with the necessary mathematical tools, several applications in labor economics, economic growth, and asset pricing are introduced. The course pursues a hands-on approach so that students not only gain theoretical insights but also learn numerical tools to solve dynamic economic models using the modern programming language Python.

**Workload**

The total workload for this course is approximately 135 hours. For further information see German version.

**Literature**

Literature and lecture notes are provided during the course.

## T

**6.91 Course: Efficient Energy Systems and Electric Mobility [T-WIWI-102793]**

**Responsible:** PD Dr. Patrick Jochem  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101452 - Energiewirtschaft und Technologie](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each summer term	1

Events					
SS 2019	2581006	<a href="#">Efficient Energy Systems and Electric Mobility</a>	2 SWS	Lecture (V)	Jochem, McKenna
Exams					
WS 18/19	7981006	<a href="#">Efficient Energy Systems and Electric Mobility</a>		Prüfung (PR)	Fichtner

**Competence Certificate**

See German version.

**Prerequisites**

None

**Recommendation**

None

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

## V

**Efficient Energy Systems and Electric Mobility**

2581006, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

This lecture series combines two of the most central topics in the field of energy economics at present, namely energy efficiency and electric mobility. The objective of the lecture is to provide an introduction and overview to these two subject areas, including theoretical as well as practical aspects, such as the technologies, political framework conditions and broader implications of these for national and international energy systems.

The energy efficiency part of the lecture provides an introduction to the concept of energy efficiency, the means of affecting it and the relevant framework conditions. Further insights into economy-wide measurements of energy efficiency, and associated difficulties, are given with recourse to several practical examples. The problems associated with market failures in this area are also highlighted, including the Rebound Effect. Finally and by way of an outlook, perspectives for energy efficiency in diverse economic sectors are examined.

The electric mobility part of the lecture examines all relevant issues associated with an increased penetration of electric vehicles including their technology, their impact on the electricity system (power plants and grid), their environmental impact as well as their optimal integration in the future private electricity demand (i.e. smart grids and V2G). Besides technical aspects the user acceptance and behavioral aspects are also discussed.

**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

## 6.92 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-101446 - Market Engineering](#)  
[M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2540454	<a href="#">eFinance: Information Systems for Securities Trading</a>	2 SWS	Lecture (V)	Weinhardt, Notheisen, Glaser
WS 18/19	2540455	<a href="#">Übungen zu eFinance: Wirtschaftsinformatik für den Wertpapierhandel</a>	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

## 6.93 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-101263 - Einführung in die Logistik](#)  
[M-MACH-101279 - Technische Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2117096	<a href="#">Elements and systems of Technical Logistics</a>	3 SWS	Lecture / Practice (VÜ)	Mittwollen, Fischer
Exams					
WS 18/19	76-T-MACH-102159	<a href="#">Elements and Systems of Technical Logistics</a>		Prüfung (PR)	Mittwollen
SS 2019	76-T-MACH-102159	<a href="#">Elements and Systems of Technical Logistics</a>		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

## 6.94 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-101263 - Einführung in die Logistik](#)  
[M-MACH-101279 - Technische Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	2	Each winter term	1

Events					
WS 18/19	2117097	<a href="#">Elements and systems of Technical Logistics - project</a>	SWS	Project (PRO)	Mittwollen, Fischer

### 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

## 6.95 Course: Emerging Trends in Critical Information Infrastructures [T-WIWI-109250]

**Responsible:** Prof. Dr. Ali Sunyaev

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
WS 18/19	2513400	<a href="#">Emerging Trends in Critical Information Infrastructures</a>	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
Exams					
WS 18/19	7900114	<a href="#">Emerging Trends in Critical Information Infrastructures</a>		Prüfung (PR)	Sunyaev
SS 2019	7900187	<a href="#">Emerging Trends in Critical Information Infrastructures</a>		Prüfung (PR)	Sunyaev

### Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of a final thesis.

### Prerequisites

None.

### Annotation

The course is usually held as a block course.

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

## V

## 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.

## T

**6.96 Course: Emissions into the Environment [T-WIWI-102634]**

**Responsible:** Ute Karl  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101412 - Industrielle Produktion III](#)  
[M-WIWI-101471 - Industrielle Produktion II](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581962	<a href="#">Emissions into the Environment</a>	2 SWS	Lecture (V)	Karl
Exams					
WS 18/19	7981962	<a href="#">Emissions into the Environment</a>		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.

**Recommendation**

None

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

## V

**Emissions into the Environment**

2581962, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The course will provide an overview of sources of air pollution, waste and municipal waste; methods to monitor and to reduce/manage pollutant flows; regulatory framework on national and international level.

**A Air pollution control**

- Introduction and definitions
- Sources and pollutants
- Regulatory framework
- Emission monitoring
- Air pollution control measures

**B Waste management and Recycling**

- Introduction and regulatory framework
- Statistics and logistics
- Recycling and disposal
- Waste treatment

**C Waste water treatment**

- Municipal waste water treatment systems
- Sewage sludge disposal

**Workload**

The total workload for this course is approximately 105 hours. For further information see German version.

**Literature**

Will be announced in the course.

T

**6.97 Course: Employment Law I [T-INFO-101329]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Recht der Wirtschaftsunternehmen](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
WS 18/19	24167	<a href="#">Employment Law I</a>	2 SWS	Lecture (V)	Hoff
Exams					
WS 18/19	7500040	<a href="#">Employment Law I</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500097	<a href="#">Employment Law I</a>		Prüfung (PR)	Dreier, Matz

T

**6.98 Course: Employment Law II [T-INFO-101330]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Recht der Wirtschaftsunternehmen](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
SS 2019	24668	<a href="#">Employment Law II</a>	2 SWS	Lecture (V)	Hoff
Exams					
WS 18/19	7500058	<a href="#">Employment Law II</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500098	<a href="#">Employment Law II</a>		Prüfung (PR)	Dreier, Matz

## T

**6.99 Course: Energy and Environment [T-WIWI-102650]**

**Responsible:** Ute Karl  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101452 - Energiewirtschaft und Technologie](#)  
[M-WIWI-101468 - Umwelt- und Ressourcenökonomie](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2581003	<a href="#">Energy and Environment</a>	2 SWS	Lecture (V)	Karl
SS 2019	2581004	<a href="#">Übungen zu Energie und Umwelt</a>	1 SWS	Practice (Ü)	Seddig, Keles
Exams					
WS 18/19	7981003	<a href="#">Energy and Environment</a>		Prüfung (PR)	Fichtner

**Competence Certificate**

The assessment consists of a written exam (60 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

**Energy and Environment**

2581003, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The focus of the lecture is put on environmental impacts of fossil fuel conversion and related assessment methods. The list of topics is given below.

- Fundamentals of energy conversion
- Air pollutant formation from fossil fuel combustion
- Control of air pollutant emissions from fossil-fuelled power plants.
- Measures to improve conversion efficiency of fossil fuelled power plants.
- External effects of energy supply (Life Cycle Assessment of selected energy systems)
- Integrated Assessment models supporting the European Thematic Strategy on Air
- Cost-effectiveness analyses and cost-benefit analyses of air pollution control measures
- Monetary evaluation of external effects of energy supply (external costs)

**Workload**

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

**Literature**

Thr references for further reading are included in the lecture documents (see ILIAS)

## T

**6.100 Course: Energy and Process Technology I [T-MACH-102211]**

**Responsible:** Prof. Dr.-Ing. Hans-Jörg Bauer  
Dr.-Ing. Corina Schwitzke  
Dr. Amin Velji  
Heiner Wirbser

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101296 - Energie- und Prozesstechnik I](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each winter term	1

Events					
WS 18/19	2157961	<a href="#">Energy and Process Technology I</a>	6 SWS	Lecture / Practice (VÜ)	Wirbser, Bauer, Mitarbeiter, Wagner, Schwitzke
Exams					
WS 18/19	76-T-MACH-102211	<a href="#">Energy and Process Technology I</a>		Prüfung (PR)	Bauer, Wirbser, Schwitzke

**Competence Certificate**

The assessment consists of a written exam (120 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**

none

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

## V

**Energy and Process Technology I**

2157961, WS 18/19, 6 SWS, [Open in study portal](#)

**Lecture / Practice (VÜ)**

**Learning Content**

The last third of the lecture deals with the topic **Thermal Turbomachinery**. The basic principles, the functionality and the scope of application of gas and steam turbines for the generation of electrical power and propulsion technology are addressed.

## T

**6.101 Course: Energy and Process Technology II [T-MACH-102212]**

**Responsible:** Dr.-Ing. Corina Schwitzke  
Heiner Wirbser

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101297 - Energie- und Prozesstechnik II](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each summer term	1

Events					
SS 2019	2170832	<a href="#">Energy and Process Technology II</a>	6 SWS	Lecture / Practice (VÜ)	Schwitzke, Wirbser
Exams					
WS 18/19	76-T-MACH-102212	<a href="#">Energy and Process Technology II</a>		Prüfung (PR)	Schwitzke, Wirbser, Bauer

**Competence Certificate**

The assessment consists of a written exam (120 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**

none

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

## V

**Energy and Process Technology II**  
2170832, SS 2019, 6 SWS, [Open in study portal](#)

**Lecture / Practice (VÜ)**

**Learning Content**

**Thermal Turbomaschinery** - In the first part of the lecture deals with energy systems. Questions regarding global energy resources and their use, especially for the generation and provision of electrical energy, are addressed. Common fossile and nuclear power plants for the centralized supply with electrical power as well as concepts of power-heat cogeneration for the decentralized electrical power supply by means of block-unit heat and power plants, etc. are discussed. Moreover, the characteristics and the potential of renewable energy conversion concepts, such as wind and hydro-power, photovoltaics, solar heat, geothermal energy and fuel cells are compare and evaluated. The focus is on the description of the potentials, the risks and the economic feasibility of the different strategies aimed to protect resources and reduce CO2 emissions.

T

## 6.102 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	<a href="#">Energy Conversion and Increased Efficiency in Internal Combustion Engines</a>	2 SWS	Lecture (V)	Koch
Exams					
WS 18/19	76-T-MACH-105564	<a href="#">Energy Conversion and Increased Efficiency in Internal Combustion Engines</a>		Prüfung (PR)	Koch
SS 2019	76-T-MACH-105564	<a href="#">Energy Conversion and Increased Efficiency in Internal Combustion Engines</a>		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

## 6.103 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-101263 - Einführung in die Logistik](#)  
[M-MACH-101279 - Technische Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2117500	<a href="#">Energy efficient intralogistic systems</a>	2 SWS	Lecture (V)	Braun, Schönung
Exams					
WS 18/19	76-T-MACH-105151	<a href="#">Energy Efficient Intralogistic Systems</a>		Prüfung (PR)	Braun
SS 2019	76-T-MACH-105151	<a href="#">Energy Efficient Intralogistic Systems</a>		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 knownn.

**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

**6.104 Course: Energy Market Engineering [T-WIWI-107501]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101411 - Information Engineering](#)  
[M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-101451 - Energiewirtschaft und Energiemärkte](#)  
[M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2540464	<a href="#">Energy Market Engineering</a>	2 SWS	Lecture (V)	Weinhardt, Staudt
SS 2019	2540465	<a href="#">Übung zu Energy Market Engineering</a>	1 SWS	Practice (Ü)	Staudt, vom Scheidt

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to §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**

None

**Recommendation**

None

**Annotation**

Former course title until summer term 2017: T-WIWI-102794 "eEnergy: Markets, Services, Systems".

The lecture has also been added in the IIP Module *Basics of Liberalised Energy Markets*.

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

## V

**Energy Market Engineering**

2540464, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

This lecture discusses different design options for electricity markets. We will focus on different approaches of nodal and zonal pricing as well as single price mechanisms and capacity markets. After a short recap of German and European market designs, the different design options will be discussed scientifically and with the help of examples. Furthermore, we will evaluate alternative market design options like microgrids. Besides the fundamental functioning of those markets, we will introduce and discuss methodological knowledge to evaluate market design options.

**Annotation**

The lecture has also been added in the IIP Module *Basics of Liberalised Energy Markets*.

**Workload**

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

**Literature**

- Erdmann G, Zweifel P. *Energieökonomik, Theorie und Anwendungen*. Berlin Heidelberg: Springer; 2007.
- Grimm V, Ockenfels A, Zoettl G. Strommarktdesign: Zur Ausgestaltung der Auktionsregeln an der EEX \*. *Zeitschrift für Energiewirtschaft*. 2008:147-161.
- Stoft S. *Power System Economics: Designing Markets for Electricity*. IEEE; 2002.,
- Ströbele W, Pfaffenberger W, Heuterkes M. *Energiewirtschaft: Einführung in Theorie und Politik*. 2nd ed. München: Oldenbourg Verlag; 2010:349.

## T

**6.105 Course: Energy Networks and Regulation [T-WIWI-107503]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2540494	<a href="#">Energy Networks and Regulation</a>	2 SWS	Lecture (V)	Rogat
WS 18/19	2540495	<a href="#">Übung zu Energy Networks and Regulation</a>	1 SWS	Practice (Ü)	Rogat
Exams					
WS 18/19	7900198	<a href="#">Energy Networks and Regulation</a>		Prüfung (PR)	Weinhardt
WS 18/19	7900236	<a href="#">Energy Networks and Regulation</a>		Prüfung (PR)	Weinhardt

**Competence Certificate**

The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation. The exam is offered every semester. Re-examinations are offered on every ordinary examination date.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

Former course title until summer term 2017: T-WIWI-103131 "Regulatory Management and Grid Management - Economic Efficiency of Network Operation"

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

## V

**Energy Networks and Regulation**

2540494, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The lecture "Energy Networks and Regulation" provides insights into the regulatory framework of electricity and gas. It touches upon the way the grids are operated and how regulation affects almost all grid activities. The lecture also addresses approaches of grid companies to cope with regulation on a managerial level. We analyze how the system influences managerial decisions and strategies such as investment or maintenance. Furthermore, we discuss how the system affects the operator's abilities to deal with the massive challenges lying ahead ("Energiewende", redispatch, European grid integration, electric vehicles etc.). Finally, we look at current developments and major upcoming challenges, e.g., the smart meter rollout. Covered topics include:

- Grid operation as a heterogeneous landscape: big vs. small, urban vs. rural, TSO vs. DSO.
- Objectives of regulation: Fair price calculation and high standard access conditions.
- The functioning of incentive regulation
- Amendment to the incentive regulation: its merits, its flaws
- The revenue cap and how it is adjusted according to certain exogenous factors
- Grid tariffs: How are they calculated, what is the underlying rationale, do we need a reform (and which)?
- Exogenous costs shifted (arbitrarily) into the grid, e.g. feed-in tariffs for renewable energy or decentralized supply.

**Workload**

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

**Literature**

Averch, H.; Johnson, L.L (1962). Behavior of the firm under regulatory constraint, in: American Economic Review, 52 (5), S. 1052 – 1069.

Bundesnetzagentur (2006): Bericht der Bundesnetzagentur nach § 112a EnWG zur Einführung der Anreizregulierung nach § 21a EnWG, [http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen\\_Institutionen/Netzentgelte/Anreizregulierung/BerichtEinfuehrungAnreizregulierung.pdf?\\_\\_blob=publicationFile&v=3](http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen_Institutionen/Netzentgelte/Anreizregulierung/BerichtEinfuehrungAnreizregulierung.pdf?__blob=publicationFile&v=3).

Bundesnetzagentur (2015): Evaluierungsbericht nach § 33 Anreizregulierungsverordnung, [https://www.bmwi.de/Redaktion/DE/Downloads/A/anreizregulierungsverordnung-evaluierungsbericht.pdf?\\_\\_blob=publicationFile&v=1](https://www.bmwi.de/Redaktion/DE/Downloads/A/anreizregulierungsverordnung-evaluierungsbericht.pdf?__blob=publicationFile&v=1).

Filippini, M.; Wild, J.; Luchsinger, C. (2001): Regulierung der Verteilnetzpreise zu Beginn der Marktöffnung. Erfahrungen in Norwegen und Schweden, Bundesamt für Energie, Bern, [http://www.iaea.org/inis/collection/NCLCollectionStore/\\_Public/34/066/34066585.pdf](http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/34/066/34066585.pdf).

Gómez, T. (2013): Monopoly Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 151 – 198, Springer-Verlag, London.

Gómez, T. (2013): Electricity Distribution, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 199 – 250, Springer-Verlag, London.

Pérez-Arriaga, I.J. (2013): Challenges in Power Sector Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 647 – 678, Springer-Verlag, London.

Rivier, M.; Pérez-Arriaga, I.J.; Olmos, L. (2013): Electricity Transmission, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 251 – 340, Springer-Verlag, London.

## T

**6.106 Course: Energy Systems Analysis [T-WIWI-102830]**

**Responsible:** Dr. Armin Ardone  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101452 - Energiewirtschaft und Technologie](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2581002	<a href="#">Energy Systems Analysis</a>	2 SWS	Lecture (V)	Ardone
Exams					
WS 18/19	7981002	<a href="#">Energy Systems Analysis</a>		Prüfung (PR)	Fichtner

**Competence Certificate**

The assessment consists of a written exam according to Section 4(2), 1 of the examination regulation.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

Since 2011 the lecture is offered in winter term. Exams can still be taken in summer term.

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

## V

**Energy Systems Analysis**

2581002, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

1. Overview and classification of energy systems modelling approaches
2. Usage of scenario techniques for energy systems analysis
3. Unit commitment of power plants
4. Interdependencies in energy economics
5. Scenario-based decision making in the energy sector
6. Visualisation and GIS techniques for decision support in the energy sector

**Annotation**

Since 2011 the lecture is offered in winter term. Exams can still be taken in summer term.

**Workload**

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

## T

**6.107 Course: Energy Trade and Risk Management [T-WIWI-102691]**

**Responsible:** Dr. Clemens Cremer  
Prof. Dr. Wolf Fichtner  
Dr. Dogan Keles

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101451 - Energiewirtschaft und Energiemärkte](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Events					
SS 2019	2581020	<a href="#">Energy Trade and Risk Management</a>	3 SWS	Lecture (V)	Keles, Cremer
Exams					
WS 18/19	7981020	<a href="#">Energy Trade and Risk Management</a>		Prüfung (PR)	Fichtner

**Competence Certificate**

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation.

**Prerequisites**

None

**Recommendation**

None

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

## V

**Energy Trade and Risk Management**

2581020, SS 2019, 3 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

1. Introduction to Markets, Mechanisms, Interactions
2. Basics of Risk Management
3. Oil Markets
4. Gas Markets
5. Coal Markets
6. Emission Markets
7. Simulation Game
8. Power Markets
9. Risk Management in Utilities

**Annotation**

The credits have been changed from 3.5 to 4.

**Workload**

The total workload for this course is approximately 120.0 hours. For further information see German version.



**Literature****Elective literature:**

Burger, M., Graeber, B., Schindlmayr, G. (2007): *Managing energy risk: An integrated view on power and other energy markets*, Wiley&Sons, Chichester, England

EEX (2010): *Einführung in den Börsenhandel an der EEX auf Xetra und Eurex*, [www.eex.de](http://www.eex.de)

Erdmann, G., Zweifel, P. (2008), *Energieökonomik, Theorie und Anwendungen*, Springer, ISBN: 978-3-540-71698-3

Hull, J.C. (2006): *Options, Futures and other Derivatives*, 6. Edition, Pearson Prentice Hall, New Jersey, USA

Borchert, J., Schlemm, R., Korth, S. (2006): *Stromhandel: Institutionen, Marktmodelle, Pricing und Risikomanagement (Gebundene Ausgabe)*, Schäffer-Poeschel Verlag

[www.riskglossary.com](http://www.riskglossary.com)

## T

**6.108 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	<a href="#">Engine measurement techniques</a>	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

**6.109 Course: Engineering FinTech Solutions [T-WIWI-106193]**

**Responsible:** Prof. Dr Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103247 - Intelligente Risiko- und Investitionsberatung](#)  
[M-WIWI-103261 - Disruptive Finanz-technologische Innovationen](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each summer term	2

Events					
WS 18/19	2530357	<a href="#">Engineering FinTech Solutions</a>	2 SWS	Lecture (V)	Ulrich
SS 2019	2530357	<a href="#">Engineering FinTech Solutions</a>	3 SWS	Lecture (V)	Ulrich
Exams					
WS 18/19	7900287	<a href="#">Engineering FinTech Solutions</a>		Prüfung (PR)	Ulrich
SS 2019	7900125	<a href="#">Engineering FinTech Solutions</a>		Prüfung (PR)	Ulrich

**Competence Certificate**

Alternative exam assessment (§ 4(2), 3 SPO 2015). Details of the grade formation will be announced at the beginning of the course.

**Prerequisites**

This course is only open for registered students of the module “Intelligent Risk and Investment Advisory” and “Disruptive FinTech Solutions”.

**Recommendation**

None

**Annotation**

The course will be held in English language.

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

## V

**Engineering FinTech Solutions**

2530357, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

**Learning Content**

This project-oriented lecture invites students to work independently and yet, under close monitoring of researchers and the professor of the C-RAM research group, on a sub-problem of a larger FinTech research question. Students will in a personalized manner be introduced to the necessary concepts, tools and methods that are necessary to solve the question at hand. Students obtain the opportunity to connect newest research insights with modern information technology to move a step closer towards their own development of a prototype. Depending on the topic, students work alone or in groups. An essential part of the guided research mentoring is that students take part in weekly meetings to discuss open issues, to present their progress and to learn from their fellow students

**Workload**

The total workload for this course is approximately 135 hours. For further information see German version.

**Literature**

Literature will be distributed during the first lecture.

## V

**Engineering FinTech Solutions**

2530357, SS 2019, 3 SWS, [Open in study portal](#)

Lecture (V)

**Notes**

New course starting summer term 2019.

**Learning Content**

This project-oriented lecture invites students to work independently and yet, under close monitoring of researchers and the professor of the C-RAM research group, on a sub-problem of a larger FinTech research question. Students will in a personalized manner be introduced to the necessary concepts, tools and methods that are necessary to solve the question at hand. Students obtain the opportunity to connect newest research insights with modern information technology to move a step closer towards their own development of a prototype. Depending on the topic, students work alone or in groups. An essential part of the guided research mentoring is that students take part in weekly meetings to discuss open issues, to present their progress and to learn from their fellow students

**Workload**

The total workload for this course is approximately 135 hours. For further information see German version.

**Literature**

Literature will be distributed during the first lecture.

T

**6.110 Course: Engineering Hydrology [T-BGU-108943]**

**Responsible:** Dr.-Ing. Uwe Ehret  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-WIWI-101642 - Naturgefahren und Risikomanagement 1](#)  
[M-WIWI-101644 - Naturgefahren und Risikomanagement 2](#)  
[M-WIWI-104837 - Naturgefahren und Risikomanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	6200617	<a href="#">Ingenieurhydrologie</a>	2 SWS	Lecture / Practice (VÜ)	Ehret

**Competence Certificate**

See German version.

**Prerequisites**

None

## T

**6.111 Course: Enterprise Architecture Management [T-WIWI-102668]**

**Responsible:** Thomas Wolf  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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 winter term	1

Events					
WS 18/19	2511600	<a href="#">Enterprise Architecture Management</a>	2 SWS	Lecture (V)	Wolf
WS 18/19	2511601	<a href="#">Übungen zu Enterprise Architecture Management</a>	1 SWS	Practice (Ü)	Wolf
Exams					
WS 18/19	7900010	<a href="#">Enterprise Architecture Management</a>		Prüfung (PR)	Oberweis
SS 2019	7900043	<a href="#">Enterprise Architecture Management</a>		Prüfung (PR)	Wolf

**Competence Certificate**

The assessment of this course is a written (60 min.) or (if necessary) oral examination (30 min.) according to §4(2) of the examination regulation.

**Prerequisites**

None

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

## V

**Enterprise Architecture Management**

2511600, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The following topics will be covered: components of enterprise architecture, enterprise strategy including methods to develop strategies, business process (re)engineering, methods to implement changes within enterprises (management of change)

**Literature**

- Nolan, R., Croson, D.: Creative Destruction: A Six-Stage Process for Transforming the Organization. Harvard Business School Press, Boston Mass. 1995
- Doppler, K., Lauterburg, Ch.: Change Management. Campus Verlag 1997
- Jacobson, I.: The Object Advantage, Business Process Reengineering with Object Technology. Addison-Wesley Publishing Company, Wokingham England 1994
- Keller, G., Teufel, Th.: SAP R/3 prozessorientiert anwenden. Addison Wesley 1998
- Österle, H.: Business Engineering Bd. 1 und 2. Springer Verlag, Berlin 1995

T

## 6.112 Course: Entrepreneurial Leadership & Innovation Management [T-WIWI-102833]

**Responsible:** Dr. Carsten Linz  
Prof. Dr. Orestis Terzidis

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	2

### Competence Certificate

Please note: The seminar cannot be offered in the winter semester 2018/2019 due to organizational reasons.  
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

### Prerequisites

None

### Recommendation

None

## T

**6.113 Course: Entrepreneurship [T-WIWI-102864]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
SS 2019	2545001	<a href="#">Entrepreneurship</a>	2 SWS	Lecture (V)	Terzidis, Mitarbeiter
Exams					
WS 18/19	7900045	<a href="#">Entrepreneurship</a>		Prüfung (PR)	Terzidis
WS 18/19	7900215	<a href="#">Entrepreneurship</a>		Prüfung (PR)	Terzidis
WS 18/19	7900229	<a href="#">Entrepreneurship</a>		Prüfung (PR)	Terzidis

**Competence Certificate**

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**

None

**Recommendation**

None

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

## V

**Entrepreneurship**

2545001, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

This lecture, as an obligatory part of the module "Entrepreneurship", introduces basic concepts of entrepreneurship. It approaches the individual steps of dynamic corporate development. The focus here is the introduction to methods for generating innovative business ideas, the translation of patents into business concepts and general principles of business planning.

Other topics are the design and use of service-oriented information systems for founders, technology management, business model generation and lean startup methods for the implementation of business ideas in the way of controlled experiments in the market.

**Learning Content**

This lecture, as an obligatory part of the module "Entrepreneurship", introduces basic concepts of entrepreneurship. It approaches the individual steps of dynamic corporate development. The focus here is the introduction to methods for generating innovative business ideas, the translation of patents into business concepts and general principles of financial planning.

Other topics are the design and use of service-oriented information systems for founders, technology management, business model generation and lean startup methods for the implementation of business ideas in the way of controlled experiments in the market.

**Workload**

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



T

**6.114 Course: Entrepreneurship Research [T-WIWI-102894]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	2545002	<a href="#">Entrepreneurship Research</a>	2 SWS	Seminar (S)	Avila Albez, Terzidis, Tittel

**Competence Certificate**

The performance review is done via a so called other methods of performance review (term paper) (non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015)). The final grade is a result from both, the grade of the term paper and its presentation, as well as active participation during the seminar.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The topics will be prepared in groups. The presentation of the results is done during a a block period seminar at the end of the semester. Students have to be present all day long during the seminar.

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

V

**Entrepreneurship Research**2545002, SS 2019, 2 SWS, [Open in study portal](#)**Seminar (S)****Learning Content**

Content of the seminar is most recently discussed topics in the field of entrepreneurship. Topics and dates will be communicated online via the seminar portal.

**Annotation**

The topics are prepared in small groups. The seminar consists of two attendance meetings (kick-off event and final presentation). Between the appointments, independent work is required. The results will be presented at the end of the semester. There is an obligation to attend all seminars.

**Workload**

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

**Literature**

Will be announced during/prior to the seminar as this varies from topic to topic.

T

**6.115 Course: Environmental and Resource Policy [T-WIWI-102616]**

**Responsible:** Rainer Walz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101468 - Umwelt- und Ressourcenökonomie](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Exams				
WS 18/19	7900271	<a href="#">Environmental and Resource Policy</a>	Prüfung (PR)	Mitusch

**Competence Certificate**

See German version

**Recommendation**

It is recommended to already have knowledge in the area of industrial organization and economic policy. This knowledge may be acquired in the courses *Introduction to Industrial Organization* [2520371] and *Economic Policy* [2560280].

## T

**6.116 Course: Environmental Communication [T-BGU-101676]**

**Responsible:** Dr. Charlotte Kämpf  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-WIWI-101642 - Naturgefahren und Risikomanagement 1](#)  
[M-WIWI-101644 - Naturgefahren und Risikomanagement 2](#)  
[M-WIWI-104837 - Naturgefahren und Risikomanagement](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	2

Events					
WS 18/19	6224905	<a href="#">Umweltkommunikation / Environmental Communication</a>	2 SWS	Seminar (S)	Kämpf
SS 2019	6224905	<a href="#">Environmental Communication</a>	2 SWS	Seminar (S)	Kämpf
Exams					
WS 18/19	8244101676	<a href="#">Environmental Communication</a>		Prüfung (PR)	Kämpf

**Competence Certificate**

Non exam assessment (following §4(2), 3 of the examination regulation).

**Prerequisites**

Examination Prerequisite Environmental Communication must be passend.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-BGU-106620 - Examination Prerequisite Environmental Communication](#) must have been passed.

**Recommendation**

None

**Annotation**

none

T

**6.117 Course: Environmental Economics and Sustainability [T-WIWI-102615]**

**Responsible:** Rainer Walz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101468 - Umwelt- und Ressourcenökonomie](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2521547	<a href="#">Umweltökonomik und Nachhaltigkeit (mit Übung)</a>	2 SWS	Lecture / Practice (VÜ)	Walz
Exams					
WS 18/19	7900273	<a href="#">Environmental Economics and Sustainability</a>	Prüfung (PR)		Mitusch

**Competence Certificate**

See German version

**Prerequisites**

None

**Recommendation**

It is recommended to already have knowledge in the area of macro- and microeconomics. This knowledge may be acquired in the courses *Economics I: Microeconomics* [2600012] and *Economics II: Macroeconomics* [2600014].

T

**6.118 Course: Environmental Law [T-INFO-101348]**

**Responsible:** Prof. Dr. Matthias Bäcker  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101217 - Öffentliches Wirtschaftsrecht](#)  
[M-WIWI-101468 - Umwelt- und Ressourcenökonomie](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
WS 18/19	24140	<a href="#">Umweltrecht</a>	2 SWS	Lecture (V)	Marsch
Exams					
WS 18/19	7500050	<a href="#">Environmental Law</a>		Prüfung (PR)	Marsch
SS 2019	7500082	<a href="#">Environmental Law</a>		Prüfung (PR)	Marsch

T

**6.119 Course: European and International Law [T-INFO-101312]**

**Responsible:** Ulf Brühann  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101217 - Öffentliches Wirtschaftsrecht](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events				
SS 2019	24666	<a href="#">Europäisches und Internationales Recht</a>	2 SWS	Lecture (V) Brühann
Exams				
WS 18/19	7500048	<a href="#">European and International Law</a>		Prüfung (PR) Marsch
SS 2019	7500084	<a href="#">European and International Law</a>		Prüfung (PR) Marsch

T

## 6.120 Course: Examination Prerequisite Environmental Communication [T-BGU-106620]

**Responsible:** Dr. Charlotte Kämpf

**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences

**Part of:** [M-WIWI-101642 - Naturgefahren und Risikomanagement 1](#)  
[M-WIWI-101644 - Naturgefahren und Risikomanagement 2](#)  
[M-WIWI-104837 - Naturgefahren und Risikomanagement](#)

Type	Credits	Recurrence	Version
Studienleistung	0	Each summer term	1

Events					
WS 18/19	6224905	<a href="#">Umweltkommunikation / Environmental Communication</a>	2 SWS	Seminar (S)	Kämpf
SS 2019	6224905	<a href="#">Environmental Communication</a>	2 SWS	Seminar (S)	Kämpf
Exams					
WS 18/19	8244106620	<a href="#">Examination Prerequisite Environmental Communication</a>		Prüfung (PR)	Kämpf

### Competence Certificate

2 literature annotations, appr. 150 words each, and short presentation, appr. 10 min.

### Prerequisites

none

### Recommendation

none

### Annotation

none

T

**6.121 Course: Exchanges [T-WIWI-102625]**

**Responsible:** Dr. Jörg Franke  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Exams			
WS 18/19	7900062	<a href="#">Exchanges</a>	Prüfung (PR) Franke, Ruckes

**Competence Certificate**

The examination will be offered latest until winter term 2018/2019 (repeaters only).

**Prerequisites**

None

**Recommendation**

None



## T

**6.122 Course: Experimental Economics [T-WIWI-102614]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-101453 - Angewandte strategische Entscheidungen](#)  
[M-WIWI-101505 - Experimentelle Wirtschaftsforschung](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2540489	<a href="#">Experimental Economics</a>	2 SWS	Lecture (V)	Pfeiffer, Peukert, Dorner, Knierim
WS 18/19	2540493	<a href="#">Übung zu Experimentelle Wirtschaftsforschung</a>	1 SWS	Practice (Ü)	Knierim
Exams					
WS 18/19	7900178	<a href="#">Experimental Economics</a>		Prüfung (PR)	Weinhardt
WS 18/19	7900194	<a href="#">Experimental Economics</a>		Prüfung (PR)	Weinhardt

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to §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**

None

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

## V

**Experimental Economics**

2540489, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Experimental Economics have become a separate field in Economics. Nearly all fields of the economic discipline use economic experiments to verify theoretical results. Besides being used for empirical validation, this method is applied in political and strategic consulting. The lecture gives an introduction to experimental methods in economics and shows differences to experiments in natural sciences. Scientific studies are used to show exemplary applications.

**Workload**

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

**Literature**

- Strategische Spiele; S. Berninghaus, K.-M. Ehrhart, W. Güth; Springer Verlag, 2nd ed., 2006.
- Handbook of Experimental Economics; J. Kagel, A. Roth; Princeton University Press, 1995.
- Experiments in Economics; J.D. Hey; Blackwell Publishers, 1991.
- Experimental Economics; D.D. Davis, C.A. Holt; Princeton University Press, 1993.
- Experimental Methods: A Primer for Economists; D. Friedman, S. Sunder; Cambridge University Press, 1994.

T

## 6.123 Course: Extraordinary additional course in the module Cross-Functional Management Accounting [T-WIWI-108651]

**Responsible:** Prof. Dr. Marcus Wouters

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101510 - Cross-Functional Management Accounting](#)

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

### Competence Certificate

The assessment depends on which extraordinary course becomes part of the module "Cross-Functional Management Accounting".

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### Prerequisites

None

### Annotation

The purpose of this placeholder is to make it possible to include an extraordinary course in the module "Cross-Functional Management Accounting". Proposals for specific courses have to be approved in advance by the module coordinator.

T

## 6.124 Course: Fabrication Processes in Microsystem Technology [T-MACH-102166]

**Responsible:** Dr. Klaus Bade

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101291 - Mikrofertigung](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each term	1

Events					
WS 18/19	2143882	<a href="#">Fabrication Processes in Microsystem Technology</a>	2 SWS	Lecture (V)	Bade
SS 2019	2143882	<a href="#">Fabrication Processes in Microsystem Technology</a>	2 SWS	Lecture (V)	Bade
Exams					
WS 18/19	76-T-MACH-102166	<a href="#">Fabrication Processes in Microsystem Technology</a>		Prüfung (PR)	Bade
SS 2019	76-T-MACH-102166	<a href="#">Fabrication Processes in Microsystem Technology</a>		Prüfung (PR)	Bade

### Competence Certificate

Oral examination, 20 minutes

### Prerequisites

none

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

V

### Fabrication Processes in Microsystem Technology

2143882, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

### Description

#### Media:

pdf files of presentation sheets

### Learning Content

The lecture offers an advanced understanding of manufacturing processes in microsystem technology. Basic aspects of microtechnological processing will be introduced. With examples from semiconductor microfabrication and microsystem technology the base processing steps for conditioning and finishing, patterning, removal are imparted. Nano-patterning is covered is also included and the micro-nano interface is discussed. By the help of typical processing steps elementary mechanisms, process execution, and equipment are explained. Additionally quality control, process control and environmental topics are included

**Literature**

M. Madou

Fundamentals of Microfabrication

CRC Press, Boca Raton, 1997

W. Menz, J. Mohr, O. Paul

Mikrosystemtechnik für Ingenieure

Dritte Auflage, Wiley-VCH, Weinheim 2005

L.F. Thompson, C.G. Willson, A.J. Bowden

Introduction to Microlithography

2<sup>nd</sup> Edition, ACS, Washington DC, 1994

**Fabrication Processes in Microsystem Technology**

2143882, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)****Description****Media:**

pdf files of presentation sheets

**Learning Content**

The lecture offers an advanced understanding of manufacturing processes in microsystem technology. Basic aspects of microtechnological processing will be introduced. With examples from semiconductor microfabrication and microsystem technology the base processing steps for conditioning and finishing, patterning, removal are imparted. Nano-patterning is covered is also included and the micro-nano interface is discussed. By the help of typical processing steps elementary mechanisms, process execution, and equipment are explained. Additionally quality control, process control and environmental topics are included

**Literature**

M. Madou

Fundamentals of Microfabrication

CRC Press, Boca Raton, 1997

W. Menz, J. Mohr, O. Paul

Mikrosystemtechnik für Ingenieure

Dritte Auflage, Wiley-VCH, Weinheim 2005

L.F. Thompson, C.G. Willson, A.J. Bowden

Introduction to Microlithography

2<sup>nd</sup> Edition, ACS, Washington DC, 1994

T

## 6.125 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-102832 - Operations Research im 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	<a href="#">Facility Location and Strategic Supply Chain Management</a>	2 SWS	Lecture (V)	Nickel
WS 18/19	2550487	<a href="#">Übungen zu Standortplanung und strategisches SCM</a>	1 SWS	Practice (Ü)	Bakker
Exams					
WS 18/19	7900221	<a href="#">Facility Location and Strategic Supply Chain Management</a>		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 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.

### 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

**6.126 Course: Financial Analysis [T-WIWI-102900]**

**Responsible:** Dr. Torsten Luedecke  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2530205	<a href="#">Financial Analysis</a>	2 SWS	Lecture (V)	Luedecke
SS 2019	2530206	<a href="#">Übungen zu Financial Analysis</a>	2 SWS	Practice (Ü)	Luedecke
Exams					
WS 18/19	7900059	<a href="#">Financial Analysis</a>		Prüfung (PR)	Luedecke, Ruckes
SS 2019	7900075	<a href="#">Financial Analysis</a>		Prüfung (PR)	Luedecke

**Competence Certificate**

See German version.

**Prerequisites**

None

**Recommendation**

Basic knowledge in corporate finance, accounting, and valuation is required.

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

## V

**Financial Analysis**

2530205, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

This lecture reviews the key financial statements according to international financial reporting standards and provides analytical tools to evaluate the income statement, the balance sheet, and the cash flow statement in order to measure a firm's liquidity, operational efficiency, and profitability.

**Learning Content**

Topics:

- Introduction to Financial Analysis
- Financial Reporting Standards
- Major Financial Statements and Other Information
- Recognition and Measurement Issues
- Analysis of Financial Statements
- Financial Reporting Quality

**Literature**

- Alexander, D. and C. Nobes (2017): Financial Accounting – An International Introduction, 6th ed., Pearson.
- Penman, S.H. (2013): Financial Statement Analysis and Security Valuation, 5th ed., McGraw Hill.

T

**6.127 Course: Financial Econometrics [T-WIWI-103064]**

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101638 - Ökonometrie und Statistik I](#)  
[M-WIWI-101639 - Ökonometrie und Statistik II](#)  
[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

**6.128 Course: Financial Intermediation [T-WIWI-102623]**

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101453 - Angewandte strategische Entscheidungen](#)  
[M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2530232	<a href="#">Financial Intermediation</a>	2 SWS	Lecture (V)	Ruckes
WS 18/19	2530233	<a href="#">Übung zu Finanzintermediation</a>	1 SWS	Practice (Ü)	Ruckes, Hoang, Benz
Exams					
WS 18/19	7900063	<a href="#">Financial Intermediation</a>		Prüfung (PR)	Ruckes
SS 2019	7900078	<a href="#">Financial Intermediation</a>		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

**6.129 Course: Fixed Income Securities [T-WIWI-102644]**

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Exams				
WS 18/19	7900053	<a href="#">Fixed Income Securities</a>	Prüfung (PR)	Uhrig-Homburg

**Competence Certificate**

Please note that the lecture is not held in winter semester 18/19.

The assessment consists of a written exam (75 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation SPO2015 and may be supplemented by a non exam assessment according to § 4 paragraph 2 Nr. 3. The examination is offered every semester and can be repeated at every regular examination date.

**Prerequisites**

None

**Recommendation**

Knowledge from the course "Derivatives" is very helpful.

**Annotation**

See German version.

## T

**6.130 Course: Foundations of Information Systems [T-WIWI-109918]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101411 - Information Engineering](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2540450	<a href="#">Foundations of Information Systems</a>	2 SWS	Lecture (V)	Weinhardt, Mädche
WS 18/19	2540451	<a href="#">Übungen zu "Foundations of Information Systems"</a>	1 SWS	Practice (Ü)	Jung, Mädche, Weinhardt

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulation).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

This course replaces T-WIWI-102638 "Principles of Information Engineering and Management" as of summer semester 2019.

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

## V

**Foundations of Information Systems**

2540450, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

Information plays a central role in today's society. The resulting structures and processes cannot be explained intuitively with traditional approaches of economic theory. Formerly, information has only been implicitly treated as a production factor; its role as a competitive factor used to be neglected. In order to deal with the central role of information we developed the concept of the 'information lifecycle' that systematizes all phases from information generation to information distribution. The state of the art of economic theory is presented across this information lifecycle within the lectures.

The content of the lecture is deepened in accompanying lecture courses.

**Learning Content**

Information plays a central role in today's society. The resulting structures and processes cannot be explained intuitively with traditional approaches of economic theory. Formerly, information has only been implicitly treated as a production factor; its role as a competitive factor used to be neglected. In order to deal with the central role of information we developed the concept of the "information lifecycle" that systematizes all phases from information generation to information distribution. The single phases of that cycle,

- extraction/generation,
- storage,
- transformation,
- evaluation,
- marketing
- and usage of information

are analyzed from the business administration perspective and the microeconomic perspective. The state of the art of economic theory is presented across this information lifecycle within the lectures. The content of the lecture is deepened in accompanying lecture courses.

**Workload**

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

**Literature**

- Shapiro, C., Varian, H., Information Rules: A Strategic Guide to the Network Economy. Harvard Business School Press 1999.
- Stahlknecht, P., Hasenkamp, U., Einführung in die Wirtschaftsinformatik. Springer Verlag 7. Auflage, 1999.
- Wirth, H., Electronic Business. Gabler Verlag 2001.

T

**6.131 Course: Freight Transport [T-BGU-106611]**

**Responsible:** Bastian Chlond  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	2

Events					
SS 2019	6232809	<a href="#">Güterverkehr</a>	2 SWS	Lecture / Practice (VÜ)	Chlond
Exams					
WS 18/19	8245106611	<a href="#">Freight Transport</a>		Prüfung (PR)	Chlond

**Competence Certificate**

written exam, 60 min.

**Prerequisites**

none

**Recommendation**

none

**Annotation**

none

T

**6.132 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	<a href="#">Fuels and Lubricants for Combustion Engines</a>	2 SWS	Lecture (V)	Kehrwald
Exams					
WS 18/19	76-T-MACH-105184	<a href="#">Fuels and Lubricants for Combustion Engines</a>		Prüfung (PR)	
SS 2019	76-T-MACH-105184	<a href="#">Fuels and Lubricants for Combustion Engines</a>		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

## 6.133 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	<a href="#">Fundamentals of catalytic exhaust gas aftertreatment</a>	2 SWS	Lecture (V)	Lox, Grunwaldt, Deutschmann
Exams					
WS 18/19	76-T-MACH-105044	<a href="#">Fundamentals of Catalytic Exhaust Gas Aftertreatment</a>		Prüfung (PR)	
SS 2019	76-T-MACH-105044	<a href="#">Fundamentals of Catalytic Exhaust Gas Aftertreatment</a>		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

**6.134 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

**6.135 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	<a href="#">Gear Cutting Technology</a>	2 SWS	Lecture (V)	Klaiber
Exams					
WS 18/19	76-T-MACH-102148	<a href="#">Gear Cutting Technology</a>		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

**6.136 Course: Global Optimization I [T-WIWI-102726]**

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

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

Events					
SS 2019	2550134	<a href="#">Globale Optimierung I</a>	2 SWS	Lecture (V)	Stein
SS 2019	2550135	<a href="#">Übungen zu Globale Optimierung I+II</a>	1 SWS	Practice (Ü)	Stein
Exams					
WS 18/19	7900007_NK_WS1819	<a href="#">Global Optimization I</a>		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

## 6.137 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-101473 - Mathematische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each summer term	1

Events					
SS 2019	2550134	<a href="#">Globale Optimierung I</a>	2 SWS	Lecture (V)	Stein
SS 2019	2550136	<a href="#">Globale Optimierung II</a>	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900001_NK_WS1819	<a href="#">Global optimization I and II</a>		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

**6.138 Course: Global Optimization II [T-WIWI-102727]**

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	2

Events					
SS 2019	2550135	<a href="#">Übungen zu Globale Optimierung I+II</a>	1 SWS	Practice (Ü)	Stein
SS 2019	2550136	<a href="#">Globale Optimierung II</a>	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900152_NK_WS1819	<a href="#">Global Optimization II</a>		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

## 6.139 Course: Global Production and Logistics - Part 1: Global Production [T-MACH-105158]

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

**Part of:** [M-MACH-101282 - Globale Produktion und Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	2

Events					
WS 18/19	2149610	<a href="#">Global Production and Logistics - Part 1: Global Production</a>	2 SWS	Lecture (V)	Lanza
Exams					
WS 18/19	76-T-MACH-105158	<a href="#">Global Production and Logistics - Part 1: Global Production</a>		Prüfung (PR)	Lanza

### Competence Certificate

Written Exam (60 min)

### Prerequisites

"T-MACH-108848 - Globale Produktion und Logistik - Teil 1: Globale Produktion" must not be commenced.

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

V

## Global Production and Logistics - Part 1: Global Production

2149610, 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/>)

### Notes

Lectures on Mondays 14:00-15:30

### Learning Content

Target of the lecture is to depict the challenges and fields of action of global operating companies and to give an overview of central aspects in global production networks as well as establishing a deepening knowledge of established methods and procedures for design and scale. Within the course methods for site selection, procedures for site specific adjustment of product construction and product technology as well as planning approaches to establish a new production site are imparted. The course is rounded off by showing the characteristics of the departments sale, procurement as well as research and development under global aspects. Moreover, the implementation of Industry 4.0 applications is discussed in the context of global production.

The topics are:

- Basic conditions and influencing factors of global production (historical development, targets, chances and threats)
- Global sales
- Site selection
- Site specific production adjustment
- Establishing of new production sites
- Global procurement
- Design and management of global production networks
- Global research and development

**Annotation**

None

**Workload**

regular attendance: 21 hours

self-study: 99 hours

**Literature**

Lecture Notes

recommended secondary literature:

Abele, E. et al: Global Production – A Handbook for Strategy and Implementation, Springer 2008 (english)

T

## 6.140 Course: Global Production and Logistics - Part 2: Global Logistics [T-MACH-105159]

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

**Part of:** [M-MACH-101282 - Globale Produktion und Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Events					
SS 2019	2149600	<a href="#">Global Production and Logistics - Part 2: Global Logistics</a>	2 SWS	Lecture (V)	Furmans
Exams					
WS 18/19	76-T-MACH-105159	<a href="#">Global Production and Logistics - Part 2: Global Logistics</a>		Prüfung (PR)	Furmans
SS 2019	76-T-MACH-105159	<a href="#">Global Production and Logistics - Part 2: Global Logistics</a>		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

### Recommendation

We recommend attending the course "Logistics - organization, design and control of logistic systems " (2118078) beforehand.

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

V

## Global Production and Logistics - Part 2: Global Logistics

2149600, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Description

#### Media:

presentations, black board

**Learning Content**

Characteristics of global trade

- Incoterms
- Customs clearance, documents and export control

Global transport and shipping

- Maritime transport, esp. container handling
- Air transport

Modeling of supply chains

- SCOR model
- Value stream analysis

Location planning in cross-border-networks

- Application of the Warehouse Location Problem
- Transport Planning

Inventory Management in global supply chains

- Stock keeping policies

Inventory management considering lead time and shipping costs

**Workload**

regular attendance: 21 hours

self-study: 99 hours

**Literature****Elective literature:**

- Arnold/Isermann/Kuhn/Tempelmeier. HandbuchLogistik, Springer Verlag, 2002 (Neuaufgabe in Arbeit)
- Domschke. Logistik, Rundreisen und Touren, Oldenbourg Verlag, 1982
- Domschke/Drexl. Logistik, Standorte, OldenbourgVerlag, 1996
- Gudehus. Logistik, Springer Verlag, 2007
- Neumann-Morlock. Operations-Research, Hanser-Verlag, 1993
- Tempelmeier. Bestandsmanagement in SupplyChains, Books on Demand 2006
- Schönsleben. IntegralesLogistikmanagement, Springer, 1998

## T

**6.141 Course: Graph Theory and Advanced Location Models [T-WIWI-102723]**

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	2

Exams				
WS 18/19	7900276	<a href="#">Graph Theory and Advanced Location Models</a>	Prüfung (PR)	Nickel

**Competence Certificate**

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

**Prerequisites**

None

**Recommendation**

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

**Annotation**

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at <http://dol.ior.kit.edu/english/Courses.php>.

T

**6.142 Course: Heat Economy [T-WIWI-102695]**

**Responsible:** Prof. Dr. Wolf Fichtner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101452 - Energiewirtschaft und Technologie](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Exams				
WS 18/19	7981001	<a href="#">Heat Economy</a>	Prüfung (PR)	Fichtner

**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**

See German version.

## T

## 6.143 Course: High-Voltage Technology I [T-ETIT-101913]

**Responsible:** Dr.-Ing. Rainer Badent  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-ETIT-101163 - Hochspannungstechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

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

Events					
WS 18/19	2307360	<a href="#">Hochspannungstechnik I</a>	2 SWS	Lecture (V)	Badent
WS 18/19	2307362	<a href="#">Übungen zu 2307360 Hochspannungstechnik I</a>	1 SWS	Practice (Ü)	Maier
Exams					
WS 18/19	7307360	<a href="#">High-Voltage Technology I</a>		Prüfung (PR)	Badent
SS 2019	7307360	<a href="#">High-Voltage Technology I</a>		Prüfung (PR)	Badent

**Prerequisites**  
none



T

**6.144 Course: High-Voltage Technology II [T-ETIT-101914]**

**Responsible:** Dr.-Ing. Rainer Badent  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-ETIT-101163 - Hochspannungstechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

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

Events					
SS 2019	2307361	<a href="#">High-Voltage Technology II</a>	2 SWS	Lecture (V)	Badent
SS 2019	2307363	<a href="#">Übungen zu 2307361 Hochspannungstechnik II</a>	1 SWS	Practice (Ü)	Schulze
Exams					
WS 18/19	7307361	<a href="#">High-Voltage Technology II</a>		Prüfung (PR)	Badent
SS 2019	7307361	<a href="#">High-Voltage Technology II</a>		Prüfung (PR)	Badent

**Prerequisites**  
none

## T

## 6.145 Course: High-Voltage Test Technique [T-ETIT-101915]

**Responsible:** Dr.-Ing. Rainer Badent  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-ETIT-101164 - Erzeugung und Übertragung regenerativer Energie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2307392	<a href="#">Hochspannungsprüftechnik</a>	2 SWS	Lecture (V)	Badent
WS 18/19	2307394	<a href="#">Übungen zu 2307392</a> <a href="#">Hochspannungsprüftechnik</a>	1 SWS	Practice (Ü)	Görtz
Exams					
WS 18/19	7307392	<a href="#">High-Voltage Test Technique</a>		Prüfung (PR)	Badent

**Prerequisites**

none

## T

**6.146 Course: Human Factors in Security and Privacy [T-WIWI-109270]**

**Responsible:** Prof. Dr. Melanie Volkamer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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 winter term	1

Events					
WS 18/19	2511554	<a href="#">Human Factors in Security and Privacy</a>	2 SWS	Lecture (V)	Volkamer
WS 18/19	2511555	<a href="#">Übungen zu Human Factors in Security and Privacy</a>	1 SWS	Practice (Ü)	Volkamer
Exams					
WS 18/19	7900113	<a href="#">Human Factors in Security and Privacy</a>		Prüfung (PR)	Volkamer
SS 2019	7900084	<a href="#">Human Factors in Security and Privacy</a>		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**

Successful participation in the exercises.

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

## V

**Human Factors in Security and Privacy**

2511554, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

### Description

The history of information security and privacy has taught us that it takes more than technological innovation to develop effective security and privacy mechanisms: Many aspects of information security and privacy actually depend on both technical and human factors. As a result of focusing on the technical factors, we are seeing a persistent gap between theoretical security and actual security in real world which becomes an increasing problem in the age of digitalization. The gap is mainly caused by strong and actually unrealistic assumptions regarding the users' knowledge and behavior.

Human factors in security and privacy research addresses several types of security and privacy mechanisms, e.g., authentication mechanisms including text and graphical passwords, security and privacy indicators (such as the icons in the address bar of nowadays web browsers) and security and privacy interventions like warning messages, permission dialogs and security and privacy policies as well as corresponding configuration interfaces. Besides security and privacy mechanisms, human factors in security and privacy researchers deal with security and privacy awareness, education, and training approaches.

'Human factors in security & privacy' research areas are:

- identifying users' mental models using techniques such as (semi-)structured interviews or focus groups,
- evaluating existing approaches regarding their effectiveness in supporting their users in making secure decisions / informed decisions in the context of privacy using techniques such as cognitive walkthroughs, lab user studies or even field studies,
- proposing improved / new approaches and evaluating their effectiveness using the so called human-centered security / privacy by design approach.

This lecture and the corresponding exercises discuss the various problems of existing security and privacy mechanisms and security and privacy awareness/education/training approaches. The lecture addresses relevant psychological and sociological aspects which are important to know and to consider when developing more usable security/privacy mechanisms and more effective awareness/education/training approaches. The human centered security and privacy by design approach is introduced. Furthermore, some of the methodologies used in this area are explained and a subset of them is applied. Finally, positive examples, such as graphical passwords, are introduced and discussed. Note, the main part of the exercise is replicating an interview based study.

### Learning Content

This lecture and the corresponding exercises discuss the various problems of existing security and privacy mechanisms and security and privacy awareness/education/training approaches. The lecture addresses relevant psychological and sociological aspects which are important to know and to consider when developing more usable security/privacy mechanisms and more effective awareness/education/training approaches. This includes the importance of mental models. The human centered security and privacy by design approach is introduced. Furthermore, some of the methodologies used in this area are explained and a subset of them is also applied. Finally, positive examples, such as graphical passwords, are introduced and discussed. Note, the main part of the exercise is replicating an interview based study.

### Literature

- Usable Security: History, Themes, and Challenges (Synthesis Lectures on Information Security, Privacy, and Trust): Simson Garfinkel und Heather Richter Lipford. 2014
- Security and Usability: Designing Secure Systems that People Can Use von Lorrie Faith Cranor und Simson Garfinkel. 2005
- Melanie Volkamer, Karen Renaud: Mental Models - General Introduction and Review of Their Application to Human-Centred Security. In Number Theory and Cryptography (2013): 255-280: [https://link.springer.com/chapter/10.1007/978-3-642-42001-6\\_18](https://link.springer.com/chapter/10.1007/978-3-642-42001-6_18)
- Paul Gerber, Marco Ghiglierie, Birgit Henhapl, Oksana Kulyk, Karola Marky, Peter Mayer, Benjamin Reinheimer, Melanie Volkamer: Human Factors in Security. In: Reuter C. (eds) Sicherheitskritische Mensch-Computer-Interaktion. Springer (2018) [https://link.springer.com/chapter/10.1007/978-3-658-19523-6\\_5](https://link.springer.com/chapter/10.1007/978-3-658-19523-6_5)
- Bruce Schneier: Psychology of Security (2018): [https://www.schneier.com/essays/archives/2008/01/the\\_psychology\\_of\\_se.html](https://www.schneier.com/essays/archives/2008/01/the_psychology_of_se.html)
- Ross Anderson: security /usability and psychology. In Security Engineering. <http://www.cl.cam.ac.uk/~rja14/Papers/SEv2-c02.pdf>
- Andrew Odlyzko: Economics, Psychology and Sociology of Security: <http://www.dtc.umn.edu/~odlyzko/doc/econ.psych.security.pdf>

## T

**6.147 Course: Incentives in Organizations [T-WIWI-105781]**

**Responsible:** Prof. Dr. Petra Nieken  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101453 - Angewandte strategische Entscheidungen](#)  
[M-WIWI-101500 - Microeconomic Theory](#)  
[M-WIWI-101505 - Experimentelle Wirtschaftsforschung](#)  
[M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Events					
SS 2019	2573003	<a href="#">Incentives in Organizations</a>	2 SWS	Lecture (V)	Nieken
SS 2019	2573004	<a href="#">Übung zu Incentives in Organizations</a>	1 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
WS 18/19	7900201	<a href="#">Incentives in Organizations</a>		Prüfung (PR)	Nieken

**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.

In case of a small number of registrations, we might offer an oral exam instead of a written exam.

**Prerequisites**

None

**Recommendation**

Knowledge of microeconomics, game theory, and statistics is assumed.

**Annotation**

The course is carried out routinely in summer.

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

## V

**Incentives in Organizations**

2573003, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The students acquire profound knowledge about the design and the impact of different incentive and compensation systems. Topics covered are, for instance, performance based compensation, team work, intrinsic motivation, multitasking, and subjective performance evaluations. We will use microeconomic or behavioral models as well as empirical data to analyze incentive systems. We will investigate several widely used compensation schemes and their relationship with corporate strategy. Students will learn to develop practical implications which are based on the acquired knowledge of this course.

**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**

Literature (mandatory): Slides, case studies, and selected research papers announced in the lecture

Literature (additional):

Brickley / Smith / Zimmerman: Managerial Economics and Organizational Architecture

Camerer: Behavioral Game Theory

Lazear / Gibbs: Personnel Economics in Practice

Wooldridge: Introduction to Econometrics

Wooldridge: Econometric Analysis of Cross Section and Panel Data

## T

**6.148 Course: Industrial Services [T-WIWI-102822]**

**Responsible:** Prof. Dr. Hansjörg Fromm  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101448 - Service Management](#)  
[M-WIWI-101506 - Service Analytics](#)  
[M-WIWI-102808 - Digital Service Systems in Industry](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2595505	<a href="#">Industrial Services</a>	2 SWS	Lecture (V)	Fromm
WS 18/19	2595506	<a href="#">Übungen zu Industrial Services</a>	1 SWS	Practice (Ü)	Walk
Exams					
WS 18/19	7900241	<a href="#">Industrial Services</a>		Prüfung (PR)	Fromm

**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

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

## V

**Industrial Services**

2595505, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

### Learning Content

Services are becoming ever more important in business. Today, the gross income share of services in Germany exceeds 70%. Following this trend, many companies that previously focused solely on the sale of goods, strive to an extension of their business model: In order to realize new competitive advantages in domestic and international markets, they enrich their material goods with customer-specific services. This transformation to a provider of integrated solutions is called "Servitization" (Neely 2009). For this reason, so-called industrial services to companies of increasing importance. They benefit from the increasingly detailed data collected (on "Big Data"), e.g. concerning user profiles, failure statistics, usage history, accrued expenses, etc. Only these data allow in principle to end products and spare parts are delivered faster, cheaper and more targeted and technicians can be used more efficiently with the correct skills. This requires, however, also suitable methods of optimization, prognosis or predictive modeling. When used properly, such methods can minimize logistics costs, increase availability, prevent potential failures and improve repair planning. This is also enabled by latest "Technology Enabled Services" along with corresponding data transfer and analysis ("Internet of Things", automatic error detection, remote diagnostics, centralized collection of consumption data, etc.). The change from goods manufacturer to a provider of integrated solutions requires new services, transformation of business models as well as intelligent new contract types, which are addressed in the course as well.

#### More specifically, the lessons of this lecture will include:

- Servitization – The Manufacturer's Transformation to Integrated Solution Provider
- Service Levels – Definitions, Agreements, Measurements and Service Level Engineering
- The "Services Supply Chain"
- Spare Parts Planning – Forecasting, Assortment Planning, Order Quantities and Safety Stocks
- Distribution Network Planning – Network Types, Models, Optimization
- Service Technician Planning
- Condition Monitoring, Predictive Maintenance, Diagnose Systems
- Call Center Services
- Full Service Contracts
- IT-enabled Value-Add Services – Industrial Service Innovation

### Workload

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

### Literature

- Silver, E. A., Pyke, D. F., & Peterson, R. (1998). *Inventory management and production planning and scheduling* (Vol. 3, p. 30). New York: Wiley.
- Pintelon, L., & Van Puyvelde, F. (2013). *Asset Management. The Maintenance Perspective*. Acco.
- Chopra, S., & Meindl, P. (2007). Supply chain management. Strategy, planning & operation. In *Das summa summarum des management* (pp. 265-275). Gabler.
- Koole, G. (2007). Call Center Mathematics: A scientific method for understanding and improving contact centers. *Department of Mathematics, Vrije Universiteit, Amsterdam*.
- Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International journal of service industry management*, 14(2), 160-172.



T

**6.149 Course: Information Engineering [T-MACH-102209]**

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

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	2

Events					
SS 2019	2122014	<a href="#">Information Engineering</a>	2 SWS	Seminar (S)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102209	<a href="#">Information Engineering</a>		Prüfung (PR)	Ovtcharova

**Competence Certificate**

Alternative exam assessment (written composition and speech)

**Prerequisites**

None

T

## 6.150 Course: Information Management for Public Mobility Services [T-BGU-106608]

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	6232813	<a href="#">Informationsmanagement für öffentliche Mobilitätsangebote</a>	2 SWS	Block (B)	Vortisch

### Competence Certificate

lecture accompanying exercises, appr. 5 pieces

### Prerequisites

none

### Recommendation

none

### Annotation

none

## T

**6.151 Course: Information Service Engineering [T-WIWI-106423]**

**Responsible:** Prof. Dr. Harald Sack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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	1

Events					
SS 2019	2511606	<a href="#">Information Service Engineering</a>	2 SWS	Lecture (V)	Sack
SS 2019	2511607	<a href="#">Übungen zu Information Service Engineering</a>	1 SWS	Practice (Ü)	Sack
Exams					
WS 18/19	7900071	<a href="#">Information Service Engineering</a>		Prüfung (PR)	Sack
SS 2019	7900070	<a href="#">Information Service Engineering</a>		Prüfung (PR)	Sack

**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 (20 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

**Annotation**

New course starting summer term 2017.

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

## V

**Information Service Engineering**

2511606, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

- Information, Natural Language and the Web
- Natural Language Processing
  - NLP and Basic Linguistic Knowledge
  - NLP Applications, Techniques & Challenges
  - Evaluation, Precision and Recall
  - Regular Expressions and Automata
  - Tokenization
  - Language Model and N-Grams
  - Part-of-Speech Tagging
- Linked Data Engineering
  - Knowledge Representations and Ontologies
  - What's in an URI?
  - Resource Description Framework (RDF)
  - Creating new Models with RDFS
  - Querying RDF(S) with SPARQL
  - More Expressivity with Web Ontology Language (OWL)
  - The Web of Data
  - Vocabularies and Ontologies in the Web of Data
  - Wikipedia, DBpedia, and Wikidata
- Information Retrieval
  - Information Retrieval Models
  - Retrieval Evaluation
  - Web Information Retrieval
  - Document Crawling, Text Processing, and Indexing
  - Query Processing and Result Representation
  - Question Answering
- Knowledge Mining
  - From Data to Knowledge
  - Data Mining
  - Machine Learning Basics for Knowledge Mining
  - Mining Knowledge from Wikipedia
  - Named Entity Resolution
- Exploratory Search and Recommender Systems
  - Semantic Search and Entity Centric Search
  - Collaborative Filtering and Content Based Recommendations
  - From Search to Intelligent Browsing
  - Linked Data Based Exploratory Search
  - Fact Ranking

**Annotation**

New lecture, since summer semester 2017

**Literature**

- D. Jurafsky, J.H. Martin, Speech and Language Processing, 2nd ed. Pearson Int., 2009.
- S. Hitzler, S. Rudolph, Foundations of Semantic Web Technologies, Chapman / Hall, 2009.
- R. Baeza-Yates, B. Ribeiro-Neto, Modern Information Retrieval, 2nd ed., Addison Wesley, 2010.#

T

## 6.152 Course: Information Systems and Supply Chain Management [T-MACH-102128]

**Responsible:** Dr. Christoph Kilger

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101263 - Einführung in die Logistik](#)  
[M-MACH-101280 - Logistik in Wertschöpfungsnetzwerken](#)  
[M-MACH-101282 - Globale Produktion und Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	2

Events					
SS 2019	2118094	<a href="#">Information Systems in Logistics and Supply Chain Management</a>	2 SWS	Lecture (V)	Kilger
Exams					
WS 18/19	76T-MACH-102128	<a href="#">Information Systems and Supply Chain Management</a>		Prüfung (PR)	Mittwollen
WS 18/19	76-T-MACH-102128	<a href="#">Information Systems and Supply Chain Management</a>		Prüfung (PR)	Mittwollen
SS 2019	76-T-MACH-102128	<a href="#">Information Systems and Supply Chain Management</a>		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

## 6.153 Course: Innovation Management: Concepts, Strategies and Methods [T-WIWI-102893]

**Responsible:** Prof. Dr. Marion Weissenberger-Eibl  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2545100	<a href="#">Innovation Management: Concepts, Strategies and Methods</a>	2 SWS	Lecture (V)	Weissenberger-Eibl
Exams					
SS 2019	7900144	<a href="#">Innovation Management: Concepts, Strategies and Methods</a>		Prüfung (PR)	Weissenberger-Eibl
SS 2019	7900145	<a href="#">Innovation Management: Concepts, Strategies and Methods</a>		Prüfung (PR)	Weissenberger-Eibl

### 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

None

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

## V

## Innovation Management: Concepts, Strategies and Methods

2545100, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Notes

The lecture will be held in German.

### Learning Content

The course 'Innovation Management: Concepts, Strategies and Methods' offers scientific concepts which facilitate the understanding of the different phases of the innovation process and resulting strategies and appropriate methodologies suitable for application.

The concepts refer to the entire innovation process so that an integrated perspective is made possible. This is the basis for the teaching of strategies and methods which fulfil the diverse demands of the complex innovation process. The course focuses particularly on the creation of interfaces between departments and between various actors in a company's environment and the organisation of a company's internal procedures. In this context a basic understanding of knowledge and communication is taught in addition to the specific characteristics of the respective actors. Subsequently methods are shown which are suitable for the profitable and innovation-led implementation of integrated knowledge.

### Annotation

This course was formerly named "Innovation Management".

### Workload

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

**Literature**

A detailed bibliography is provided with the lecture notes.



## T

**6.154 Course: Innovationtheory and -Policy [T-WIWI-102840]**

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101478 - Innovation und Wachstum](#)  
[M-WIWI-101497 - Agglomeration und Innovation](#)  
[M-WIWI-101514 - Innovationsökonomik](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2560236	<a href="#">Innovationtheory and -policy</a>	SWS	Lecture (V)	Ott
SS 2019	2560237	<a href="#">Übung zu Innovationstheorie und -politik</a>	SWS	Practice (Ü)	Ott, Eraydin
Exams					
WS 18/19	7900077	<a href="#">Innovationtheory and -Policy</a>		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.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

**Prerequisites**

None

**Recommendation**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

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

## V

**Innovationtheory and -policy**

2560236, SS 2019, SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

- Incentives for the emergence of innovations
- Patents
- Diffusion
- Impact of technological progress
- Innovation Policy

**Workload**

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

**Literature**

## Excerpt:

- Aghion, P., Howitt, P. (2009), The Economics of Growth, MIT Press, Cambridge MA.
- de la Fuente, A. (2000), Mathematical Methods and Models for Economists. Cambridge University Press, Cambridge, UK.
- Klodt, H. (1995), Grundlagen der Forschungs- und Technologiepolitik. Vahlen, München.
- Linde, R. (2000), Allokation, Wettbewerb, Verteilung - Theorie, UNIBUCH Verlag, Lüneburg.
- Ruttan, V. W. (2001), Technology, Growth, and Development. Oxford University Press, Oxford.
- Scotchmer, S. (2004), Incentives and Innovation, MIT Press.
- Tirole, Jean (1988), The Theory of Industrial Organization, MIT Press, Cambridge MA.

## T

**6.155 Course: Integrated Product Development [T-MACH-105401]**

**Responsible:** Prof. Dr.-Ing. Albert Albers  
Albers Assistenten

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-102626 - Schwerpunkt: Integrierte Produktentwicklung](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	16	Each winter term	1

Events					
WS 18/19	2145156	<a href="#">Integrated Product Development</a>	4 SWS	Lecture (V)	Albers
WS 18/19	2145157	<a href="#">Workshop Product Development</a>	4 SWS	Practice (Ü)	Albers, Mitarbeiter
WS 18/19	2145300	<a href="#">Project Work in Product Development</a>	2 SWS	Others (sonst.)	Albers
Exams					
WS 18/19	7600021	<a href="#">Integrated Product Development</a>		Prüfung (PR)	Albers

**Competence Certificate**

oral examination (60 minutes)

**Prerequisites**

none

**Annotation**

Due to organizational reasons, the number of participants is limited. Thus a selection has to be made. For registration to the selection process a standard form has to be used, that can be downloaded from IPEK homepage from april to july. The selection itself is made by Prof. Albers in personal interviews.

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

## V

**Integrated Product Development**

2145156, WS 18/19, 4 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

organizational integration: integrated product engineering model, core team management and simultaneous engineering

informational integration: innovation management, cost management, quality management and knowledge management

personal integration: team coaching and leadership management

invited lectures

**Annotation**

The lecture starts in first week of October.

**Workload**

regular attendance: 84 h

self-study: 288 h

**Literature**

Klaus Ehrlenspiel - Integrierte Produktentwicklung. Denkabläufe, Methodeneinsatz, Zusammenarbeit, Hanser Verlag, 2009

**Workshop Product Development**2145157, WS 18/19, 4 SWS, [Open in study portal](#)**Practice (ü)****Learning Content**

problem solving: analysis techniques, creativity techniques and evaluation methods

professional skills: presentation techniques, moderation and teamcoaching

development tools: MS Project, Szenario-Manager &amp; Pro/Engineer Wildfire

**Workload**

lectures: 21 h

preparation to exam: 99 h

**Literature**

none

**Project Work in Product Development**2145300, WS 18/19, 2 SWS, [Open in study portal](#)**Others (sonst.)****Learning Content**

The project work begins with the early stages of product development, i.e. the identification of market trends and needs. Based on this information the students develop scenarios for future markets and create product profiles, which describe the customers and their demands without anticipating possible product solutions. After having passed several following milestones for ideas, concepts and designs, virtual prototypes and function prototypes are presented to an audience.

The project work is supported by coaching through skilled faculty staff. Additionally weekly tutorials, respectively workshops are given. For doing the project the teams gain access to team workspaces featuring IT-infrastructure and relevant software, such as office, CAD or FEA. Further on the teams learn how team cooperation and knowledge management can be supported in design project by using a wiki system.

**Workload**

regular attendance: 21 h

self-study: 99 h

T

## 6.156 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	<a href="#">Integrated Production Planning in the Age of Industry 4.0</a>	6 SWS	Lecture / Practice (VÜ)	Lanza
Exams					
WS 18/19	76-T-MACH-109054	<a href="#">Integrated Production Planning in the Age of Industry 4.0</a>		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

## 6.157 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-101282 - Globale Produktion und Logistik](#)  
[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	<a href="#">Integrative Strategies in Production and Development of High Performance Cars</a>	2 SWS	Lecture (V)	Schlichtenmayer
Exams					
WS 18/19	76-T-MACH-105188	<a href="#">Integrative Strategies in Production and Development of High Performance Cars</a>		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

2150601, 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 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

**6.158 Course: Intelligent CRM Architectures [T-WIWI-103549]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101470 - Data Science: Advanced CRM](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	2

Events					
WS 18/19	2540525	<a href="#">Intelligent CRM Architectures</a>	2 SWS	Lecture (V)	Geyer-Schulz
WS 18/19	2540526	<a href="#">Übung zu Intelligent CRM Architectures</a>	1 SWS	Practice (Ü)	Ball
Exams					
WS 18/19	79011480	<a href="#">Intelligent CRM Architectures</a>		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**

It is recommended to additionally review the Bachelor-level lecture "Customer Relationship Management" from the module "CRM and Servicemanagement".

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

## V

**Intelligent CRM Architectures**

2540525, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The lecture is structured in three parts:

In the first part the methods used for architecture design are introduced (system analysis, UML, formal specification of interfaces, software and analysis patterns, and the separation in conceptual and IT-architectures. The second part is dedicated to learning architectures and machine learning methods. The third part presents examples of learning CRM-Architectures.

**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**

- P. Clements *et al.*, *Documenting Software Architectures. Views and Beyond*. Upper Saddle River: Addison-Wesley, 2011.
- M. Fowler, *Patterns of Enterprise Application Architecture*. Amsterdam: Addison-Wesley Longman, 2002.
- S. Russell and P. Norvig, *Artificial Intelligence: A Modern Approach*, 3rd ed. Harlow Essex England: Pearson New International Edition, 2014.
- V. N. Vapnik, *The Nature of Statistical Learning Theory*. New York: Springer, 1995.

## T

**6.159 Course: Interactive Information Systems [T-WIWI-108461]**

- Responsible:** Prof. Dr. Alexander Mädche  
Dr. Stefan Morana
- Organisation:** KIT Department of Economics and Management
- Part of:** [M-WIWI-104068 - Information Systems in Organizations](#)  
[M-WIWI-104080 - Designing Interactive Information Systems](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each summer term	3

Events					
SS 2019	2540558	<a href="#">Interactive Systems</a>	3 SWS	Lecture (V)	Mädche, Morana
Exams					
WS 18/19	7900228	<a href="#">Interactive Information Systems</a>		Prüfung (PR)	Mädche

**Competence Certificate**

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation. Students receive one aggregated grade consisting of a written exam (70%) and research paper (30%). The exam and the research paper need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the research paper.

**Prerequisites**

None

**Annotation**

This course replaces T-WIWI-106342 "Interactive Systems" starting summer term 2018. The course is held in english.

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

## V

**Interactive Systems**

2540558, 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 in production and administration (e.g. in the form of dashboards).

With the continuous growing capabilities of computers, the design of the interaction between human and computer becomes even more important. The aim of this course is to introduce the foundations, theoretical grounding, key concepts and principles as well as current practice of interactive systems. The contents of the course abstract from the technical implementation details. The students get the necessary knowledge to guide the successful implementation of interactive systems in business and private life.

**Notes**

The lecture is complemented with a capstone project assignment, where students analyze and review existing interactive systems and suggest areas of improvement / extensions.

**Learning Content**

- Basics
- Theoretical foundations
- Key concepts and design principles for specific interactive systems classes
- Capstone project

**Literature**

The lecture bases to a large extent on

· Benyon, D. (2014). Designing interactive systems: A comprehensive guide to HCI, UX and interaction design (3. ed.). Harlow: Pearson.

Additional literature will be provided in the lecture.

T

**6.160 Course: International Finance [T-WIWI-102646]**

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2530570	<a href="#">International Finance</a>	2 SWS	Lecture (V)	Walter, Uhrig-Homburg
Exams					
WS 18/19	7900052	<a href="#">International Finance</a>		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

## 6.161 Course: International Management in Engineering and Production [T-WIWI-102882]

**Responsible:** Dr. Henning Sasse  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101412 - Industrielle Produktion III](#)  
[M-WIWI-101471 - Industrielle Produktion II](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581956	<a href="#">International Management in Engineering and Production</a>	2 SWS	Lecture (V)	Sasse
Exams					
WS 18/19	7981956	<a href="#">International Management in Engineering and Production</a>		Prüfung (PR)	Schultmann

### Competence Certificate

The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

### Prerequisites

None

### Recommendation

None

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

V

## International Management in Engineering and Production

2581956, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

- Fundamentals of international business
- Forms of international cooperation and value creation
- Site selection
- Cost driven internationalization and site selection
- Sales and customer driven internationalization and site selection
- Challenges, risks and risk mitigation
- Management of international production sites
- Types and case studies of international production

### Workload

The total workload for this course is approximately 105 hours. For further information see German version.

### Literature

Will be announced in the course.

## T

**6.162 Course: Internet Law [T-INFO-101307]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Recht des Geistigen Eigentums](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	2

Events					
WS 18/19	24354	<a href="#">Internet Law</a>	2 SWS	Lecture (V)	Dreier
Exams					
WS 18/19	7500060	<a href="#">Internet Law</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500057	<a href="#">Internet Law</a>		Prüfung (PR)	Dreier, Matz

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-INFO-108462 - Selected legal issues of Internet law](#) must not have been started.

## T

**6.163 Course: Introduction to Hydrogeology [T-BGU-101499]**

**Responsible:** Prof. Dr. Nico Goldscheider  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-WIWI-101642 - Naturgefahren und Risikomanagement 1](#)  
[M-WIWI-101644 - Naturgefahren und Risikomanagement 2](#)  
[M-WIWI-104837 - Naturgefahren und Risikomanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	6339050	<a href="#">Grundlagen der Hydrogeologie (Studienplan 2009 G10-1, G10-2)</a>	4 SWS	Lecture / Practice (VÜ)	Goldscheider
Exams					
WS 18/19	8210_101499	<a href="#">Introduction to Hydrogeology</a>		Prüfung (PR)	Goldscheider

**Competence Certificate**

Written exam with 90 minutes

**Prerequisites**

none



## T

**6.164 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-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2141861	<a href="#">Introduction to Microsystem Technology I</a>	2 SWS	Lecture (V)	Korvink, Badilita
Exams					
WS 18/19	76-T-MACH-105182	<a href="#">Introduction to Microsystem Technology I</a>		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

**6.165 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-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2142874	<a href="#">Introduction to Microsystem Technology II</a>	2 SWS	Lecture (V)	Korvink, Badilita
Exams					
WS 18/19	76-T-MACH-105183	<a href="#">Introduction to Microsystem Technology II</a>		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

**6.166 Course: Introduction to Stochastic Optimization [T-WIWI-106546]**

**Responsible:** Prof. Dr. Steffen Rebennack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

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

Events					
SS 2019	2550470	<a href="#">Einführung in die Stochastische Optimierung</a>	2 SWS	Lecture (V)	Rebennack
SS 2019	2550471	<a href="#">Übung zur Einführung in die Stochastische Optimierung</a>	1 SWS	Practice (Ü)	Rebennack, Assistenten
Exams					
WS 18/19	7900143	<a href="#">Introduction to Stochastic Optimization</a>		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

**6.167 Course: IoT platform for engineering [T-MACH-106743]**

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

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
WS 18/19	2123352	<a href="#">IoT platform for engineering</a>	SWS	Project/Seminar (P)/S	Ovtcharova, Maier
SS 2019	2123352	<a href="#">IoT platform for engineering</a>	3 SWS	Project/Seminar (P)/S	Ovtcharova, Maier
Exams					
WS 18/19	76T-MACH-106743	<a href="#">IoT platform for engineering</a>		Prüfung (PR)	Ovtcharova

**Competence Certificate**

Assessment of another type (graded), procedure see webpage. Number of participants limited to 20 people. There is a participant selection process.

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

## V

**IoT platform for engineering**

2123352, WS 18/19, SWS, [Open in study portal](#)

**Project/Seminar (P)/S**

**Learning Content**

Industry 4.0, IT systems for fabrication and assembly, process modelling and execution, project work in teams, practice-relevant I4.0 problems, in automation, manufacturing industry and service.

## V

**IoT platform for engineering**

2123352, SS 2019, 3 SWS, [Open in study portal](#)

**Project/Seminar (P)/S**

**Notes**

Number of participants limited to 15 people. There is a participant selection process.

T

**6.168 Course: IT- Security Law [T-INFO-109910]**

**Responsible:** PD Dr. Oliver Raabe  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101242 - Governance, Risk & Compliance](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2400007	<a href="#">IT SECURITY LAW</a>	2 SWS	Lecture (V)	Raabe

T

**6.169 Course: IT-Fundamentals of Logistics [T-MACH-105187]**

**Responsible:** Prof. Dr.-Ing. Frank Thomas  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101263 - Einführung in die Logistik](#)  
[M-MACH-101279 - Technische Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	2

Events					
SS 2019	2118183	<a href="#">IT-Fundamentals of Logistics</a>	2 SWS	Lecture (V)	Thomas
Exams					
WS 18/19	76-T-MACH-105187	<a href="#">IT-Fundamentals of Logistics</a>		Prüfung (PR)	Furmans, Mittwollen
SS 2019	76-T-MACH-105187	<a href="#">IT-Fundamentals of Logistics</a>		Prüfung (PR)	Furmans, Mittwollen

**Competence Certificate**

The assessment consists of an oral exam (30min) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

**Prerequisites**

none

**Annotation**

- 1) Detailed script can be downloaded online ([www.tup.com](http://www.tup.com)), updated and enhanced annually.
- 2) CD-ROM with chapters and exercises at the end of the semester available from the lecturer, also updated and enhanced annually.

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

V

**IT-Fundamentals of Logistics**

2118183, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

### Learning Content

The rapid development of information technology influences business processes drastically.

A strategic IT-orientation for an enterprise without a critical appreciation of worldwide IT-development (where the half-life value of IT for logistic systems knowledge is less than 3 years) is dangerous. The pressure of costs is always in focus. For this purpose the contents of this course, as well as the detailed script will be continuously revised, and the influences on business processes will be shown in practical examples.

#### Focuses:

- **System architecture in Material Flow Control Systems (MFCS)**

A guiding principle for a new system architecture for MFC systems is the consideration of making new standardized, functional groups available for re-usability.

- **Design and application of innovative Material Flow Control Systems (MFCS)**

The most important task of the MFCS is the commissioning of conveying systems with driving commands in a way that optimally utilizes the facility and serves the logistics processes on schedule.

- **Identification of goods – Application in Logistics**

Along with business processes, coded information is the link between the flow of information and the flow of materials, and contributes to error prevention in the communication between people and machines.

- **Data communication in Intra-logistics**

Information describes the content of a message that is of value to the recipient. The recipient can be both a human and a machine.

- **Business processes for Intra-logistics – Software follows function!**

If the business processes from Goods Incoming to Goods Outgoing are adapted with reusable building blocks then capabilities become visible. Against this background the consideration becomes apparent, how, through an innovative software architecture, a reusable building-block based framework can be made.

Therefore applies: Software follows function. And only if all project requirements are documented in the planing phase, and supported together in an inter-disciplinary team - consisting of logistics planners, the customers (users) and the implementation leader (IL).

- **Software development in accordance with industrial standards**

Today's development of object-oriented software, and the increasing penetration of industrial software production with this technology, makes it possible to create system designs that already offer these opportunities in their facility - both for a high degree of reuse and for easier adaptability.

In software development, object-oriented methods are used to improve the productivity, maintainability and software quality. An important aspect of object-orientation is: the objects used are primarily intended to depict the real world.

### Annotation

1) Detailed script can be downloaded online ([www.tup.com](http://www.tup.com)), updated and enhanced annually.

2) CD-ROM with chapters and exercises at the end of the semester available from the lecturer, also updated and enhanced annually.

### Workload

regular attendance: 21 hours

self-study: 99 hours

## T

**6.170 Course: Joint Entrepreneurship Summer School [T-WIWI-109064]**

**Responsible:** Prof. Dr. Orestis Terzidis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	6	Irregular	1

**Competence Certificate**

The learning control of the program (Summer School) consists of two parts:

**A) Investor Pitch:**

Based on a presentation (investor pitch) in front of a jury, the insights gained and developed during the course of the event are presented and the business idea presented. Among other things, the presentation performance of the team, the structured content and the logical consistency of the business idea are evaluated. The exact evaluation criteria will be announced in the course.

**B) Written elaboration:**

The second part of the assessment is a written report. The iterative knowledge gain of the entire event is systematically logged and can be further supplemented by the contents of the presentation. The report documents key action steps, applied methods, findings, market analyzes and interviews and prepares them in writing. The exact structure and requirements will be announced in the course.

The grade consists of 50% presentation performance and 50% written preparation.

**Prerequisites**

The Summer School is aimed at master students of KIT. Prerequisite is the participation in the selection process.

**Recommendation**

We recommend basic business knowledge, the lecture Entrepreneurship as well as openness and interest in intercultural exchange. Solid knowledge of the English language is an advantage.

**Annotation**

The working language during the Summer School is English. A one-week stay in China is part of the Summer School.



## T

**6.171 Course: Knowledge Discovery [T-WIWI-102666]**

**Responsible:** Prof. Dr. York Sure-Vetter  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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 winter term	1

Events					
WS 18/19	2511302	<a href="#">Knowledge Discovery</a>	2 SWS	Lecture (V)	Sure-Vetter, Rettinger
WS 18/19	2511303	<a href="#">Exercises to Knowledge Discovery</a>	1 SWS	Practice (Ü)	Sure-Vetter, Rettinger, Thoma, Weller
Exams					
WS 18/19	7900013	<a href="#">Knowledge Discovery</a>		Prüfung (PR)	Sure-Vetter
SS 2019	7900039	<a href="#">Knowledge Discovery</a>		Prüfung (PR)	Sure-Vetter

**Competence Certificate**

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation.

Students can be awarded a bonus on their final grade if they successfully complete special assignments.

**Prerequisites**

None

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

## V

**Knowledge Discovery**

2511302, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

Knowledge discovery is a well-established field with a large community investigating methods for the discovery of patterns and regularities in large data sets, including relational databases and unstructured text.

A variety of methods are available to assist in extracting patterns that, if interpreted, provide valuable, possibly previously unknown, insights. This information can be predictive or descriptive in nature.

This lecture provides an overview of this field. The lecture imparts specific techniques and methods, challenges and current and future research work in this field.

**Learning Content**

Topics of the lectures comprise the whole Machine Learning and Data Mining process like CRISP, data warehousing, OLAP-techniques, learning algorithms, visualization and empirical evaluation. Covered learning techniques range from traditional approaches like decision trees, neural networks and support vector machines to selected approaches resulting from current research. Discussed learning problems are amongst others featurevector-based learning, text mining and social network analysis.

**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**

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (<http://www-stat.stanford.edu/~tibs/ElemStatLearn/>)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

**V****Exercises to Knowledge Discovery**2511303, WS 18/19, 1 SWS, [Open in study portal](#)**Practice (Ü)****Description**

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

**Learning Content**

Topics of the lectures comprise the whole Machine Learning and Data Mining process like CRISP, data warehousing, OLAP-techniques, learning algorithms, visualization and empirical evaluation. Covered learning techniques range from traditional approaches like decision trees, neural networks and support vector machines to selected approaches resulting from current research. Discussed learning problems are amongst others feauturevector-based learning, text mining and social network analysis.

**Workload**

The total workload for the lecture Knowledge Discovery is given out on the description of the lecture.

**Literature**

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (<http://www-stat.stanford.edu/~tibs/ElemStatLearn/>)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

## T

**6.172 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	<a href="#">Laboratory Production Metrology</a>	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

**6.173 Course: Laboratory Work Water Chemistry [T-CIWVT-103351]**

**Responsible:** Dr. Gudrun Abbt-Braun  
Prof. Dr. Harald Horn

**Organisation:** KIT Department of Chemical and Process Engineering

**Part of:** [M-CIWVT-101121 - Wasserchemie und Wassertechnologie I](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung anderer Art	4	1

Events					
WS 18/19	22664	<a href="#">Praktikum Wassertechnologie und Wasserbeurteilung</a>	2 SWS	Practical course (P)	Horn, Abbt-Braun, und Mitarbeiter

**Prerequisites**

none

## T

**6.174 Course: Large-scale Optimization [T-WIWI-106549]**

**Responsible:** Prof. Dr. Steffen Rebennack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
SS 2019	2550475	<a href="#">Large-Scale Optimization</a>	2 SWS	Lecture (V)	Rebennack
SS 2019	2550476	<a href="#">Übung zu Large-Scale Optimization</a>	1 SWS	Practice (Ü)	Rebennack
Exams					
WS 18/19	7900155	<a href="#">Large-scale Optimization</a>		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

**6.175 Course: Laser Physics [T-ETIT-100741]****Responsible:** Prof. Dr.-Ing. Christian Koos**Organisation:** KIT Department of Electrical Engineering and Information Technology**Part of:** [M-MACH-101292 - Mikrooptik](#)[M-MACH-101295 - Optoelektronik und Optische Kommunikationstechnik](#)[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung mündlich	4	1

Events					
WS 18/19	2301480	<a href="#">Laserphysics</a>	2 SWS	Lecture (V)	Eichhorn
WS 18/19	2301481	<a href="#">Laserphysics (Tutorial)</a>	1 SWS	Practice (Ü)	Eichhorn
Exams					
WS 18/19	7301480	<a href="#">Laser Physics</a>		Prüfung (PR)	Eichhorn

**Prerequisites**

none

T

**6.176 Course: Law of Contracts [T-INFO-101316]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Recht der Wirtschaftsunternehmen](#)  
[M-INFO-101242 - Governance, Risk & Compliance](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
SS 2019	24671	<a href="#">Law of Contracts</a>	2 SWS	Lecture (V)	Hoff
Exams					
WS 18/19	7500059	<a href="#">Law of Contracts</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500055	<a href="#">Law of Contracts</a>		Prüfung (PR)	Dreier, Matz

T

**6.177 Course: Lean Construction [T-BGU-108000]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101884 - Lean Management im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

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

Events					
WS 18/19	6241901	<a href="#">Lean Construction</a>	4 SWS	Lecture / Practice (VÜ)	Haghsheno, Mitarbeiter/innen
Exams					
WS 18/19	8246108000	<a href="#">Lean Construction</a>		Prüfung (PR)	Haghsheno

**Competence Certificate**

written exam, 70 min.

**Prerequisites**

none

**Recommendation**

none

**Annotation**

none



T

**6.178 Course: Learning Factory "Global Production" [T-MACH-105783]**

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

**Part of:** [M-MACH-101282 - Globale Produktion und Logistik](#)  
[M-MACH-101284 - Vertiefung der Produktionstechnik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each winter term	2

Events					
WS 18/19	2149612	<a href="#">Lernfabrik Globale Produktion</a>	2 SWS	Seminar / Practical course (S/P)	Lanza
Exams					
WS 18/19	76-T-MACH-105783	<a href="#">Learning Factory "Global Production"</a>		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

**6.179 Course: Liberalised Power Markets [T-WIWI-107043]**

**Responsible:** Prof. Dr. Wolf Fichtner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101451 - Energiewirtschaft und Energiemärkte](#)  
[M-WIWI-102808 - Digital Service Systems in Industry](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2581998	<a href="#">Liberalised Power Markets</a>	2 SWS	Lecture (V)	Fichtner
Exams					
WS 18/19	7900193	<a href="#">Liberalised Power Markets</a>		Prüfung (PR)	Fichtner

**Competence Certificate**

The assessment consists of a written exam according to Section 4(2), 1 of the examination regulation.

**Prerequisites**

See German version.

**Recommendation**

None

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

## V

**Liberalised Power Markets**

2581998, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

1. The European liberalisation process
  - 1.1 The concept of a competitive market
  - 1.2 The regulated market
  - 1.3 Deregulation in Europe
2. Pricing and investments in a liberalised power market
  - 2.1 Merit order
  - 2.2 Prices and investments
  - 2.3 Market flaws and market failure
  - 2.4 Regulation in liberalised markets
  - 2.5 Additional regulation mechanisms
3. The power market and the corresponding submarkets
  - 3.1 List of submarkets
  - 3.2 Types of submarkets
  - 3.3 Market rules
4. Risk management
  - 4.1 Uncertainties in a liberalised market
  - 4.2 Investment decisions under uncertainty
  - 4.3 Estimating future electricity prices
  - 4.4 Portfolio management
5. Market power
  - 5.1 Defining market power
  - 5.2 Indicators of market power
  - 5.3 Reducing market power
6. Market structures in the value chain of the power sector

**Annotation**

The course "Basics of Liberalised Energy Markets" [2581998] will be reduced to 3 credits in winter term 2015/2016 and the tutorial [2581999] is no longer offered.

**Workload**

The total workload for this course is approximately 105.0 hours. For further information see German version.

**Literature****Elective literature:**

Power System Economics; Steven Stoft, IEEE Press/Wiley-Interscience Press, 0-471-15040-1

## T

**6.180 Course: Life Cycle Assessment [T-WIWI-103133]**

**Responsible:** Dr. Heiko Keller  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101412 - Industrielle Produktion III](#)  
[M-WIWI-101471 - Industrielle Produktion II](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581995	<a href="#">Life Cycle Assessment</a>	2 SWS	Lecture (V)	Keller
Exams					
WS 18/19	7981995	<a href="#">Life Cycle Assessment</a>		Prüfung (PR)	Schultmann

**Competence Certificate**

The assessment consists of an oral exam (30 min.) or a written exam (60 min.).

**Prerequisites**

None.

**Recommendation**

None

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

## V

**Life Cycle Assessment**

2581995, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Our society has reached a historically unique material prosperity. At the same time, environmental burdens and resource consumption are continuously reaching new peaks - not only regarding greenhouse gas emissions and oil production rates. It is obvious that the material and energy intensity of products and services has to decrease if we want to keep our current level of material prosperity on the long run. Enormous efficiency gains, as they have been reached e.g. for labour productivity, however, require that environmental burdens and resource consumption per unit of product are in the first place known, transparent and can thus be optimised. This data and its calculation are increasingly requested and sooner or later will have to become as essential for management as e.g. unit labour costs.

Life cycle assessment is a methodology in sustainability assessment that provides this information and deduces optimisation potentials and decision support for companies, politics, consumers etc. To this end, material and energy flows are compiled along the whole life cycle of a product from extraction of raw materials, via production and use of a product until its disposal. Subsequently, environmental impacts of these flows are analysed.

This lecture describes structure and individual steps of life cycle assessments in detail. Furthermore, it explains its application in decision support. In interactive phases, participants recapitulate the theoretical basis by own calculations. As an outlook, further instruments in sustainability assessment are introduced that analyse other sustainability aspects.

**Workload**

Total effort required will account for approximately 105h (3.5 credits).

**Literature**

will be announced in the course

T

## 6.181 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-MACH-101280 - Logistik in Wertschöpfungsnetzwerken](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events					
SS 2019	2118078	<a href="#">Logistics - Organisation, Design, and Control of Logistic Systems</a>	3 SWS	Lecture (V)	Furmans
Exams					
WS 18/19	76-T-MACH-102089	<a href="#">Logistics - Organisation, Design and Control of Logistic Systems</a>		Prüfung (PR)	Furmans, Mittwollen
SS 2019	76-T-MACH-102089	<a href="#">Logistics - Organisation, Design and Control of Logistic Systems</a>		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/Drexl. 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

**6.182 Course: Long-Distance and Air Traffic [T-BGU-106301]**

**Responsible:** Bastian Chlond  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
WS 18/19	6232904	<a href="#">Fern- und Luftverkehr</a>	2 SWS	Lecture (V)	Chlond, Dozenten
Exams					
WS 18/19	8245106301	<a href="#">Long-distance and Air Traffic</a>		Prüfung (PR)	Chlond

**Competence Certificate**  
written exam, 60 min.

**Prerequisites**  
none

**Recommendation**  
none

**Annotation**  
none



## T

**6.183 Course: Machine Learning 1 - Basic Methods [T-WIWI-106340]**

**Responsible:** Prof. Dr.-Ing. Johann Marius Zöllner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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 winter term	1

Events					
WS 18/19	2511500	<a href="#">Machine Learning 1 - Fundamental Methods</a>	2 SWS	Lecture (V)	Zöllner
WS 18/19	2511501	<a href="#">Exercises for Machine Learning 1 - Fundamental Methods</a>	1 SWS	Practice (Ü)	Zöllner
Exams					
WS 18/19	7900076	<a href="#">Machine Learning 1 - Basic Methods</a>		Prüfung (PR)	Zöllner
SS 2019	7900154	<a href="#">Machine Learning 1 - Basic Methods</a>		Prüfung (PR)	Zöllner

**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 (20 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.

**Annotation**

New course starting winter term 2017/2018.

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

## V

**Machine Learning 1 - Fundamental Methods**

2511500, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

The field of knowledge acquisition and machine learning is a rapidly expanding field of knowledge and the subject of numerous research and development projects. The acquisition of knowledge can take place in different ways. Thus a system can benefit from experiences already made, it can be trained, or it draws conclusions from extensive background knowledge.

The lecture covers symbolic learning methods such as inductive learning (learning from examples, learning by observation), deductive learning (explanation-based learning) and learning from analogies, as well as sub-symbolic techniques such as neural networks, support vector machines and genetic algorithms. The lecture introduces the basic principles and structures of learning systems and examines the algorithms developed so far. The structure and operation of learning systems is presented and explained with some examples, especially from the fields of robotics and image processing.

**Learning Content**

The field of knowledge acquisition and machine learning is a rapidly expanding field of knowledge and the subject of numerous research and development projects. The acquisition of knowledge can take place in different ways. Thus a system can benefit from experiences already made, it can be trained, or it draws conclusions from extensive background knowledge.

The lecture covers symbolic learning methods such as inductive learning (learning from examples, learning by observation), deductive learning (explanation-based learning) and learning from analogies, as well as sub-symbolic techniques such as neural networks, support vector machines and genetic algorithms. The lecture introduces the basic principles and structures of learning systems and examines the algorithms developed so far. The structure and operation of learning systems is presented and explained with some examples, especially from the fields of robotics and image processing.

**Literature**

The slides are available as a PDF

**Related Literature**

- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

**Further (specific) literature on individual topics will be given in the lecture.**

## T

**6.184 Course: Machine Learning 2 – Advanced Methods [T-WIWI-106341]**

**Responsible:** Prof. Dr.-Ing. Johann Marius Zöllner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-101637 - Analytics und Statistik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2511502	<a href="#">Machine Learning 2 - Advanced methods</a>	2 SWS	Lecture (V)	Zöllner
SS 2019	2511503	<a href="#">Exercises for Machine Learning 2 - Advanced Methods</a>	1 SWS	Practice (Ü)	Zöllner
Exams					
WS 18/19	7900050	<a href="#">Machine Learning 2 – Advanced Methods</a>		Prüfung (PR)	Zöllner
SS 2019	7900080	<a href="#">Machine Learning 2 – Advanced Methods</a>		Prüfung (PR)	Zöllner

**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 (20 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.

**Annotation**

New course starting summer term 2017.

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

## V

**Machine Learning 2 - Advanced methods**

2511502, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

The field of machine decision-making and inference procedures, taking into account uncertainties and incomplete knowledge, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The focus of this lecture is on the embedding and application of machine-learning methods in decision and inference systems starting with methods of dimension reduction, feature selection/evaluation via semi-supervised learning to methods of probabilistic inference (e.g. Dempster Shafer information fusion, dynamic and object-oriented Bayesian networks, POMDP, etc).

The lecture introduces the basic principles and structures and explains algorithms developed so far. The structure and operation of the procedures and methods are presented and explained using a number of application scenarios, in particular from the field of technical (semi-)autonomous systems.

**Learning Content**

The subject area of machine intelligence and, in particular, machine learning, taking into account real challenges of complex application domains, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The lecture "Machine Learning 2" deals with advanced methods of machine learning such as semi-supervised and active learning, deep neural networks (deep learning), pulsed networks, hierarchical approaches, e.g. As well as dynamic, probabilistic relational methods. Another focus is the embedding and application of machine learning methods in real systems.

The lecture introduces the latest basic principles as well as extended basic structures and elucidates previously developed algorithms. The structure and the mode of operation of the methods and methods are presented and explained by means of some application scenarios, especially in the field of technical (sub) autonomous systems (robotics, neurorobotics, image processing, etc.).

**Literature**

The slides are available as a PDF

**Related Literature**

- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

**Further (specific) literature on individual topics will be given in the lecture.**

## T

## 6.185 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	<a href="#">Machine Tools and Industrial Handling</a>	6 SWS	Lecture / Practice (VÜ)	Fleischer
Exams					
WS 18/19	76-T-MACH-102158-MIT	<a href="#">Machine Tools and Industrial Handling</a>		Prüfung (PR)	Fleischer
WS 18/19	76-T-MACH-102158-WING	<a href="#">Machine Tools and Industrial Handling</a>		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

**6.186 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	<a href="#">Management Accounting 1</a>	2 SWS	Lecture (V)	Wouters
SS 2019	2579901	<a href="#">Übung zu Management Accounting 1</a>	2 SWS	Practice (Ü)	Riar
Exams					
WS 18/19	79-2579900-00	<a href="#">Management Accounting 1</a>		Prüfung (PR)	Wouters
SS 2019	79-2579900-00	<a href="#">Management Accounting 1</a>		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 in combination with a project that runs for several weeks during the 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

**6.187 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	<a href="#">Management Accounting 2</a>	2 SWS	Lecture (V)	Wouters
WS 18/19	2579903	<a href="#">Übung zu Management Accounting 2</a>	2 SWS	Practice (Ü)	Wouters, Mickovic
Exams					
WS 18/19	79-2579902-00	<a href="#">Management Accounting 2</a>		Prüfung (PR)	Wouters
SS 2019	79-2579902-00	<a href="#">Management Accounting 2</a>		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 in combination with a project that runs for several weeks during the 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

**6.188 Course: Management of IT-Projects [T-WIWI-102667]**

**Responsible:** Dr. Roland Schätzle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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	2511214	<a href="#">Management of IT-Projects</a>	2 SWS	Lecture (V)	Schätzle
SS 2019	2511215	<a href="#">Übungen zu Management von Informatik-Projekten</a>	1 SWS	Practice (Ü)	Schätzle
Exams					
WS 18/19	7900014	<a href="#">Management of IT-Projects</a>		Prüfung (PR)	Oberweis
SS 2019	7900045	<a href="#">Management of IT-Projects</a>		Prüfung (PR)	Oberweis

**Competence Certificate**

The assessment of this course is a written examination (60 min) in the first week after lecture period according to Section 4(2), 1 of the examination regulation.

**Prerequisites**

None.

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

## V

**Management of IT-Projects**

2511214, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The lecture deals with the general framework, impact factors and methods for planning, handling, and controlling of IT projects. Especially following topics are addressed:

- project environment
- project organisation
- project planning including the following items:
  - plan of the project structure
  - flow chart
  - project schedule
  - plan of resources
- effort estimation
- project infrastructure
- project controlling
- risk management
- feasibility studies
- decision processes, conduct of negotiations, time management.

**Workload**

Lecture 30h

Exercise 15h

Preparation of lecture 30h

Preparation of exercises 30h

Exam preparation 44h

Exam & 1h

Total: 150h

**Literature**

- B. Hindel, K. Hörmann, M. Müller, J. Schmied. Basiswissen Software-Projektmanagement. dpunkt.verlag 2004
- Project Management Institute Standards Committee. A Guide to the Project Management Body of Knowledge (PMBOK guide). Project Management Institute. Four Campus Boulevard. Newton Square. PA 190733299. U.S.A.

Further literature is given in each lecture individually.

T

## 6.189 Course: Management of Water Resources and River Basins [T-BGU-106597]

**Responsible:** Dr.-Ing. Uwe Ehret

**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences

**Part of:** [M-WIWI-101642 - Naturgefahren und Risikomanagement 1](#)  
[M-WIWI-101644 - Naturgefahren und Risikomanagement 2](#)  
[M-WIWI-104837 - Naturgefahren und Risikomanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	6	Each summer term	1

Events					
SS 2019	6224801	<a href="#">Management of Water Resources and River Basins</a>	4 SWS	Lecture / Practice (VÜ)	Ehret

### Competence Certificate

course associated assignments, short reports appr. 2 pages each, and final take home exam, report appr. 10 pages and colloquium

### Prerequisites

none

### Recommendation

none

### Annotation

none

T

## 6.190 Course: Managing New Technologies [T-WIWI-102612]

**Responsible:** Dr. Thomas Reiß  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2545003	<a href="#">Managing New Technologies</a>	2 SWS	Lecture (V)	Reiß
Exams					
WS 18/19	7900189	<a href="#">Managing New Technologies</a>		Prüfung (PR)	Reiß

### Competence Certificate

Written exam 100% following §4, Abs. 2.

### Prerequisites

None

### Recommendation

None

### Annotation

The credit points for T-WIWI-102612 "Management of New Technologies" were reduced to 3 credit points in the 2019 summer semester.

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

V

## Managing New Technologies

2545003, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

The course provides an overview of the international development of a selected number of key technologies such as biotechnology, nanotechnology, neurotechnologies, converging technologies. Methods for monitoring new technologies including foresight approaches will be presented and the economic and social impacts of new technologies will be discussed.

### Workload

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

### Literature

- Hausschildt/Salomo: Innovationsmanagement; Borchert et al.: Innovations- und Technologiemanagement;
- Specht/Möhrle; Gabler Lexikon Technologiemanagement

## T

**6.191 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	<a href="#">Manufacturing Technology</a>	6 SWS	Lecture / Practice (VÜ)	Schulze, Zanger
Exams					
WS 18/19	76-T-MACH-102105	<a href="#">Manufacturing Technology</a>		Prüfung (PR)	Schulze
WS 18/19	76-T-MACH-102105-Mündl.	<a href="#">Manufacturing Technology</a>		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

**6.192 Course: Market Engineering: Information in Institutions [T-WIWI-102640]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101409 - Electronic Markets](#)  
[M-WIWI-101411 - Information Engineering](#)  
[M-WIWI-101446 - Market Engineering](#)  
[M-WIWI-101453 - Angewandte strategische Entscheidungen](#)  
[M-WIWI-102754 - Service Economics and Management](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2540460	<a href="#">Market Engineering: Information in Institutions</a>	2 SWS	Lecture (V)	Weinhardt, Straub
SS 2019	2540461	<a href="#">Übungen zu Market Engineering: Information in Institutions</a>	1 SWS	Practice (Ü)	Weinhardt
Exams					
WS 18/19	7900208	<a href="#">Market Engineering: Information in Institutions</a>		Prüfung (PR)	Weinhardt

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) up to 6 bonus points can be obtained. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by max. one grade level (0.3 or 0.4).

**Prerequisites**

None

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

## V

**Market Engineering: Information in Institutions**

2540460, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

The ongoing advancements in information technology have revolutionized traditional business processes and given rise to electronic marketplaces. In contrast to physical marketplaces, electronic markets do not just evolve, but must be carefully designed, implemented and monitored and evaluated. Moreover electronic markets demand open and flexible platforms as well as adequate standards and information services. Future Market Engineers must therefore be able to consider the economic, legal and technological dimension of markets simultaneously. The lecture focuses on the discussion of (1) Microstructure, (2) IT Infrastructure, and (3) Business Structure of electronic markets. Hence, students will be taught the economic incentives that a market can impose on market participants, development models for implementing markets, and business models for the application of markets.

**Learning Content**

The ongoing advancements in information technology have revolutionized traditional business processes and given rise to electronic marketplaces. In contrast to physical marketplaces, electronic markets do not just evolve, but must be carefully designed, implemented and monitored and evaluated. Moreover electronic markets demand open and flexible platforms as well as adequate standards and information services. Future Market Engineers must therefore be able to consider the economic, legal and technological dimension of markets simultaneously. The lecture focuses on the discussion of (1) Microstructure, (2) IT Infrastructure, and (3) Business Structure of electronic markets. Hence, students will be taught the economic incentives that a market can impose on market participants, development models for implementing markets, and business models for the application of markets.

**Workload**

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

**Literature**

- Roth, A., The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics. *Econometrica* 70(4): 1341-1378, 2002.
- Weinhardt, C., Holtmann, C., Neumann, D., Market Engineering. *Wirtschaftsinformatik*, 2003.
- Wolfstetter, E., Topics in Microeconomics - Industrial Organization, Auctions, and Incentives. Cambridge, Cambridge University Press, 1999.
- Smith, V. "Theory, Experiments and Economics", *The Journal of Economic Perspectives*, Vol. 3, No. 1, 151-69 1989



## T

**6.193 Course: Market Research [T-WIWI-107720]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101487 - Sales Management](#)  
[M-WIWI-101490 - Marketing Management](#)  
[M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-101647 - Data Science: Evidence-based Marketing](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2571150	<a href="#">Market Research</a>	2 SWS	Lecture (V)	Klarmann
SS 2019	2571151	<a href="#">Market Research Tutorial</a>	1 SWS	Practice (Ü)	Honold

**Competence Certificate**

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

Please note that this course has to be completed successfully by students interested in master thesis positions at the Marketing & Sales Research Group.

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

## V

**Market Research**

2571150, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Within the lecture, essential statistical methods for measuring customer attitudes (e.g. satisfaction measurement), understanding customer behavior and making strategic decisions will be discussed. The practical use as well as the correct handling of different survey methods will be taught, such as experiments and surveys. To analyze the collected data, various analysis methods are presented, including hypothesis tests, factor analyses, cluster analyses, variance and regression analyses. Building on this, the interpretation of the results will be discussed.

Topics addressed in this course are for example:

- Theoretical foundations of market research
- Statistical foundations of market research
- Measuring customer attitudes
- Understanding customer reactions
- Strategical decision making

**Annotation**

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

**Workload**

The total workload for this course is approximately 135.0 hours.

Presence time: 30 hours

Preparation and wrap-up of the course: 45.0 hours

Exam and exam preparation: 60.0 hours

**Literature**

Homburg, Christian (2016), Marketingmanagement, 6th. ed., Wiesbaden.

## T

**6.194 Course: Marketing Analytics [T-WIWI-103139]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101647 - Data Science: Evidence-based Marketing](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	4

Events					
WS 18/19	2572170	<a href="#">Marketing Analytics</a>	2 SWS	Lecture (V)	Klarmann
WS 18/19	2572171	<a href="#">Übung zu Marketing Analytics</a>	1 SWS	Practice (Ü)	Halbauer
Exams					
WS 18/19	7900082	<a href="#">Marketing Analytics</a>		Prüfung (PR)	Klarmann
WS 18/19	7900127	<a href="#">Marketing Analytics</a>		Prüfung (PR)	Klarmann

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to Section 4(2), 1 of the examination regulation)

**Prerequisites**

The prerequisite for taking the course is the successful completion of the course Market Research [2571150].

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-107720 - Market Research](#) must have been passed.

**Recommendation**

It is strongly recommended to complete the course Market Research prior to taking the Marketing Analytics course.

**Annotation**

For further information please contact the Marketing and Sales Research Group ([marketing.iism.kit.edu](mailto:marketing.iism.kit.edu)).

Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

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

## V

**Marketing Analytics**

2572170, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)****Learning Content**

In this course various relevant market research questions are addressed, as for example measuring and understanding customer attitudes, preparing strategic decisions and sales forecasting. In order to analyze these questions, students learn to handle social media data, panel data, nested observations and experimental design. To analyze the data, advanced methods, as for example multilevel modeling, structural equation modeling and return on marketing models are taught. Also, problems of causality are addressed in-depth. The lecture is accompanied by a computer-based exercise, in the course of which the methods are applied practically.

**Annotation**

For further information please contact the Marketing and Sales Research Group ([marketing.iism.kit.edu](mailto:marketing.iism.kit.edu)).

Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

**Workload**

Total workload for 4.5 ECTS: ca. 135 hours

**Literature**

- Hanssens, Dominique M., Parsons, Leonard J., Schultz, Randall L. (2003), Market response models: Econometric and time series analysis, 2nd ed, Boston.
- Gelman, Andrew, Hill, Jennifer (2006), Data analysis using regression and multilevel/hierarchical models, New York.
- Cameron, A. Colin, Trivedi, Pravin K. (2005), Microeconometrics: methods and applications, New York.
- Chapman, Christopher, Feit, Elea M. (2015), R for Marketing Research and Analytics, Cham.
- Ledolter, Johannes (2013), Data mining and business analytics with R, New York.

T

## 6.195 Course: Marketing Strategy Business Game [T-WIWI-102835]

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101490 - Marketing Management](#)  
[M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each summer term	1

Events					
SS 2019	2571183	<a href="#">Marketing Strategy Business Game</a>	1 SWS	Block (B)	Klarmann, Assistenten
Exams					
SS 2019	7900022	<a href="#">Marketing Strategy Business Game</a>		Prüfung (PR)	Klarmann

### Competence Certificate

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015). The assessment consists of a group presentation and a subsequent round of questions totalling 20 minutes.

### Prerequisites

None

### Recommendation

None

### Annotation

Please note that only one of the following courses can be chosen in the Marketing Management Module: Marketing Strategy Business Game, Strategic Brand Management, Open Innovation – Concepts, Methods and Best Practices or Business Plan Workshop.

Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)) shortly before the lecture period in summer term starts.

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

V

### Marketing Strategy Business Game

2571183, SS 2019, 1 SWS, [Open in study portal](#)

**Block (B)**

### Learning Content

Using Markstrat, a marketing strategy business game, students work in groups representing a company that competes on a simulated market against the other groups' companies.

**Annotation**

- Please note that only one of the following courses can be chosen in the Marketing Management Module: Marketing Strategy Business Game, Strategic Brand Management, Open Innovation – Concepts, Methods and Best Practices or Business Plan Workshop. Exception: In summer term 2016 exceptionally two courses can be chosen or, in case one course has already been chosen previously, a second course can be chosen.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.
- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)) shortly before the lecture period in summer term starts.

**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

**6.196 Course: Master Thesis [T-WIWI-103142]**

- Responsible:** Studiendekan der KIT-Fakultät für Informatik  
Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften
- Organisation:** KIT Department of Economics and Management
- Part of:** [M-WIWI-101659 - Modul Masterarbeit](#)

Type	Credits	Version
Abschlussarbeit	30	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** 3 months**Correction period** 8 weeks

This thesis requires confirmation by the examination office.

## T

**6.197 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-101263 - Einführung in die Logistik](#)  
[M-MACH-101277 - Materialfluss in Logistiksystemen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	6	Each winter term	2

Events					
WS 18/19	2117051	<a href="#">Material flow in logistic systems</a>	4 SWS	Others (sonst.)	Furmans
Exams					
WS 18/19	76-T-MACH-102151	<a href="#">Material Flow in Logistic Systems</a>		Prüfung (PR)	Furmans
SS 2019	76-T-MACH-102151	<a href="#">Material Flow in Logistic Systems</a>		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

## 6.198 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	<a href="#">Materials and Processes for Body Lightweight Construction in the Automotive Industry</a>	2 SWS	Lecture (V)	Steegmüller, Kienzle
Exams					
WS 18/19	76-T-MACH-105166	<a href="#">Materials and Processes for Body Lightweight Construction in the Automotive Industry</a>		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

## 6.199 Course: Mathematical Models and Methods for Production Systems [T-MACH-105189]

**Responsible:** Prof. Dr.-Ing. Kai Furmans  
Marion Rimmele

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101278 - Materialfluss in vernetzten Logistiksystemen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	6	Each winter term	1

Events					
WS 18/19	2117059	<a href="#">Mathematical models and methods for Production Systems</a>	4 SWS	Lecture (V)	Stoll, Rimmele, Furmans
Exams					
WS 18/19	76-T-MACH-105189	<a href="#">Mathematical models and methods for Production Systems</a>		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

## Mathematical models and methods for Production Systems

2117059, WS 18/19, 4 SWS, [Open in study portal](#)

Lecture (V)

### Description

#### Media:

black board, lecture notes, presentations

### Notes

lecture language: english

### Learning Content

- single server systems:  $M/M/1$ ,  $M/G/1$ : priority rules, model of failures
- networks: open and closed approximations, exact solutions and approximations
- application to flexible manufacturing systems, AGV (automated guided vehicles) - systems
- modeling of control approaches like constant work in process (ConWIP) or kanban
- discrete-time modeling of queuing systems

### Workload

regular attendance: 42 hours

self-study: 198 hours

### Literature

Wolff: Stochastic Modeling and the Theory of Queues, Prentice Hall, 1989

Shanthikumar, Buzacott: Stochastic Models of Manufacturing Systems

## T

**6.200 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	<a href="#">Metal Forming</a>	2 SWS	Lecture (V)	Herlan
Exams					
WS 18/19	76-T-MACH-105177	<a href="#">Metal Forming</a>		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

**6.201 Course: Methods and Models in Transportation Planning [T-BGU-101797]**

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	6232701	<a href="#">Berechnungsverfahren und Modelle in der Verkehrsplanung</a>	2 SWS	Lecture / Practice (VÜ)	Vortisch, Mitarbeiter/innen
Exams					
WS 18/19	8240101797	<a href="#">Methods and Models in Transportation Planning</a>		Prüfung (PR)	Vortisch

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

T

**6.202 Course: Methods in Economic Dynamics [T-WIWI-102906]**

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101514 - Innovationsökonomik](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each summer term	2

Events					
SS 2019	2560240	<a href="#">Methods in Economic Dynamics</a>	SWS	Lecture (V)	Ott, Bälz

**Competence Certificate**

Non exam assessment according to § 4 paragraph 3 of the examination regulation (SPO 2015).

**Prerequisites**

None

**Recommendation**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012] and Economics II [2600014]. Further, it is assumed that students have interest in using quantitative-mathematical methods.

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

V

**Methods in Economic Dynamics**

2560240, SS 2019, SWS, [Open in study portal](#)

**Lecture (V)****Learning Content**

The workshop offers the possibility to deepen the understanding about different aspects of theoretical modelling of innovation-based growth and induced economic effects. This includes the implementation of formal models in computer algebra systems as well as recording, processing and econometric analysis of related data from relational databases (concerning for example patents or trademarks). Moreover, methods of network theory are discussed.

**Annotation**

The course has been added summer 2015.

**Workload**

The total workload for this course is approximately 45 hours.

Lecture: 15h

Preparation of lecture/exam: 30h



## T

**6.203 Course: Microactuators [T-MACH-101910]**

**Responsible:** Prof. Dr. Manfred Kohl  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101290 - BioMEMS](#)  
[M-MACH-101292 - Mikrooptik](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2142881	<a href="#">Microactuators</a>	2 SWS	Lecture (V)	Kohl
Exams					
WS 18/19	76-T-MACH-101910	<a href="#">Microactuators</a>		Prüfung (PR)	Kohl

**Competence Certificate**

oral exam

**Prerequisites**

none

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

## V

**Microactuators**2142881, 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

**6.204 Course: Mixed Integer Programming I [T-WIWI-102719]**

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Exams				
WS 18/19	7900215_WS1819	<a href="#">Mixed Integer Programming I</a>	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.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

The examination can also be combined with the examination of *Mixed Integer Programming II*[25140]. 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-102733 - Mixed Integer Programming I and II](#) must not have been started.

**Recommendation**

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**

The lecture is offered irregularly. The curriculum of the next three years is available online ([kop.ior.kit.edu](http://kop.ior.kit.edu)).

## T

**6.205 Course: Mixed Integer Programming II [T-WIWI-102720]**

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Exams				
WS 18/19	7900150_NK_WS1819	<a href="#">Mixed Integer Programming II</a>	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.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

The examination can also be combined with the examination of *Mixed Integer Programming I* [2550138]. 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-102733 - Mixed Integer Programming I and II](#) must not have been started.

**Recommendation**

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**

The lecture is offered irregularly. The curriculum of the next three years is available online ([kop.iior.kit.edu](http://kop.iior.kit.edu)).

T

**6.206 Course: Mobility Services and new Forms of Mobility [T-BGU-103425]**

**Responsible:** Dr.-Ing. Martin Kagerbauer  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	6232811	<a href="#">Mobilitätsservices und neue Formen der Mobilität</a>	2 SWS	Lecture / Practice (VÜ)	Kagerbauer
Exams					
WS 18/19	8240103425	<a href="#">Mobility Services and new Forms of Mobility</a>	Prüfung (PR)		Kagerbauer

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

T

**6.207 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

## 6.208 Course: Modeling and Analyzing Consumer Behavior with R [T-WIWI-102899]

**Responsible:** Dr. Verena Dörner  
Prof. Dr. Christof Weinhardt

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101448 - Service Management](#)  
[M-WIWI-101489 - Strategie, Kommunikation und Datenanalyse](#)  
[M-WIWI-101506 - Service Analytics](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2540470	<a href="#">Modeling and Analyzing Consumer Behavior with R</a>	2 SWS	Lecture (V)	Dörner, Knierim
SS 2019	2540471	<a href="#">Übung zu Modeling and Analyzing Consumer Behaviour with R</a>	1 SWS	Practice (Ü)	Knierim, Greif-Winzrieth

### Competence Certificate

The assessment consists of a written exam (60 min) (according to §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

None

### Recommendation

None

### Annotation

Number of participants limited.

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

V

## Modeling and Analyzing Consumer Behavior with R

2540470, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

Students learn the fundamental methods, algorithms and concepts for analysing consumer data. The students deepen their knowledge in working on a case study and computer exercises, especially in the areas of e-commerce and behavioural economics. In addition, students learn to write applications in R and to organize and execute larger data mining and general data analytics projects. Furthermore, students learn methods for evaluating and visualizing data.

The event will focus on the following topics:

1. basic programming concepts in R
2. data mining with R using established process models such as CRISP-DM
3. text mining and analysis of online data with R
4. working on a case study from the area of Consumer and User Analytics
5. data visualization and evaluation with R

### Annotation

The course has been added summer term 2015.

**Workload**

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

**Literature**

Field, A., Miles, J., Field, Z., Discovering Statistics Using R, SAGE 2014

Jones, O., Maillardet, R., Robinson, A., Scientific Programming and Simulation Using R, Chapman & Hall / CRC Press 2009

Venables, W.N., Smith, D.M. and the R Core Team, "An Introduction to R", 2012 (Version 2.15.2), <http://cran.r-project.org/doc/manuals/R-intro.pdf>

Wickham, Hadley, ggplot2: Elegant Graphics for Data Analysis (Use R!), Springer 2009 (2nd edition)



## T

**6.209 Course: Modeling and OR-Software: Advanced Topics [T-WIWI-106200]**

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102808 - Digital Service Systems in Industry](#)  
[M-WIWI-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each winter term	2

Events					
WS 18/19	2550490	<a href="#">Modellieren und OR-Software: Fortgeschrittene Themen</a>	3 SWS	Practical course (P)	Nickel, Reuter-Oppermann
Exams					
WS 18/19	00019	<a href="#">Modeling and OR-Software: Advanced Topics</a>	Prüfung (PR)		Nickel

**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**

Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

Successful completion of the course *Modeling and OR-Software: Introduction*.

**Annotation**

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is held 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: Fortgeschrittene Themen**

2550490, WS 18/19, 3 SWS, [Open in study portal](#)

**Practical course (P)**

**Learning Content**

After an introduction to general concepts of modelling tools (implementation, data handling, result interpretation, ...), the software IBM ILOG CPLEX Optimization Studio and the corresponding modeling language OPL will be discussed which can be used to solve OR problems on a computer-aided basis.

Subsequently, a broad range of exercises will be discussed. The main goals of the exercises from literature and practical applications are to learn the process of modeling optimization problems as linear or mixed-integer programs, to efficiently utilize the presented tools for solving these optimization problems and to implement heuristic solution procedures for mixed-integer programs.

**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 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.

T

**6.210 Course: Modeling Strategic Decision Making [T-WIWI-102803]**

**Responsible:** Prof. Dr. Hagen Lindstädt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

**Competence Certificate**

The course will not be offered anymore from winter term 2016/2017 on. The examination will be offered latest until summer term 2017 (repeaters only).

Written exam 100% following §4, Abs. 2.

**Prerequisites**

None

**Recommendation**

None

T

**6.211 Course: Morphodynamics [T-BGU-101859]**

**Responsible:** Prof. Dr. Franz Nestmann  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-WIWI-101642 - Naturgefahren und Risikomanagement 1](#)  
[M-WIWI-101644 - Naturgefahren und Risikomanagement 2](#)  
[M-WIWI-104837 - Naturgefahren und Risikomanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung mündlich	3	1

Events					
SS 2019	6222805	<a href="#">Morphodynamics</a>	2 SWS	Lecture / Practice (VÜ)	Nestmann

**Competence Certificate**

See German version.

**Prerequisites**

None

## T

**6.212 Course: Multivariate Statistical Methods [T-WIWI-103124]**

**Responsible:** Prof. Dr. Oliver Grothe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-101637 - Analytics und Statistik](#)  
[M-WIWI-101639 - Ökonometrie und Statistik II](#)  
[M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

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

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. A bonus program can improve the grade by one grade level (i.e. by 0.3 or 0.4).

The exam is offered every semester. Re-examinations are offered only for repeaters.

**Prerequisites**

None

**Recommendation**

The course covers highly advanced statistical methods with a quantitative focus. Hence, participants are necessarily expected to have advanced statistical knowledge, e.g. acquired in the course "Advanced Statistics". Without this, participation in the course is not advised.

Previous attendance of the course Analysis of Multivariate Data is recommended. Alternatively, the script can be provided to interested students.

T

## 6.213 Course: Nanotechnology for Engineers and Natural Scientists [T-MACH-105180]

**Responsible:** Prof. Dr. Martin Dienwiebel  
PD Dr. Hendrik Hölscher  
Stefan Walheim

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101294 - Nanotechnologie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Events					
SS 2019	2142861	<a href="#">Nanotechnology for Engineers and Natural Scientists</a>	2 SWS	Lecture (V)	Hölscher, Dienwiebel, Walheim

### Competence Certificate

written exam 90 min

### Prerequisites

none

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

V

## Nanotechnology for Engineers and Natural Scientists

2142861, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

- 1) Introduction into nanotechnology
- 2) History of scanning probe techniques
- 3) Scanning tunneling microscopy (STM)
- 4) Atomic force microscopy (AFM)
- 5) Dynamic Modes (DFM, nCAFM, MFM, KPFM, ...)
- 6) Friction force microscopy & nanotribology
- 7) Nanolithography
- 8) Other families of the SPM family

### Workload

lectures 30 h

self study 30 h

preparation for examination 30 h

### Literature

1. Lecture notes, slides, script
2. Scanning Probe Microscopy – Lab on a Tip: Meyer, Hug, Bennewitz, Springer (2003)

T

**6.214 Course: Nanotechnology with Clusterbeams [T-MACH-102080]**

**Responsible:** Dr. Jürgen Gspann  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101293 - Mikrosystemtechnik](#)  
[M-MACH-101294 - Nanotechnologie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

**Competence Certificate**

written examination  
 presence in more than 70% of the lectures  
 Duration: 1 h

aids: none

**Prerequisites**

none

## T

**6.215 Course: Nanotribology and -Mechanics [T-MACH-102167]**

**Responsible:** Prof. Dr. Martin Dienwiebel  
PD Dr. Hendrik Hölscher

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101291 - Mikrofertigung](#)  
[M-MACH-101294 - Nanotechnologie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	4

Events					
WS 18/19	2182712	<a href="#">Nanotribology and -Mechanics</a>	2 SWS	Block lecture (BV)	Dienwiebel
SS 2019	2182712	<a href="#">Nanotribology and -Mechanics</a>	2 SWS	Lecture / Practice (VÜ)	Dienwiebel
Exams					
WS 18/19	76-T-MACH-102167	<a href="#">Nanotribology and -Mechanics</a>		Prüfung (PR)	Dienwiebel

**Competence Certificate**

presentation (40%) and colloquium (30 min, 60%)

no tools or reference materials

**Prerequisites**

none

**Recommendation**

preliminary knowlegde in mathematics and physics

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

## V

**Nanotribology and -Mechanics**

2182712, WS 18/19, 2 SWS, [Open in study portal](#)

**Block lecture (BV)**

**Learning Content**

Part 1: Basics:

- Nanotechnology
- Forces at nanometer scale
- contact mechanics models (Hertz, JKR, DMT)
- Experimental methods (SFA, QCM, FFM)
- Prandtl-Tomlinson model
- Superlubricity
- Atomic-Scale Wear

Part 2: Topical papers

**Workload**

regular attendance: 22,5 hours

preparation for presentation: 22,5 hours

self-study: 75 hours

**Literature**

Lecture notes, slides and copies of articles

**Nanotribology and -Mechanics**2182712, SS 2019, 2 SWS, [Open in study portal](#)**Lecture / Practice (VÜ)****Learning Content**

## Part 1: Basics:

- Nanotechnology
- Forces at nanometer scale
- contact mechanics models (Hertz, JKR, DMT)
- Experimental methods (SFA, QCM, FFM)
- Prandtl-Tomlinson model
- Superlubricity
- Atomic-Scale Wear

## Part 2: Topical papers

**Workload**

regular attendance: 22,5 hours

preparation for presentation: 22,5 hours

self-study: 75 hours

**Literature**

Edward L. Wolf

Nanophysics and Nanotechnology, Wiley-VCH, 2006

C. Mathew Mate

Tribology on the Small Scale: A Bottom Up Approach to Friction, Lubrication, and Wear (Mesoscopic Physics and Nanotechnology) 1st Edition, Oxford University Press

Lecture notes, slides and copies of articles



## T

**6.216 Course: Nature-Inspired Optimisation Methods [T-WIWI-102679]**

**Responsible:** Dr. rer. nat. Pradyumn Kumar Shukla  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2511106	<a href="#">Nature-Inspired Optimization Methods</a>	2 SWS	Lecture (V)	Shukla
SS 2019	2511107	<a href="#">Übungen zu Nature-Inspired Optimization Methods</a>	1 SWS	Practice (Ü)	Shukla
Exams					
WS 18/19	7900016	<a href="#">Nature-Inspired Optimisation Methods</a>		Prüfung (PR)	Shukla
SS 2019	7900026	<a href="#">Nature-Inspired Optimisation Methods</a>		Prüfung (PR)	Shukla

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to Section 4(2), 1 of the examination regulation) and an additional written examination called "bonus exam", 60 min (according Section 4(2), 3 of the examination regulation) or a selection of exercises. The bonus exam may be split into several shorter written tests.

The grade of this course is the achieved grade in the written examination. If this grade is at least 4.0 and at most 1.3, a passed bonus exam will improve it by one grade level (i.e. by 0.3 or 0.4).

**Prerequisites**

None

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

## V

**Nature-Inspired Optimization Methods**

2511106, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Many optimization problems are too complex to be solved to optimality. A promising alternative is to use stochastic heuristics, based on some fundamental principles observed in nature. Examples include evolutionary algorithms, ant algorithms, or simulated annealing. These methods are widely applicable and have proven very powerful in practice. During the course, such optimization methods based on natural principles are presented, analyzed and compared. Since the algorithms are usually quite computational intensive, possibilities for parallelization are also investigated.

T

**6.217 Course: Non- and Semiparametrics [T-WIWI-103126]**

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101638 - Ökonometrie und Statistik I](#)  
[M-WIWI-101639 - Ökonometrie und Statistik II](#)  
[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 "*Applied Econometrics*" [2520020]

**Annotation**

The course takes place every second winter semester: 2018/19 then 2020/21

## T

**6.218 Course: Nonlinear Optimization I [T-WIWI-102724]**

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	3

Events					
WS 18/19	2550111	<a href="#">Nichtlineare Optimierung I</a>	2 SWS	Lecture (V)	Stein
WS 18/19	2550112	<a href="#">Übungen zu Nichtlineare Optimierung I + II</a>	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550142	<a href="#">Rechnerübung zu Nichtlineare Optimierung I + II</a>	SWS	Practice (Ü)	Stein, Mohr
Exams					
WS 18/19	7900002_HK_WS1819	<a href="#">Nonlinear Optimization I</a>		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

## 6.219 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-101473 - Mathematische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each winter term	5

Events					
WS 18/19	2550111	<a href="#">Nichtlineare Optimierung I</a>	2 SWS	Lecture (V)	Stein
WS 18/19	2550112	<a href="#">Übungen zu Nichtlineare Optimierung I + II</a>	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550113	<a href="#">Nichtlineare Optimierung II</a>	2 SWS	Lecture (V)	Stein
WS 18/19	2550142	<a href="#">Rechnerübung zu Nichtlineare Optimierung I + II</a>	SWS	Practice (Ü)	Stein, Mohr
Exams					
WS 18/19	7900151_HK_WS1819	<a href="#">Nonlinear Optimization I and II</a>		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

## 6.220 Course: Nonlinear Optimization II [T-WIWI-102725]

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	2

Events					
WS 18/19	2550112	<a href="#">Übungen zu Nichtlineare Optimierung I + II</a>	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550113	<a href="#">Nichtlineare Optimierung II</a>	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900050_HK_WS1819	<a href="#">Nonlinear Optimization II</a>		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

## 6.221 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-101293 - Mikrosystemtechnik](#)  
[M-MACH-101294 - Nanotechnologie](#)  
[M-MACH-101295 - Optoelektronik und Optische Kommunikationstechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	2

Events					
WS 18/19	2141865	<a href="#">Novel actuators and sensors</a>	2 SWS	Lecture (V)	Kohl, Sommer
Exams					
WS 18/19	76-T-MACH-102152	<a href="#">Novel Actuators and Sensors</a>		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

**6.222 Course: Operation Methods for Earthmoving [T-BGU-101801]**

**Responsible:** Dr.-Ing. Heinrich Schlick  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101110 - Verfahrenstechnik im Baubetrieb](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each winter term	1

Events					
WS 18/19	6241905	<a href="#">Erdbau</a>	1 SWS	Lecture (V)	Haghsheno, Schlick
Exams					
WS 18/19	8240101801	<a href="#">Operation Methods for Earthmoving</a>		Prüfung (PR)	Schneider

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

T

## 6.223 Course: Operation Methods for Foundation and Marine Construction [T-BGU-101832]

**Responsible:** Dr.-Ing. Harald Schneider

**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences

**Part of:** [M-BGU-101110 - Verfahrenstechnik im Baubetrieb](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each winter term	1

Events					
WS 18/19	6241904	<a href="#">Tiefbau</a>	1 SWS	Lecture (V)	Haghsheno, Schneider
Exams					
WS 18/19	8240101832	<a href="#">Operation Methods for Foundation and Marine Construction</a>		Prüfung (PR)	Schneider

### Prerequisites

None

### Recommendation

None

### Annotation

None

T

## 6.224 Course: Operations Research in Health Care Management [T-WIWI-102884]

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102805 - Service Operations](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	2

Exams				
WS 18/19	7900124	<a href="#">Operations Research in Health Care Management</a>	Prüfung (PR)	Nickel

### Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).  
 The examination is held in the term of the lecture and the following lecture.

### Prerequisites

None

### Recommendation

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

### Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at <http://dol.ior.kit.edu/english/Courses.php>.

T

## 6.225 Course: Operations Research in Supply Chain Management [T-WIWI-102715]

**Responsible:** Prof. Dr. Stefan Nickel

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-102805 - Service Operations](#)  
[M-WIWI-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	2

Events					
SS 2019	2550480	<a href="#">Operations Research in Supply Chain Management</a>	2 SWS	Lecture (V)	Nickel
SS 2019	2550481	<a href="#">Übungen zu OR in Supply Chain Management</a>	1 SWS	Practice (Ü)	Dunke

### Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

### Prerequisites

None

### Recommendation

Basic knowledge as conveyed in the module Introduction to Operations Research and in the lectures Facility Location and Strategic SCM, Tactical and operational SCM is assumed.

### Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at <http://dol.ior.kit.edu/english/Courses.php>.

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

V

## Operations Research in Supply Chain Management

2550480, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

Supply Chain Management constitutes a general tool for logistics process planning in supply networks. To an increasing degree quantitative decision support is provided by methods and models from Operations Research. The lecture "OR in Supply Chain Management" conveys concepts and approaches for solving practical problems and presents an insight to current research topics. The lecture's focus is set on modeling and solution methods for applications originating in different domains of a supply chain. The emphasis is put on mathematical methods like mixed integer programming, valid inequalities or column generation, and the derivation of optimal solution strategies.

In form and content, the lecture addresses all levels of Supply Chain Management: After a short introduction, the tactical and operational level will be discussed with regard to inventory models, scheduling as well as cutting and packing. The strategic level will be discussed in terms of layout planning. Another main focus of the lecture is the application of methods from online optimization. This optimization discipline has gained more and more importance in the optimization of supply chains over the several past years due to an increasing amount of dynamic data flows.

### Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at <http://dol.ior.kit.edu/english/Courses.php>.

**Workload**

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

**Literature**

- Simchi-Levi, D.; Chen, X.; Bramel, J.: The Logic of Logistics: Theory, Algorithms, and Applications for Logistics and Supply Chain Management, 2nd edition, Springer, 2005
- Simchi-Levi, D.; Kaminsky, P.; Simchi-Levi, E.: Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies, McGraw-Hill, 2000
- Silver, E. A.; Pyke, D. F.; Peterson, R.: Inventory Management and Production Planning and Scheduling, 3rd edition, Wiley, 1998
- Blazewicz, J.: Handbook on Scheduling - From Theory to Applications, Springer, 2007
- Pinedo, M. L.: Scheduling - Theory, Algorithms, and Systems (3rd edition), Springer, 2008
- Dyckhoff, H.; Finke, U.: Cutting and Packing in Production and Distribution - A Typology and Bibliography, Physica-Verlag, 1992
- Borodin, A.; El-Yaniv, R.: Online Computation and Competitive Analysis, Cambridge University Press, 2005
- Francis, R. L.; McGinnis, L. F.; White, A.: Facility Layout and Location: An Analytical Approach, 2nd edition, Prentice-Hall, 1992

## T

**6.226 Course: Optical Transmitters and Receivers [T-ETIT-100639]****Responsible:** Prof. Dr. Wolfgang Freude**Organisation:** KIT Department of Electrical Engineering and Information Technology**Part of:** [M-MACH-101295 - Optoelektronik und Optische Kommunikationstechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2309460	<a href="#">Optical Transmitters and Receivers</a>	2 SWS	Lecture (V)	Freude
WS 18/19	2309461	<a href="#">Optical Transmitters and Receivers (Tutorial)</a>	1 SWS	Practice (Ü)	Freude
Exams					
WS 18/19	7309460	<a href="#">Optical Transmitters and Receivers</a>		Prüfung (PR)	Freude

**Prerequisites**

none



## T

**6.227 Course: Optical Waveguides and Fibers [T-ETIT-101945]****Responsible:** Prof. Dr.-Ing. Christian Koos**Organisation:** KIT Department of Electrical Engineering and Information Technology**Part of:** [M-MACH-101292 - Mikrooptik](#)[M-MACH-101295 - Optoelektronik und Optische Kommunikationstechnik](#)[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	2309464	<a href="#">Optical Waveguides and Fibers</a>	2 SWS	Lecture (V)	Koos
WS 18/19	2309465	<a href="#">Optical Waveguides and Fibers (Tutorial)</a>	1 SWS	Practice (Ü)	Koos
Exams					
WS 18/19	7309464	<a href="#">Optical Waveguides and Fibers</a>		Prüfung (PR)	Koos

**Prerequisites**

none

T

**6.228 Course: Optimization under Uncertainty [T-WIWI-106545]**

**Responsible:** Prof. Dr. Steffen Rebennack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Irregular	1

Events					
WS 18/19	2550464	<a href="#">Optimierungsansätze unter Unsicherheit</a>	SWS	Lecture (V)	Sinske
WS 18/19	2550465	<a href="#">Übungen zu Optimierungsansätze unter Unsicherheit</a>	SWS	Practice (Ü)	Füllner
WS 18/19	2550466	<a href="#">Rechnerübungen zu Optimierungsansätze unter Unsicherheit</a>	2 SWS	Practice (Ü)	Füllner
Exams					
WS 18/19	7900158	<a href="#">Optimization under uncertainty</a>		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

## 6.229 Course: Optoelectronic Components [T-ETIT-101907]

**Responsible:** Prof. Dr. Wolfgang Freude  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2309486	<a href="#">Optoelectronic Components</a>	2 SWS	Lecture (V)	Freude
SS 2019	2309487	<a href="#">Optoelectronic Components (Tutorial)</a>	1 SWS	Practice (Ü)	Freude
Exams					
WS 18/19	7309486	<a href="#">Optoelectronic Components</a>		Prüfung (PR)	Freude

**Prerequisites**

none

T

**6.230 Course: Panel Data [T-WIWI-103127]**

**Responsible:** Dr. Wolf-Dieter Heller  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101638 - Ökonometrie und Statistik I](#)  
[M-WIWI-101639 - Ökonometrie und Statistik II](#)  
[M-WIWI-104902 - Statistik](#)

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

Events					
SS 2019	2520320	<a href="#">Paneldaten</a>	2 SWS	Lecture (V)	Heller
SS 2019	2520321	<a href="#">Übungen zu Paneldaten</a>	2 SWS	Practice (Ü)	Heller

**Prerequisites**

None

T

**6.231 Course: Parametric Optimization [T-WIWI-102855]**

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101473 - Mathematische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Exams			
WS 18/19	7900141_HK_WS1819	<a href="#">Parametric Optimization</a>	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. The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

**Prerequisites**

None

**Recommendation**

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**

The lecture is offered irregularly. The curriculum of the next three years is available online ([www.ior.kit.edu](http://www.ior.kit.edu)).

T

**6.232 Course: Patent Law [T-INFO-101310]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Recht des Geistigen Eigentums](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	24656	<a href="#">Patent Law</a>	2 SWS	Lecture (V)	Koch
Exams					
WS 18/19	7500001	<a href="#">Patent Law</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500062	<a href="#">Patent Law</a>		Prüfung (PR)	Dreier, Matz

## T

**6.233 Course: Personalization and Services [T-WIWI-102848]**

**Responsible:** Dr.-Ing. Andreas Sonnenbichler  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101410 - Business & Service Engineering](#)  
[M-WIWI-101470 - Data Science: Advanced CRM](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2540533	<a href="#">Personalization &amp; Services</a>	2 SWS	Lecture (V)	Sonnenbichler
WS 18/19	2540534	<a href="#">Exercise Personalization &amp; Services</a>	1 SWS	Practice (Ü)	Sonnenbichler
Exams					
WS 18/19	7979702	<a href="#">Personalization and Services</a>		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**

None

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

## V

**Personalization & Services**2540533, WS 18/19, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning Content**

- Personalization of Services and Applications
- User Modeling
- User Profiles
- Authentication
- Authorization
- Applications in e-Commerce and for internet-based Services
- Personalized Web Search
- Privacy

**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**

The course follows latest scientific papers. References to these papers are listed at the end of each course unit.



**T****6.234 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****6.235 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****6.236 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****6.237 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****6.238 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****6.239 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****6.240 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

**6.241 Course: Photovoltaic System Design [T-ETIT-100724]**

**Responsible:** Robin Grab  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-ETIT-101164 - Erzeugung und Übertragung regenerativer Energie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung schriftlich	3	1

Events					
SS 2019	2307380	<a href="#">Photovoltaische Systemtechnik</a>	2 SWS	Lecture (V)	Grab
Exams					
SS 2019	7307380	<a href="#">Photovoltaics</a>		Prüfung (PR)	Leibfried

**Prerequisites**

none



## T

**6.242 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-101291 - Mikrofertigung](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events					
SS 2019	2142890	<a href="#">Physics for Engineers</a>	2 SWS	Lecture (V)	Weygand, Dienwiebel, Nesterov-Müller, Gumbsch
Exams					
WS 18/19	76-T-MACH-100530	<a href="#">Physics for Engineers</a>		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 Engineers**

2142890, 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

**6.243 Course: Planning and Management of Industrial Plants [T-WIWI-102631]**

**Responsible:** Prof. Dr. Frank Schultmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101471 - Industrielle Produktion II](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5,5	Each winter term	1

Events					
WS 18/19	2581952	<a href="#">Planning and Management of Industrial Plants</a>	2 SWS	Lecture (V)	Glöser-Chahoud
WS 18/19	2581953	<a href="#">Übungen Anlagenwirtschaft</a>	2 SWS	Practice (Ü)	Schiel, Rosenberg
Exams					
WS 18/19	7981952	<a href="#">Planning and Management of Industrial Plants</a>		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

**Recommendation**

None

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

## V

**Planning and Management of Industrial Plants**

2581952, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Industrial plant management incorporates a complex set of tasks along the entire life cycle of an industrial plant, starting with the initiation and erection up to operating and dismantling.

During this course students will get to know special characteristics of industrial plant management. Students will learn important methods to plan, realize and supervise the supply, start-up, maintenance, optimisation and shut-down of industrial plants. Alongside, students will have to handle the inherent question of choosing between technologies and evaluating each of them. This course pays special attention to the specific characteristics of plant engineering, commissioning and investment.

**Workload**

Total effort required will account for approximately 165h (5.5 credits).

**Literature**

will be announced in the course

## T

**6.244 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-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2122376	<a href="#">PLM for product development in mechatronics</a>	SWS	Lecture (V)	Eigner
Exams					
WS 18/19	76-T-MACH-102181	<a href="#">PLM for Product Development in Mechatronics</a>		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

**6.245 Course: PLM-CAD Workshop [T-MACH-102153]**

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

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	2

Events					
WS 18/19	2121357	<a href="#">PLM-CAD Workshop</a>	4 SWS	Seminar / Practical course (S/P)	Ovtcharova, Mitarbeiter
SS 2019	2121357	<a href="#">PLM-CAD Workshop</a>	4 SWS	Practical course (P)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102153	<a href="#">PLM-CAD Workshop</a>		Prüfung (PR)	Ovtcharova

**Competence Certificate**

Alternative exam assessment (graded)

**Prerequisites**

None

**Annotation**

Number of participants is limited, compulsory attendance

**T****6.246 Course: Polymers in MEMS A: Chemistry, Synthesis and Applications [T-MACH-102192]**

**Responsible:** Dr.-Ing. Bastian Rapp  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101291 - Mikrofertigung](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	2141853	<a href="#">Polymers in MEMS A: Chemistry, Synthesis and Applications</a>	2 SWS	Block lecture (BV)	Rapp

**Competence Certificate**

Oral examination

**Prerequisites**

none

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

**V****Polymers in MEMS A: Chemistry, Synthesis and Applications**2141853, WS 18/19, 2 SWS, [Open in study portal](#)**Block lecture (BV)****Description****Media:**

The lecture slides will be given out as scriptum during each lecture course.

### Learning Content

We all come in contact with numerous polymeric products in everyday life. From water bottles to packaging to the cover of the iPad, many things are made of polymers. Polymers are also important materials for modern microelectromechanical systems (MEMS) allowing cost effective mass market compatible products, e.g., in the life sciences or diagnostics. But polymers are not just cost-effective replacements for more expensive classical materials in MEMS (such as, e.g., silicon) – some polymers have intrinsic properties that make them ideal materials for sensors, actuators or templates for biology and chemistry in MEMS.

This lecture will introduce the basics of organic chemistry required for understanding what polymers are, how they are manufactured and which mechanisms are responsible for their unique properties. The lecture will highlight (in the context of MEMS but also in a wider scope) where and why polymers are applied with a strong focus on their chemical and physical properties (and on their synthesis).

Some of the topics covered are:

- What is the basic chemistry of polymers? What are monomers, what are macromolecules and how are they formed?
- How are polymers produced on industrial scale – but also on the laboratory scale? Numerous examples of how to make (commonly and lesser known) polymers will be discussed including materials such as Plexiglas.
- Why are polymers so important for biochemistry and tissue engineering?
- How do photoresists work and why do some polymers contract when exposed to light?
- What are high-performance polymers and why do they have such a wide application range, e.g., in implants?
- What polymers fuel the household 3D printing community and what materials do 3D printers such as, e.g., the RepRap work with?
- How does 3D printing and rapid prototyping work and which polymers can be employed for which techniques?
- Why does silicone always smell like vinegar and why is this material so important for modern day microfluidics? How do you built fluid-logic devices using silicone?
- How do shape memory polymers remember their shape?
- What are polymer foams and why are they not only important for heat insulation but also for organic chemistry?
- How do glues work? Why are there two-component glues, what is superglue and how can you make glue from potatoes?

The lecture will be given in German language unless non-German speaking students attend. In this case, the lecture will be given in English (with some German translations of technical vocabulary). The lecture slides are in English language and will be handed out for taking notes. Additional literature is not required.

For further details, please contact the lecturer, Dr. Ing. Bastian E. Rapp (bastian.rapp@kit.edu). Preregistration is not necessary.

The examination will be held in oral form at the end of the lecture. The lecture can be chosen as "Nebenfach" or part of a "Hauptfach". The second lecture of the lecture series "Polymers in MEMS B – Physics, manufacturing and applications" (which is also held in winter semester) can be combined with this lecture as part of a "Hauptfach". In summer semester, the third part of the lecture series "Polymers in MEMS C – Biopolymers, Biopolymers and applications" will be given which may be combined with lectures A and B to form a complete "Hauptfach".

### Annotation

For further details, please contact the lecturer, Dr. Ing. Bastian E. Rapp (bastian.rapp@kit.edu). Preregistration is not necessary.

### Workload

- lecture: 15 \* 1.5 h (22 h)
- lecture preparation (before and after lecture): 15 \* 2 h (30 h)
- preparation of final exam: 70 h

T

## 6.247 Course: Polymers in MEMS B: Physics, Microstructuring and Applications [T-MACH-102191]

**Responsible:** Dr.Ing. Matthias Worgull  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101291 - Mikrofertigung](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	2141854	<a href="#">Polymers in MEMS B: Physics, Microstructuring and Applications</a>	2 SWS	Lecture (V)	Worgull
Exams					
WS 18/19	76-T-MACH-102191	<a href="#">Polymers in MEMS B: Physics, Microstructuring and Applications</a>		Prüfung (PR)	Worgull
SS 2019	76-T-MACH-102191	<a href="#">Polymers in MEMS B: Physics, Microstructuring and Applications</a>		Prüfung (PR)	Worgull

### Competence Certificate

Oral examination

### Prerequisites

none

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

V

## Polymers in MEMS B: Physics, Microstructuring and Applications

2141854, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

### Description

#### Media:

The lecture slides will be given out as scriptum during each lecture course.



### Learning Content

We all come in contact with numerous polymeric products in everyday life. From water bottles to packaging to the cover of the iPad, many things are made of polymers. Polymers are also important materials for modern microelectromechanical systems (MEMS) allowing cost effective mass market compatible products, e.g., in the life sciences or diagnostics. But polymers are not just cost-effective replacements for more expensive classical materials in MEMS (such as, e.g., silicon) – some polymers have intrinsic properties that make them ideal materials for sensors, actuators or templates for biology and chemistry in MEMS.

This lecture will introduce the basics of physics and material science required for the understanding of the mechanical behavior seen from the engineers view. Micro and nanostructuring of polymers allows the fabrication of micro parts fulfilling their tasks in mostly invisible different applications. But also the fabrication of polymer parts with functional surfaces inspired from Bionics will be presented in this lesson. The lesson will give further an overview over the polymer based structuring processes and will underline the importance by a number of applications e.g. photonic structures or Lotus-like structures.

Some of the topics covered are:

- How can polymers described from the view of engineers?
- What are the differences between polymers and metals?
- Rheology of polymer melts – How does polymer melts flow?
- How can polymers be formed and demolded?
- Which structuring processes (replication) processes are available?
- How does stress influence molded parts (e.g. the deformation of a CD in a hot car)
- Shrinkage of polymers – which precision is achievable
- Gluing or welding – How can polymers be assembled?
- Simulation of replication processes
- Characterization of polymers – which properties can be measured?

The lecture will be given in German language unless non-German speaking students attend. In this case, the lecture will be given in English (with some German translations of technical vocabulary). The lecture slides are in English language and will be handed out for taking notes. Additional literature is not required.

For further details, please contact the lecturer, PD Dr.-Ing. Matthias Worgull ([matthias.worgull@kit.edu](mailto:matthias.worgull@kit.edu)). Preregistration is not necessary.

The examination will be held in oral form at the end of the lecture. The lecture can be chosen as "Nebenfach" or part of a "Hauptfach". The second lecture of the lecture series ""Polymers in MEMS A – Chemistry, synthesis and applications " (which is also held in winter semester) can be combined with this lecture as part of a "Hauptfach". In summer semester, the third part of the lecture series "Polymers in MEMS C – Biopolymers, Biopolymers and applications" will be given which may be combined with lectures A and B to form a complete "Hauptfach".

### Annotation

For further details, please contact the lecturer, PD Dr.-Ing. Matthias Worgull ([matthias.worgull@kit.edu](mailto:matthias.worgull@kit.edu)). Preregistration is not necessary.

### Workload

- lecture: 15 \* 1.5 h (22 h)
- lecture preparation (before and after lecture): 15 \* 2 h (30 h)
- preparation of final exam: 70 h

T

## 6.248 Course: Polymers in MEMS C: Biopolymers and Bioplastics [T-MACH-102200]

**Responsible:** Dr.-Ing. Bastian Rapp  
Dr. Ing. Matthias Worgull

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101291 - Mikrofertigung](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	2142855	<a href="#">Polymers in MEMS C - Biopolymers and Bioplastics</a>	2 SWS	Block lecture (BV)	Worgull, Rapp
Exams					
WS 18/19	76-T-MACH-102200	<a href="#">Polymers in MEMS C: Biopolymers and Bioplastics</a>		Prüfung (PR)	Worgull, Rapp

### Competence Certificate

Oral examination

### Prerequisites

none

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

V

### Polymers in MEMS C - Biopolymers and Bioplastics

2142855, SS 2019, 2 SWS, [Open in study portal](#)

**Block lecture (BV)**

**Learning Content**

Polymers are ubiquitous in everyday life: from packaging materials all the way to specialty products in medicine and medical engineering. Today it is difficult to find a product which does not (at least in parts) consist of polymeric materials. The question of how these materials can be improved with respect to their disposal and consumption of (natural) resources during manufacturing is often raised. Today polymers must be fully recycled in Germany and many other countries due to the fact that they do not (or only very slowly) decompose in nature. Furthermore significant reductions of crude oil consumption during synthesis are of increasing importance in order to improve the sustainability of this class of materials. With respect to disposal polymers which do not have to be disposed by combustion but rather allow natural decomposition (composting) are of increasing interest. Polymers from renewable sources are also of interest for modern microelectromechanical systems (MEMS) especially if the systems designed are intended as single-use products.

This lecture will introduce the most important classes of these so-called biopolymers and bioplastics. It will also discuss and highlight polymers which are created from naturally created analogues (e.g. via fermentation) to petrochemical polymer precursors and describe their technical processing. Numerous examples from MEMS as well as everyday life will be given.

Some of the topics covered are:

- What are biopolyurethanes and how can you produce them from castor oil?
- What are "natural glues" and how are they different from chemical glues?
- How do you make tires from natural rubbers?
- What are the two most important polymers for life on earth?
- How can you make polymers from potatoes?
- Can wood be formed by injection molding?
- How do you make buttons from milk?
- Can you play music on biopolymers?
- Where and how do you use polymers for tissue engineering?
- How can you built LEGO with DNA?

The lecture will be given in German language unless non-German speaking students attend. In this case, the lecture will be given in English (with some German translations of technical vocabulary). The lecture slides are in English language and will be handed out for taking notes. Additional literature is not required.

For further details, please contact the lecturer, Dr. Ing. Bastian E. Rapp (bastian.rapp@kit.edu) and PD Dr.-Ing. Matthias Worgull (matthias.worgull@kit.edu). Preregistration is not necessary.

**Annotation**

For further details, please contact the lecturer, Dr. Ing. Bastian E. Rapp (bastian.rapp@kit.edu) and PD Dr.-Ing. Matthias Worgull (matthias.worgull@kit.edu). Preregistration is not necessary.

**Workload**

- lecture: 15 \* 1.5 h (22 h)
- lecture preparation (before and after lecture): 15 \* 2 h (30 h)

preparation of final exam: 70 h

**Literature**

Additional literature is not required.

T

**6.249 Course: Portfolio and Asset Liability Management [T-WIWI-103128]**

**Responsible:** Dr. Mher Safarian  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101639 - Ökonometrie und Statistik II](#)  
[M-WIWI-104902 - Statistik](#)

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

Events					
SS 2019	2520357	<a href="#">Portfolio and Asset Liability Management</a>	2 SWS	Lecture (V)	Safarian
SS 2019	2520358	<a href="#">Übungen zu Portfolio and Asset Liability Management</a>	2 SWS	Practice (Ü)	Safarian

**Competence Certificate**

The assessment of this course consists of a written examination (following §4(2), 1 SPOs, 180 min.) and of possible additional assignments during the course (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

**Prerequisites**

None

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

V

**Portfolio and Asset Liability Management**

2520357, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)****Description**

Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment

Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

**Learning Content**

Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment

Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

**Workload**

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

**Literature**

To be announced in lecture.

**Elective literature:**

To be announced in lecture.

## T

**6.250 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-101164 - Erzeugung und Übertragung regenerativer Energie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each winter term	1

Events					
WS 18/19	2307371	<a href="#">Elektrische Energienetze</a>	2 SWS	Lecture (V)	Leibfried
WS 18/19	2307373	<a href="#">Übungen zu 2307371 Elektrische Energienetze</a>	2 SWS	Practice (Ü)	
Exams					
WS 18/19	7307371	<a href="#">Power Network</a>		Prüfung (PR)	Leibfried
SS 2019	7307371	<a href="#">Power Network</a>		Prüfung (PR)	Leibfried

## T

**6.251 Course: Power Transmission and Power Network Control [T-ETIT-101941]**

**Responsible:** Prof. Dr.-Ing. Thomas Leibfried  
**Organisation:** KIT Department of Electrical Engineering and Information Technology  
**Part of:** [M-ETIT-101164 - Erzeugung und Übertragung regenerativer Energie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2307372	<a href="#">Power Transmission and Power Network Control</a>	2 SWS	Lecture (V)	Leibfried
SS 2019	2307374	<a href="#">Übungen zu 2307372 Energieübertragung und Netzregelung</a>	1 SWS	Practice (Ü)	Nowak
Exams					
WS 18/19	7307372	<a href="#">Power Transmission and Power Network Control</a>		Prüfung (PR)	Leibfried
SS 2019	7307372	<a href="#">Power Transmission and Power Network Control</a>		Prüfung (PR)	Leibfried

**Prerequisites**

none

T

**6.252 Course: Practical Course Polymers in MEMS [T-MACH-105556]**

**Responsible:** Dr.-Ing. Bastian Rapp  
Dr. Ing. Matthias Worgull

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101291 - Mikrofertigung](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Studienleistung	3	Each summer term	1

Events					
SS 2019	2142856	<a href="#">Practical Course Polymers in MEMS</a>	2 SWS	Block (B)	Worgull, Rapp

**Competence Certificate**

The practical course will close with an oral examination. There will be only passed and failed results, no grades.

**Prerequisites**

none

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

V

**Practical Course Polymers in MEMS**

2142856, SS 2019, 2 SWS, [Open in study portal](#)

**Block (B)****Description****Media:**

descriptions of the experiments

**Learning Content**

This practical course complements the lectures "Polymers in MEMS A", "Polymers in MEMS B" and "Polymers in MEMS C" and will allow students to gain a deeper understanding of polymers and their processing. During the course of this practical course, various polymers will be synthesized and molded into components suitable for microelectromechanical systems (MEMS) applications. The aim of the course is to bring a polymer all the way from synthesis to application.

The practical course will be given in German language unless non-German speaking students attend. In this case, the course will be given in English (with some German translations of technical vocabulary). Lecture notes for the experiments are in English language and will be handed out to the students. The practical course will be held "en block" at the end of the semester (presumably beginning of October)

For further details, please contact the lecturer, Dr. Ing. Bastian E. Rapp (bastian.rapp@kit.edu) and PD Dr.-Ing. Matthias Worgull (matthias.worgull@kit.edu). Preregistration is mandatory. The number of participants is limited to 5 students.

**Workload**

- practical course: 3 \* 8 h (24 h)
- experiment preparation (before and after lecture): 30 h

preparation of final exam: 66 h

**Literature**

Scripts of the corresponding lectures, further literature as named there.

## T

**6.253 Course: Practical Seminar Digital Service Systems [T-WIWI-106563]**

**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-102808 - Digital Service Systems in Industry](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Irregular	1

Events					
SS 2019	2540554	<a href="#">Practical Seminar: Information Systems &amp; Service Design</a>	3 SWS	Lecture (V)	Mädche
Exams					
WS 18/19	7900279	<a href="#">Practical Seminar Digital Service Systems</a>		Prüfung (PR)	Satzger

**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**

New course title starting summer term 2017: "Practical Seminar Digital Service Systems".  
 The current range of seminar topics is announced on the KSRI website [www.ksri.kit.edu](http://www.ksri.kit.edu).

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

## V

**Practical Seminar: Information Systems & Service Design**

2540554, SS 2019, 3 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

Contemporary trends of every increasing digitalization in businesses lead to new challenges and fusion of technologies blurring the lines between the digital, physical and biological spheres, thereby calling for a new approaches for corporate management. Recently, physician Michio Kaku put it like the following: "The destiny of computers – like other mass technologies like electricity, paper, and running water- is to become invisible, that is, to disappear into the fabric of our lives, to be everywhere and nowhere, silently and seamlessly carrying out our wishes." Michio Kaku (2016)

In the Practical Seminar Digital Service Design students address a real-world challenge in businesses and apply digital service design practices and tools. Furthermore, during the time of the seminar the students prototypical implement a running digital service.

Real-world challenges will vary over time. This time, the challenges are from the domain of **Future Corporate Management**. The practical seminar is carried out in close cooperation with SAP SE and leverages state-of-the-art digital platforms for prototyping.



### **Learning Content**

- Foundations
- Digital Service Design Challenges in Future Corporate Management
- Basics of Digital Service Design practices and tools
- Prototyping and development Digital Services
- Delivering digital service prototypes

## T

**6.254 Course: Practical Seminar Service Innovation [T-WIWI-102799]**

**Responsible:** Prof. Dr. Gerhard Satzger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101410 - Business & Service Engineering](#)  
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Irregular	1

Exams				
WS 18/19	7900152	<a href="#">Team Work in the Area of Service Oriented Architectures</a>	Prüfung (PR)	Satzger

**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**

None

**Recommendation**

Knowledge of Service Innovation Methods is assumed. Therefore it is recommended to attend the course Service Innovation [2540468] beforehand.

**Annotation**

Due to the project work, the number of participants is limited and participation requires knowledge about models, concepts and approaches that are taught in the Service Innovation lecture. Having taken the Service Innovation lecture or demonstrating equivalent knowledge is a prerequisite for participating in this Practical Seminar. Details for registration will be announced on the web pages for this course.

The seminar is not offered regularly.

T

## 6.255 Course: Practical Seminar: Health Care Management (with Case Studies) [T-WIWI-102716]

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102805 - Service Operations](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	2

Events					
SS 2019	2550498	<a href="#">Practical seminar: Health Care Management</a>	5 SWS	Event (Veranst.)	Nickel, Reuter-Oppermann
Exams					
WS 18/19	7900105	<a href="#">Practical Seminar: Health Care Management (with Case Studies)</a>		Prüfung (PR)	Nickel

### Competence Certificate

The assessment consists in a case study, the writing of a corresponding paper, and an oral exam (according to §4(2), 2 of the examination regulation).

### Prerequisites

None.

### Recommendation

Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

### Annotation

The credits have been reduced to 4,5 starting summer term 2016.

The lecture is offered 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

## Practical seminar: Health Care Management

2550498, SS 2019, 5 SWS, [Open in study portal](#)

Event (Veranst.)

### Learning Content

Processes in a hospital are often grown historically ("We have always done it this way"), so that there has not been the need to analyze processes until reforms of the health system have put increasing pressure on hospitals. Consequently, nowadays hospitals look for possibilities to improve their processes. The students are confronted with case studies and are asked to develop a solution. Therefore they have to collect and analyze relevant data, processes and structures. When developing the solution the students have to bear in mind that besides the economic efficiency also the quality of care and patient satisfaction (e.g. measured in waiting time) may not be neglected in the health care sector.

### Annotation

The lecture is offered every term.

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

### Workload

The total workload for this course is approximately 135 hours. For further information see German version.

**Literature**

**Elective literature:**

- Fleßa: Grundzüge der Krankenhausbetriebslehre, Oldenbourg, 2007
- Fleßa: Grundzüge der Krankenhaussteuerung, Oldenbourg, 2008
- Hall: Patient flow: reducing delay in healthcare delivery, Springer, 2006

## T

## 6.256 Course: Practical Seminar: Information Systems and Service Design [T-WIWI-108437]

**Responsible:** Prof. Dr. Alexander Mädche  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102806 - Service Innovation, Design & Engineering](#)  
[M-WIWI-104068 - Information Systems in Organizations](#)  
[M-WIWI-104080 - Designing Interactive Information Systems](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	2

Events					
SS 2019	2540554	<a href="#">Practical Seminar: Information Systems &amp; Service Design</a>	3 SWS	Lecture (V)	Mädche

### 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.

### Recommendation

Attending the course „Digital Service Design“ is recommended, but not mandatory.

### Annotation

The course is held in English.

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

## V

## Practical Seminar: Information Systems & Service Design

2540554, SS 2019, 3 SWS, [Open in study portal](#)

Lecture (V)

### Description

Contemporary trends of every increasing digitalization in businesses lead to new challenges and fusion of technologies blurring the lines between the digital, physical and biological spheres, thereby calling for a new approaches for corporate management. Recently, physician Michio Kaku put it like the following: “The destiny of computers – like other mass technologies like electricity, paper, and running water- is to become invisible, that is, to disappear into the fabric of our lives, to be everywhere and nowhere, silently and seamlessly carrying out our wishes.” Michio Kaku (2016)

In the Practical Seminar Digital Service Design students address a real-world challenge in businesses and apply digital service design practices and tools. Furthermore, during the time of the seminar the students prototypical implement a running digital service.

Real-world challenges will vary over time. This time, the challenges are from the domain of **Future Corporate Management**. The practical seminar is carried out in close cooperation with SAP SE and leverages state-of-the-art digital platforms for prototyping.

### **Learning Content**

- Foundations
- Digital Service Design Challenges in Future Corporate Management
- Basics of Digital Service Design practices and tools
- Prototyping and development Digital Services
- Delivering digital service prototypes

T

## 6.257 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-101290 - BioMEMS](#)  
[M-MACH-101291 - Mikrofertigung](#)  
[M-MACH-101292 - Mikrooptik](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-MACH-101294 - Nanotechnologie](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2143875	<a href="#">Introduction to Microsystem Technology - Practical Course</a>	2 SWS	Practical course (P)	Last
WS 18/19	2143877	<a href="#">Introduction to Microsystem Technology - Practical Course</a>	2 SWS	Practical course (P)	Last
SS 2019	2143875	<a href="#">Introduction to Microsystem Technology - Practical Course</a>	2 SWS	Practical course (P)	Last
SS 2019	2143877	<a href="#">Introduction to Microsystem Technology - Practical Course</a>	2 SWS	Practical course (P)	Last
Exams					
WS 18/19	76-T-MACH-102164	<a href="#">Practical Training in Basics of Microsystem Technology</a>		Prüfung (PR)	Last
SS 2019	76-T-MACH-102164	<a href="#">Practical Training in Basics of Microsystem Technology</a>		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

**6.258 Course: Predictive Mechanism and Market Design [T-WIWI-102862]**

**Responsible:** Prof. Dr. Johannes Philipp Reiß  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101453 - Angewandte strategische Entscheidungen](#)  
[M-WIWI-101505 - Experimentelle Wirtschaftsforschung](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

**Competence Certificate**

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**

None

**Annotation**

The course is given every second fall term, e.g., WS2017/18, WS2019/20, ...

The retake exam is given in the summer term subsequent to the fall term where the course (lecture and final exam) is given.

## T

**6.259 Course: Price Management [T-WIWI-105946]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
Dr Paul Glenn

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101409 - Electronic Markets](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Exams				
WS 18/19	7900170	<a href="#">Price Management (Nachklausur SS 2018)</a>	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**

None

**Annotation**

The lecture is offered for the first time in summer term 2016.

## T

**6.260 Course: Price Negotiation and Sales Presentations [T-WIWI-102891]**

**Responsible:** Prof. Dr. Martin Klarmann  
Mark Schröder

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101487 - Sales Management](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each winter term	3

Events					
WS 18/19	2572198	<a href="#">Price Negotiation and Sales Presentations</a>	1 SWS	Block (B)	Klarmann, Schröder
Exams					
WS 18/19	7900148	<a href="#">Price Negotiation and Sales Presentations</a>		Prüfung (PR)	Klarmann

**Competence Certificate**

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015). The assessment consists of a presentation with a subsequent discussion totalling 25 minutes. Moreover learning contents are checked by realistic 30-minute price negotiations.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing & Sales ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)). Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed.

For further information please contact Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)).

Please note that only one of the following courses can be attended in the Sales Management module: Country Manager Simulation, Case Studies in Sales and Pricing, Price Negotiation and Sales Presentations or Digital Marketing and Sales in B2B.

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

## V

**Price Negotiation and Sales Presentations**

2572198, WS 18/19, 1 SWS, [Open in study portal](#)

**Block (B)**

**Learning Content**

At first, theoretical knowledge about the behavior in selling contexts is discussed. Then, in a practical part, students will apply this knowledge in their own price negotiations.

**Annotation**

- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in winter term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group ([marketing.iism.kit.edu](http://marketing.iism.kit.edu)) shortly before the lecture period in winter term starts.
- Please note that only one of the following courses can be chosen in the Sales Management Module: Country Manager Simulation, Case Studies in Sales and Pricing or Preisverhandlungen und Verkaufspräsentationen.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1,5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

**Workload**

The total workload for this course is approximately 45.0 hours. For further information see German version.

**Literature**

None

## T 6.261 Course: Pricing [T-WIWI-102883]

**Responsible:** Dr. Sven Feurer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101487 - Sales Management](#)  
[M-WIWI-101489 - Strategie, Kommunikation und Datenanalyse](#)  
[M-WIWI-101490 - Marketing Management](#)  
[M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2572157	<a href="#">Pricing</a>	2 SWS	Lecture (V)	Feurer
WS 18/19	2572169	<a href="#">Übung zu Pricing</a>	1 SWS	Practice (Ü)	Klingemann
Exams					
WS 18/19	7900138	<a href="#">Pricing</a>		Prüfung (PR)	Feurer
WS 18/19	7900286	<a href="#">Pricing</a>		Prüfung (PR)	Feurer

### Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

### Prerequisites

None

### Recommendation

None

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

V

### Pricing

2572157, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

This course addresses central elements and peculiarities of pricing goods and services. The topics are below others:

- Price demand functions
- Concept of the price elasticity of demand
- Key concepts of behavioral pricing
- Decision-making areas in pricing

### Annotation

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

### Workload

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

T

**6.262 Course: Process Engineering [T-BGU-101844]**

**Responsible:** Dr.-Ing. Harald Schneider  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101110 - Verfahrenstechnik im Baubetrieb](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	6241703	<a href="#">Verfahrenstechnik</a>	2 SWS	Lecture (V)	Schneider, Schlick, Görisch
Exams					
WS 18/19	8240101844	<a href="#">Process Engineering</a>		Prüfung (PR)	Schneider

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

## T

**6.263 Course: Process Mining [T-WIWI-109799]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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	1

Events					
SS 2019	2511204	<a href="#">Process Mining</a>	2 SWS	Lecture (V)	Oberweis
SS 2019	2511205	<a href="#">Exercise Process Mining</a>	1 SWS	Practice (Ü)	Oberweis, Ullrich
Exams					
SS 2019	7900048	<a href="#">Process Mining</a>		Prüfung (PR)	Oberweis

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**

None

**Annotation**

Former name (up to winter semester 2018/1019) "Workflow Management".

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

## V

**Process Mining**

2511204, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The area of process mining covers approaches which aim at deducing new knowledge on the basis of logfiles generated by information systems. Such information systems are e.g., workflow-management-systems which are used for an efficient control of processes in enterprises and organisations. The lecture introduces the foundations of processes and respective modeling and analysis techniques. In the following, the foundations of process mining and the three classical types of approaches - discovery, conformance and enhancement - will be taught. In addition to the theoretical basics, tools, application scenarios in practice and open research questions are covered as well.

**Workload**

Lecture 30h  
 Exercise 15h

Preparation of lecture 30h  
 Preparation of exercises 30h  
 Exam preparation 44h  
 Exam 1h

Total: 150h



**Literature**

- W. van der Aalst, H. van Kees: Workflow Management: Models, Methods and Systems, Cambridge, The MIT Press, 2002.
- W. van der Aalst: Process Mining: Data Science in Action. Springer, 2016.
- J. Carmona, B. van Dongen, A. Solti, M. Weidlich: Conformance Checking: Relating Processes and Models. Springer, 2018.
- A. Drescher, A. Koschmider, A. Oberweis: Modellierung und Analyse von Geschäftsprozessen: Grundlagen und Übungsaufgaben mit Lösungen. De Gruyter Studium, 2017.
- A. Oberweis: Modellierung und Ausführung von Workflows mit Petri-Netzen. Teubner-Reihe Wirtschaftsinformatik, B.G. Teubner Verlag, 1996.
- R. Peters, M. Nauroth: Process-Mining: Geschäftsprozesse: smart, schnell und einfach, Springer, 2019.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer, 2012.
- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer, 2012.
- 

Further literature is given in the lecture.

## T

**6.264 Course: Product and Innovation Management [T-WIWI-109864]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101490 - Marketing Management](#)  
[M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-101514 - Innovationsökonomik](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2571154	<a href="#">Product and Innovation Management</a>	2 SWS	Lecture (V)	Klarmann

**Competence Certificate**

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**

None

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-WIWI-102812 - Product and Innovation Management](#) must not have been started.

**Annotation**

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

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

## V

**Product and Innovation Management**

2571154, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

This course addresses topics around the management of new as well as existing products. After the foundations of product management, especially the product choice behavior of customers, students get to know in detail different steps of the innovation process. Another section regards the management of the existing product portfolio.

**Annotation**

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

**Workload**

Total effort for 3 credit points: approx. 90 hours

Presence time: 30 hours

Preparation and wrap-up of LV: 45.0 hours

Exam and exam preparation: 15.0 hours

**Literature**

Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

## T

**6.265 Course: Production and Logistics Controlling [T-WIWI-103091]**

**Responsible:** Alexander Rausch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-MACH-101263 - Einführung in die Logistik](#)  
[M-MACH-101277 - Materialfluss in Logistiksystemen](#)  
[M-MACH-101278 - Materialfluss in vernetzten Logistiksystemen](#)  
[M-MACH-101279 - Technische Logistik](#)  
[M-MACH-101280 - Logistik in Wertschöpfungsnetzwerken](#)  
[M-MACH-101282 - Globale Produktion und Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2500005	<a href="#">Produktions- und Logistikcontrolling</a>	2 SWS	Lecture (V)	Rausch
Exams					
WS 18/19	79-T-WIWI-103091	<a href="#">Production and Logistics Controlling</a>		Prüfung (PR)	Furmans
SS 2019	79-T-WIWI-103091	<a href="#">Production and Logistics Controlling</a>		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

**6.266 Course: Production and Logistics Management [T-WIWI-102632]**

**Responsible:** Prof. Dr. Frank Schultmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101412 - Industrielle Produktion III](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2581954	<a href="#">Production and Logistics Management</a>	2 SWS	Lecture (V)	Schultmann
SS 2019	2581955	<a href="#">Übung zu Produktions- und Logistikmanagement</a>	2 SWS	Practice (Ü)	Rudi, Zimmer
Exams					
WS 18/19	7981954	<a href="#">Production and Logistics Management</a>		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. Reexaminations are offered at every ordinary examination date.

**Prerequisites**

None

**Recommendation**

None

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

## V

**Production and Logistics Management**

2581954, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

This course covers central tasks and challenges of an operative production and logistics management. Students get to know the set-up and mode of operation of planning systems such as PPS-, ERP- and Advanced Planning Systems to cope with the accompanying planning tasks. Methods to solve these tasks will be explored with respect to manufacturing program planning, material and time. Alongside to MRP II, students will be introduced to integrated supply chain management approaches in PPS. Finally, commercially available PPS-, ERP- and Advanced Planning Systems will be presented and discussed.

**Learning Content**

This course covers central tasks and challenges of operational production and logistics management. Systems analytically, central planning tasks are discussed. Exemplary solution approaches for these tasks are presented. Further practical approaches are explained. Students get to know the set-up and mode of operation of planning systems such as PPS-, ERP- and Advanced Planning Systems to cope with the accompanying planning tasks. Alongside to MRP II, students will be introduced to integrated supply chain management approaches in Supply Chain Management.

**Workload**

Total effort required will account for approximately 165h (5.5 credits).

**Literature**

will be announced in the course

## T

**6.267 Course: Project Lab Cognitive Automobiles and Robots [T-WIWI-109985]**

**Responsible:** Prof. Dr.-Ing. Johann Marius Zöllner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each winter term	1

Events					
WS 18/19	2512501	<a href="#">Projektpraktikum Kognitive Automobile und Roboter</a>	3 SWS	Practical course (P)	Zöllner

**Competence Certificate**

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

- a practical work
- a presentation and
- a written seminar thesis

Details of the grade formation will be announced at the beginning of the course.

**Prerequisites**

None

## T

**6.268 Course: Project Lab Machine Learning [T-WIWI-109983]**

**Responsible:** Prof. Dr.-Ing. Johann Marius Zöllner  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each summer term	1

Events					
SS 2019	2512500	<a href="#">Projektpraktikum Maschinelles Lernen</a>	3 SWS	Practical course (P)	Zöllner
Exams					
SS 2019	7900086	<a href="#">Project Lab Machine Learning</a>		Prüfung (PR)	Zöllner

**Competence Certificate**

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

- a practical work
- a presentation and
- a written seminar thesis

Details of the grade formation will be announced at the beginning of the course.

**Prerequisites**

None

## T

**6.269 Course: Project Management [T-WIWI-103134]**

**Responsible:** Prof. Dr. Frank Schultmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101412 - Industrielle Produktion III](#)  
[M-WIWI-101471 - Industrielle Produktion II](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581963	<a href="#">Project Management</a>	2 SWS	Lecture (V)	Schultmann, Volk, Wiens, Schiel, Hübner, Schumacher
WS 18/19	2581964	<a href="#">Übung zu Project Management</a>	1 SWS	Practice (Ü)	Volk, Wiens, Hübner, Schumacher, Schiel
Exams					
WS 18/19	7981963	<a href="#">Project Management</a>		Prüfung (PR)	Schultmann

**Competence Certificate**

The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

**Prerequisites**

None

**Recommendation**

None

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

## V

**Project Management**

2581963, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

1. Introduction
2. Principles of Project Management
3. Project Scope Management
4. Time Management and Resource Scheduling
5. Cost Management
6. Quality Management
7. Risk Management
8. Stakeholder
9. Communication, Negotiation and Leadership
10. Project Controlling

**Workload**

The total workload for this course is approximately 105 hours. For further information see German version.

**Literature**

will be announced in the course

T

## 6.270 Course: Project Management in Construction and Real Estate Industry I [T-BGU-103432]

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101884 - Lean Management im Bauwesen](#)  
[M-BGU-101888 - Projektmanagement im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	6241701	<a href="#">Projektmanagement in der Bau- und Immobilienwirtschaft</a>	4 SWS	Lecture / Practice (VÜ)	Haghsheno, Hirschberger, Sittinger, Münzl
Exams					
WS 18/19	8240103432	<a href="#">Project Management in Construction and Real Estate Industry I</a>		Prüfung (PR)	Haghsheno

### Prerequisites

None

### Recommendation

None

### Annotation

None



T

## 6.271 Course: Project Management in Construction and Real Estate Industry II [T-BGU-103433]

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101884 - Lean Management im Bauwesen](#)  
[M-BGU-101888 - Projektmanagement im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	6241701	<a href="#">Projektmanagement in der Bau- und Immobilienwirtschaft</a>	4 SWS	Lecture / Practice (VÜ)	Haghsheno, Hirschberger, Sittinger, Münzl
Exams					
WS 18/19	8240103433	<a href="#">Project Management in Construction and Real Estate Industry II</a>		Prüfung (PR)	Haghsheno

### Prerequisites

None

### Recommendation

None

### Annotation

None

T

**6.272 Course: Project Paper Lean Construction [T-BGU-101007]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101884 - Lean Management im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each winter term	1

Events					
WS 18/19	6241901	<a href="#">Lean Construction</a>	4 SWS	Lecture / Practice (VÜ)	Haghsheno, Mitarbeiter/innen
Exams					
WS 18/19	8246101007	<a href="#">Project paper Lean Construction</a>		Prüfung (PR)	Haghsheno

**Competence Certificate**

project:  
report, appr. 10 pages, and  
presentation, appr. 10 min.

**Prerequisites**

none

**Recommendation**

none

**Annotation**

none

T

**6.273 Course: Project Studies [T-BGU-101847]**

**Responsible:** Prof. Dr.-Ing. Sascha Gentes  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101110 - Verfahrenstechnik im Baubetrieb](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	6243801	<a href="#">Projektstudien</a>	2 SWS	Lecture / Practice (VÜ)	Hauptenthal, Gentes
Exams					
WS 18/19	8240101847	<a href="#">Project Studies</a>		Prüfung (PR)	Gentes

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

## T

**6.274 Course: Public Management [T-WIWI-102740]**

**Responsible:** Prof. Dr. Berthold Wigger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101504 - Collective Decision Making](#)  
[M-WIWI-101511 - Vertiefung Finanzwissenschaft](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Events					
WS 18/19	2561127	<a href="#">Public Management</a>	3 SWS	Lecture / Practice (VÜ)	Wigger
Exams					
WS 18/19	790puma	<a href="#">Public Management</a>		Prüfung (PR)	Wigger
SS 2019	790puma	<a href="#">Public Management</a>		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 Management**

2561127, WS 18/19, 3 SWS, [Open in study portal](#)

**Lecture / Practice (VÜ)**

**Learning Content**

The lecture "Public Management" deals with the economic theory of public sector administration. It is divided into four parts. The first section gives an overview of the legal framework of governmental administration in the Federal Republic of Germany and introduces the classical theory of administration as developed by Weber. Part two studies concepts of public decision-making, which have a significant impact on the operation of public sector administrations and where one focus is on consistency problems of collective decision-making. The third chapter deals with efficiency problems arising in conventionally organized public administrations and companies. X-inefficiency, information and control problems, the isolated consideration of income-spending-relations as well as rent-seeking problems will be considered. In section four the concept of New Public Management, which is a new approach to public sector administration that is mainly based in contract theory, is introduced. Its foundations in institutional economics are developed, with a focus on the specific incentive structures in self-administered administrations. Finally, the achievements of New Public Management approaches are discussed.

**Workload**

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

**Literature****Elective literature:**

- Damkowski, W. and C. Precht (1995): Public Management; Kohlhammer
- Richter, R. and E.G. Furubotn (2003): Neue Institutionenökonomik; 3rd edition; Mohr
- Schedler, K. and I. Proeller (2003): New Public Management; 2nd edition; UTB
- Mueller, D.C. (2009): Public Choice III; Cambridge University Press
- Wigger, B.U. (2006): Grundzüge der Finanzwissenschaft; 2nd edition; Springer

T

**6.275 Course: Public Media Law [T-INFO-101311]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101217 - Öffentliches Wirtschaftsrecht](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	24082	<a href="#">Public Media Law</a>	2 SWS	Lecture (V)	Kirchberg
Exams					
WS 18/19	7500062	<a href="#">Public Media Law</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500058	<a href="#">Public Media Law</a>		Prüfung (PR)	Dreier, Matz

## T

**6.276 Course: Public Revenues [T-WIWI-102739]**

**Responsible:** Prof. Dr. Berthold Wigger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101511 - Vertiefung Finanzwissenschaft](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Events					
SS 2019	2560120	<a href="#">Public Revenues</a>	2 SWS	Lecture (V)	Wigger
SS 2019	2560121	<a href="#">Übung zu Öffentliche Einnahmen</a>	1 SWS	Practice (Ü)	Wigger
Exams					
WS 18/19	790oeff	<a href="#">Public Revenues</a>		Prüfung (PR)	Wigger
SS 2019	790oeff	<a href="#">Public Revenues</a>		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

**6.277 Course: Quality Management [T-MACH-102107]**

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

**Part of:** [M-MACH-101282 - Globale Produktion und Logistik](#)  
[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	<a href="#">Quality Management</a>	2 SWS	Lecture (V)	Lanza
Exams					
WS 18/19	76-T-MACH-102107	<a href="#">Quality Management</a>		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

**6.278 Course: Quantitative Methods in Energy Economics [T-WIWI-107446]**

**Responsible:** Dr. Dogan Keles  
Patrick Plötz

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101451 - Energiewirtschaft und Energiemärkte](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2581007	<a href="#">Quantitative Methods in Energy Economics</a>	2 SWS	Lecture (V)	Keles, Plötz
WS 18/19	2581008	<a href="#">Übung zu Quantitative Methods in Energy Economics</a>	1 SWS	Practice (Ü)	Plötz
Exams					
WS 18/19	7981007	<a href="#">Quantitative Methods in Energy Economics</a>		Prüfung (PR)	Fichtner

**Competence Certificate**

The assessment consists of a written 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

**Recommendation**

None

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

## V

**Quantitative Methods in Energy Economics**

2581007, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Energy economics makes use of many quantitative methods in exploration and analysis of data as well as in simulations and modelling. This lecture course aims at introducing students of energy economics into the application of quantitative methods and techniques as taught in elementary courses to real problems in energy economics. The focus is mainly on regression, simulation, time series analysis and related statistical methods as applied in energy economics.

**Workload**

The total workload for this course is approximately 120 hours. For further information see German version.

T

## 6.279 Course: Quantum Functional Devices and Semiconductor Technology [T-ETIT-100740]

**Responsible:** Prof. Dr.-Ing. Christian Koos

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

**Part of:** [M-MACH-101294 - Nanotechnologie](#)

[M-MACH-101295 - Optoelektronik und Optische Kommunikationstechnik](#)

[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung mündlich	3	1

Events					
SS 2019	2309476	<a href="#">Quantum Functional Devices and Semiconductor Technology</a>	2 SWS	Lecture (V)	Walther
Exams					
WS 18/19	7309476	<a href="#">Quantum Functional Devices and Semiconductor Technology</a>		Prüfung (PR)	Walther

### Prerequisites

none

## T

**6.280 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	<a href="#">Rail System Technology</a>	2 SWS	Lecture (V)	Gratzfeld
WS 18/19	2115996	<a href="#">Rail Vehicle Technology</a>	2 SWS	Lecture (V)	Gratzfeld
SS 2019	2115919	<a href="#">Rail System Technology</a>	2 SWS	Lecture (V)	Gratzfeld
SS 2019	2115996	<a href="#">Rail Vehicle Technology</a>	2 SWS	Lecture (V)	Gratzfeld
Exams					
WS 18/19	76-T-MACH-102143	<a href="#">Rail System Technology</a>		Prüfung (PR)	Gratzfeld
SS 2019	76-T-MACH-102143	<a href="#">Rail System Technology</a>		Prüfung (PR)	Gratzfeld

**Competence Certificate**

Oral examination

Duration: 45 minutes

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

**Prerequisites**

none

*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

## 6.281 Course: Real Estate Economics and Sustainability Part 1: Basics and Valuation [T-WIWI-102838]

**Responsible:** Prof. Dr David Lorenz

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101508 - Immobilienwirtschaft und Nachhaltigkeit](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

### Competence Certificate

The examination for the courses generally consist of a 60 minute written exam. A 20 minute oral exam is only offered after the second failure of the written exam. The exams for the respective parts (Part 1: Basics and Valuation and Part 2: Reporting and Rating) happen in the same semester in which the lectures take place.

Therefore, Part I currently only takes place in the winter semester and Part II takes place in the summer semester. In each semester there are two alternative dates for the exam and exams can be re-sat at any regular exam date.

### Prerequisites

None

### Recommendation

A combination with courses in the area of

- Finance
- Insurance
- Civil engineering and architecture

is recommended.

Particularly recommended is the successful completion of the following Bachelor-Modules:

- Real Estate Management I and II
- Design, Construction and Assessment of Green Buildings I and II

T

## 6.282 Course: Real Estate Economics and Sustainability Part 2: Reporting and Rating [T-WIWI-102839]

**Responsible:** Prof. Dr David Lorenz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101508 - Immobilienwirtschaft und Nachhaltigkeit](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

### Competence Certificate

It is currently unclear whether the course "Real Estate Economics and Sustainability Part 2: Reporting and Rating" can be offered in summer term 2018. It must therefore be expected that the corresponding module M-WIWI-101508 "Real Estate Management and Sustainability" can not be completed according to schedule.

The examination for the courses generally consist of a 60 minute written exam. A 20 minute oral exam is only offered after the second failure of the written exam. The exams for the respective parts (Part 1: Basics and Valuation and Part 2: Reporting and Rating) happen in the same semester in which the lectures take place.

Therefore, Part I currently only takes place in the winter semester and Part II takes place in the summer semester. In each semester there are two alternative dates for the exam and exams can be re-sat at any regular exam date.

### Prerequisites

None

### Recommendation

A combination with courses in the area of

- Finance
- Insurance
- Civil engineering and architecture

is recommended.

Particularly recommended is the successful completion of the following Bachelor-Modules:

- Real Estate Management I and II
- Design, Construction and Assessment of Green Buildings I and II



## T

**6.283 Course: Recommender Systems [T-WIWI-102847]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101410 - Business & Service Engineering](#)  
[M-WIWI-101470 - Data Science: Advanced CRM](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2540506	<a href="#">Recommender Systems</a>	2 SWS	Lecture (V)	Geyer-Schulz
SS 2019	2540507	<a href="#">Exercise Recommender Systems</a>	1 SWS	Practice (Ü)	Schweizer
Exams					
WS 18/19	7900149	<a href="#">Recommender Systems</a>		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**

None

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

## V

**Recommender Systems**

2540506, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

At first, an overview of general aspects and concepts of recommender systems and its relevance for service providers and customers is given. Next, different categories of recommender systems are discussed. This includes explicit recommendations like customer reviews as well as implicit services based on behavioral data. Furthermore, the course gives a detailed view of the current research on recommender systems at the Chair of Information Services and Electronic Markets.

**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**

Rakesh Agrawal, Tomasz Imielinski, and Arun Swami. Mining association rules between sets of items in large databases. In Sushil Jajodia Peter Buneman, editor, Proceedings of the ACM SIGMOD International Conference on Management of Data, volume 22, Washington, D.C., USA, Jun 1993. ACM, ACM Press.

Rakesh Agrawal and Ramakrishnan Srikant. Fast algorithms for mining association rules. In Proceedings of the 20th Very Large Databases Conference, Santiago, Chile, pages 487 – 499, Sep 1994.

Asim Ansari, Skander Essegaier, and Rajeev Kohli. Internet recommendation systems. *Journal of Marketing Research*, 37:363 – 375, Aug 2000.

Christopher Avery, Paul Resnick, and Richard Zweckhauser. The market for evaluations. *American Economic Review*, 89(3):564 – 584, 1999.

Ibrahim Cingil, Asuman Dogac, and Ayca Azgin. A Broader Approach to Personalization. *Communications of the ACM*, 43(8):136 – 141, Aug 2000.

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

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. A customer purchase incidence model applied to recommender services. In R. Kohavi et al., editor, Proceedings of the WebKDD 2001 – Mining log data across all customer touchpoints, volume 2356 of Lecture Notes in Artificial Intelligence LNAI, pages 25–47, Berlin, 2002. ACM, Springer-Verlag.

Jon M. Kleinberg. Authoritative sources in a hyperlinked environment. *JACM*, 46(5):604–632, sep 1999.

Joseph Konstan, Bradley Miller, David Maltz, Jonathan Herlocker, Lee Gordon, and John Riedl. GroupLens: Applying Collaborative Filtering to Usenet News. *Communications of the ACM*, 40(3):77 – 87, Mar 1997.

Paul Resnick, Neophytos Iacovou, Peter Bergstrom, and John Riedl. GroupLens: An open architecture for collaborative filtering of netnews. In Proceedings of the conference on Computer supported cooperative work, pages 175 – 186. ACM Press, 1994.

**Elective literature:**

Antoinette Alexander. The return of hardware: A necessary evil? *Accounting Technology*, 15(8):46 – 49, Sep 1999.

Christopher Avery and Richard Zeckhauser. Recommender systems for evaluating computer messages. *Communications of the ACM*, 40(3):88 – 89, Mar 1997.

Steven Bellman, Gerald Lohse, and Eric Johnson. Predictors of Online Buying Behavior. *Communications of the ACM*, 42(12):32 – 38, Dec 1999.

Thomas J. Blischok. Every transaction tells a story. *Chain Store Age Executive with Shopping Center Age*, 71(3):50–56, Mar 1995.

Hans Hermann Bock. *Automatische Klassifikation*. Vandenhoeck und Ruprecht, Göttingen, 1974.

Andrew S.C. Ehrenberg. *Repeat-Buying: Facts, Theory and Applications*. Charles Griffin & Company Ltd, London, 2 edition, 1988.

Wolfgang Gaul, Andreas Geyer-Schulz, Michael Hahsler, and Lars Schmidt-Thieme. eMarketing mittels Recommendersystemen. *Marketing ZFP*, 24:47 – 55, 2002.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. myvu: a next generation recommender system based on observed consumer behavior and interactive evolutionary algorithms. In W. Gaul, O. Opitz, and M. Schader, editors, *Data Analysis – Scientific Modeling and Practical Applications*, volume 18 of Studies in Classification, Data Analysis and Knowledge Organization, pages 447 – 457, Heidelberg, Germany, 2000. Springer.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. Educational and scientific recommender systems: Designing the information channels of the virtual university. *International Journal of Engineering Education*, 17(2):153 – 163, 2001.

Mark-Edward Grey. *Recommendersysteme auf Basis linearer Regression*, 2004.

John A. Hartigan. *Clustering Algorithms*. John Wiley and Sons, New York, 1975.

Kevin Kelly. *New Rules for the New Economy: 10 Radical Strategies for a Connected World*. Viking, 1998.

Taek-Hun Kim, Young-Suk Ryu, Seok-In Park, and Sung-Bong Yang. An improved recommendation algorithm in collaborative filtering. In K. Bauknecht, A. Min Tjoa, and G. Quirchmayr, editors, *E-Commerce and Web Technologies, Third International Conference, Aix-en-Provence, France*, volume 2455 of Lecture Notes in Computer Science, pages 254–261, Berlin, Sep 2002. Springer-Verlag.

Ron Kohavi, Brij Masand, Myra Spiliopoulou, and Jaideep Srivastava. Web mining. *Data Mining and Knowledge Discovery*, 6:5 – 8, 2002.

G. S. Maddala. *Introduction to Econometrics*. John Wiley, Chichester, 3 edition, 2001.

Andreas Mild and Martin Natter. Collaborative filtering or regression models for Internet recommendation systems? *Journal of Targeting, Measurement and Analysis for Marketing*, 10(4):304 – 313, Jan 2002.

Andreas Mild and Thomas Reutterer. An improved collaborative filtering approach for predicting cross-category purchases based on binary market basket data. *Journal of Retailing & Consumer Services*, 10(3):123–133, may 2003.

Paul Resnick and Hal R. Varian. Recommender Systems. *Communications of the ACM*, 40(3):56 – 58, Mar 1997.

Badrul M. Sarwar, Joseph A. Konstan, Al Borchers, Jon Herlocker, Brad Miller, and John Riedl. Using filtering agents to improve prediction quality in the groupLens research collaborative filtering system. In Proceedings of ACM Conference on Computer-Supported Cooperative Work, Social Filtering, Social Influences, pages 345 – 354, New York, 1998. ACM Press.

J. Ben Schafer, Joseph Konstan, and Jon Riedl. Recommender Systems in E-commerce. In Proceedings of the 1st ACM conference on Electronic commerce, pages 158 – 166, Denver, Colorado, USA, Nov 1999. ACM.

Uendra Shardanand and Patti Maes. Social information filtering: Algorithms for automating "word of mouth". In Proceedings of ACM SIGCHI, volume 1 of Papers: Using the Information of Others, pages 210 – 217. ACM, 1995.

T

**6.284 Course: Regulation Theory and Practice [T-WIWI-102712]**

**Responsible:** Prof. Dr. Kay Mitusch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101406 - Netzwerkökonomie](#)  
[M-WIWI-101451 - Energiewirtschaft und Energiemärkte](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	see Annotations	2

Exams			
WS 18/19	7900272	<a href="#">Regulation Theory and Practice</a>	Prüfung (PR) Mitusch

**Competence Certificate**

The lecture is not offered for an indefinite period of time.

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**

Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics and Principal-Agent- or Contract theories. Prior attendance of the lecture *Competition in Networks* [26240] is helpful in any case but not considered a formal precondition.

**Annotation**

The lecture is not offered for an indefinite period of time.

T

## 6.285 Course: Risk Management in Industrial Supply Networks [T-WIWI-102826]

**Responsible:** Dr. Marcus Wiens  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101412 - Industrielle Produktion III](#)  
[M-WIWI-101471 - Industrielle Produktion II](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581992	<a href="#">Risk Management in Industrial Supply Networks</a>	2 SWS	Lecture (V)	Wiens
WS 18/19	2581993	<a href="#">Übung zu Risk Management in Industrial Supply Networks</a>	1 SWS	Practice (Ü)	Klein, Wiens
Exams					
WS 18/19	7981992	<a href="#">Risk Management in Industrial Supply Networks</a>		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. Reexaminations are offered at every ordinary examination date.

### Prerequisites

None

### Recommendation

None

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

V

## Risk Management in Industrial Supply Networks

2581992, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

- supply chain management: introduction, aims and trends
- industrial risk management
- definition und characterization of risks: sourcing and procurement, demand, production and infrastructure
- identification of risks
- risk controlling
- risk assessment and decision support tools
- risk prevention and mitigation strategies
- robust design of supply chain networks
- supplier selection
- capacity management
- business continuity management

### Workload

The total workload for this course is approximately 105 hours. For further information see German version.

### Literature

will be announced in the course

## T

**6.286 Course: Roadmapping [T-WIWI-102853]**

**Responsible:** Dr. Daniel Jeffrey Koch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101488 - Entrepreneurship \(EnTechnon\)](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	2545102	<a href="#">Roadmapping</a>	2 SWS	Seminar (S)	Koch
Exams					
SS 2019	7900055	<a href="#">Roadmapping</a>		Prüfung (PR)	Weissenberger-Eibl

**Competence Certificate**

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

**Prerequisites**

None

**Recommendation**

Prior attendance of the course *Innovation Management* [2545015] is recommended.

**Annotation**

See German version.

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

## V

**Roadmapping**

2545102, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Learning Content**

Roadmapping is a method used to support innovation decisions in the early phase of innovation management. The roadmapping process addresses the procedure of constructing roadmaps which can then be assessed. Roadmapping provides structured and graphical visualizations of preferably future-oriented topics which have innovation potentials. The benefits of the roadmapping method lie in the structured bundling of both technology- and market-driven individual topics and the joint setting of priorities and processes to achieve predetermined corporate targets. As a rule, roadmaps represent a consensus reached by the people involved in their compilation. For this reason, roadmaps are suited to the designation and initial prioritization of emerging technologies and corresponding development projects.

**Workload**

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

## T

**6.287 Course: Safety Engineering [T-MACH-105171]**

**Responsible:** Hans-Peter Kany  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101263 - Einführung in die Logistik](#)  
[M-MACH-101279 - Technische Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	2

Events					
WS 18/19	2117061	<a href="#">Safety Engineering</a>	2 SWS	Lecture (V)	Kany
Exams					
WS 18/19	7600020	<a href="#">Safety Engineering</a>		Prüfung (PR)	Kany
WS 18/19	76-T-MACH-105171	<a href="#">Safety Engineering</a>		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

**Safety Engineering**

2117061, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description****Media:**

presentations

**Learning Content**

The course provides basic knowledge of safety engineering. In particular the basics of health at the working place, job safety in Germany, national and European safety rules and the basics of safe machine design are covered. The implementation of these aspects will be illustrated by examples of material handling and storage technology. This course focuses on: basics of safety at work, safety regulations, basic safety principles of machine design, protection devices, system security with risk analysis, electronics in safety engineering, safety engineering for storage and material handling technique, electrical dangers and ergonomics. So, mainly, the technical measures of risk reduction in specific technical circumstances are covered.

**Annotation**

none

**Workload**

regular attendance: 21 hours  
 self-study: 99 hours

**Literature**

Defren/Wickert: Sicherheit für den Maschinen- und Anlagenbau, Druckerei und Verlag: H. von Ameln, Ratingen, ISBN: 3-926069-06-6



## T

**6.288 Course: Sales Management and Retailing [T-WIWI-102890]**

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101487 - Sales Management](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2572156	<a href="#">Sales Management and Retailing</a>	2 SWS	Lecture (V)	Klarmann
Exams					
WS 18/19	7900080	<a href="#">Sales Management and Retailing</a>		Prüfung (PR)	Klarmann
WS 18/19	7900125	<a href="#">Sales Management and Retailing</a>		Prüfung (PR)	Klarmann

**Competence Certificate**

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The lecture is compulsory for the module Sales Management. It is taught in English.  
 For further information please contact Marketing and Sales Research Group ([marketing.iism.kit.edu](mailto:marketing.iism.kit.edu)).

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

## V

**Sales Management and Retailing**

2572156, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The aim of the course "Sales Management and Retailing" is on the one hand to give insights into the challenging realization of a successful sales management and on the other hand to discuss peculiarities of retailing contexts. The contents are below others:

- Customer relationship management (word-of-mouth-analysis, key account management, loyalty programs, complain management etc.)
- Retail marketing (trends, point of sale design etc.)
- Retailer-producer relationships

**Annotation**

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

This course is held in English.

**Workload**

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

**Literature**

Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

## T

**6.289 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-101279 - Technische Logistik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	2118087	<a href="#">Selected Applications of Technical Logistics</a>	3 SWS	Lecture (V)	Mittwollen, Milushev
Exams					
WS 18/19	76-T-MACH-102160	<a href="#">Selected Applications of Technical Logistics</a>		Prüfung (PR)	Mittwollen
SS 2019	76-T-MACH-102160	<a href="#">Selected Applications of Technical Logistics</a>		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

## 6.290 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-101279 - 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

## 6.291 Course: Selected Issues in Critical Information Infrastructures [T-WIWI-109251]

**Responsible:** Prof. Dr. Ali Sunyaev

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each summer term	1

Exams				
SS 2019	7900114	<a href="#">Selected Issues in Critical Information Infrastructures</a>	Prüfung (PR)	Sunyaev

### Competence Certificate

non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015). Details will be announced in the respective course.

### Prerequisites

None.

T

**6.292 Course: Selected legal issues of Internet law [T-INFO-108462]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Recht des Geistigen Eigentums](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	24821	<a href="#">Selected legal issues of Internet law</a>	2 SWS	Colloquium (KOL)	Dreier
Exams					
SS 2019	7500226	<a href="#">Selected legal issues of Internet law</a>		Prüfung (PR)	Dreier

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The course [T-INFO-101307 - Internet Law](#) must not have been started.

T

## 6.293 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-101290 - BioMEMS](#)  
[M-MACH-101292 - Mikrooptik](#)  
[M-MACH-101293 - Mikrosystemtechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each term	1

### Competence Certificate

Oral examination

### Prerequisites

none

## T

**6.294 Course: Semantic Web Technologies [T-WIWI-102874]**

**Responsible:** Prof. Dr. York Sure-Vetter  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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	1

Events					
SS 2019	2511310	<a href="#">Semantic Web Technologies</a>	2 SWS	Lecture (V)	Sure-Vetter, Acosta Deibe, Käfer
SS 2019	2511311	<a href="#">Exercises to Semantic Web Technologies</a>	1 SWS	Practice (Ü)	Sure-Vetter, Acosta Deibe, Käfer
Exams					
WS 18/19	7900022	<a href="#">Semantic Web Technologies</a>		Prüfung (PR)	Sure-Vetter
SS 2019	7900028	<a href="#">Semantic Web Technologies</a>		Prüfung (PR)	Sure-Vetter

**Competence Certificate**

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation or of an oral exam (20 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

**Recommendation**

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required.

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

## V

**Semantic Web Technologies**

2511310, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

The aim of the Semantic Web is to make the meaning (semantics) of data on the web usable in intelligent systems, e.g. in e-commerce and internet portals

Central concepts are the representation of knowledge in form of RDF and ontologies, the access via Linked Data, as well as querying the data by using SPARQL. This lecture provides the foundations of knowledge representation and processing for the corresponding technologies and presents example applications.

**Learning Content**

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications



**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**

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

**Additional Literature**

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. <http://www.w3.org/TR/webarch/>
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

**Exercises to Semantic Web Technologies**2511311, SS 2019, 1 SWS, [Open in study portal](#)**Practice (Ü)****Description**

Multiple exercises are held that capture the topics, held in the lecture Semantic Web Technologies, 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:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

**Workload**

The total workload for the lecture Semantic Web Technologies is given out on the description of the lecture.

**Literature**

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

**Additional Literature**

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. <http://www.w3.org/TR/webarch/>
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

## T

**6.295 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-101808 - Seminarmodul](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2151643	<a href="#">Seminar Data Mining in Production</a>	2 SWS	Seminar (S)	Lanza
SS 2019	2151643	<a href="#">Seminar Data Mining in Production</a>	2 SWS	Seminar (S)	Lanza
Exams					
WS 18/19	76-T-MACH-108737	<a href="#">Seminar Data-Mining in Production</a>		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

**6.296 Course: Seminar in Business Administration A (Master) [T-WIWI-103474]****Responsible:** Professorenschaft des Fachbereichs Betriebswirtschaftslehre**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2500002	<a href="#">Automated Financial Advisory</a>	2 SWS	Seminar (S)	Ulrich
WS 18/19	2530293	<a href="#">Seminar in Finance (Master)</a>	2 SWS	Seminar (S)	Ruckes, Hoang, Luedecke, Strych, Benz, Scholz-Daneshgari, Schubert
WS 18/19	2530374	<a href="#">Applied Risk and Asset Management</a>	2 SWS	Seminar (S)	Ulrich
WS 18/19	2540510	<a href="#">Master Seminar in Information Engineering and Management</a>	2 SWS	Seminar (S)	Geyer-Schulz, Ball, Schweigert, Schweizer
WS 18/19	2540557	<a href="#">Literature Review Seminar: Information Systems and Service Design</a>	SWS	Seminar (S)	Mädche, Augenstein
WS 18/19	2540559	<a href="#">Digital Service Design Seminar</a>	3 SWS	Seminar (S)	Mädche
WS 18/19	2572181	<a href="#">Seminar in Marketing und Vertrieb (Master)</a>	SWS	Seminar (S)	Klarmann
WS 18/19	2573010	<a href="#">Seminar Human Resources and Organizations</a>	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 18/19	2573011	<a href="#">Seminar Human Resource Management</a>	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 18/19	2581976	<a href="#">Seminar in Production and Operations Management I</a>	2 SWS	Seminar (S)	Glöser-Chahoud, Schultmann
WS 18/19	2581977	<a href="#">Seminar in Production and Operations Management II</a>	2 SWS	Seminar (S)	Volk, Schultmann
WS 18/19	2581978	<a href="#">Seminar in Production and Operations Management III</a>	2 SWS	Seminar (S)	Wiens, Schultmann
WS 18/19	2581980	<a href="#">Seminar Energiewirtschaft II</a>	2 SWS	Seminar (S)	Keles
WS 18/19	2581981	<a href="#">Seminar Energiewirtschaft III</a>	2 SWS	Seminar (S)	Ardone
SS 2019	2400121	<a href="#">Interactive Analytics Seminar</a>	2 SWS	Proseminar (PS)	Beigl, Mädche, Pescara, Toreini
SS 2019	2500006	<a href="#">Seminar Human Resource Management (Master)</a>	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2500007	<a href="#">Seminar Human Resources and Organizations (Master)</a>	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2530372	<a href="#">Automated Financial Advisory</a>	2 SWS	Seminar (S)	Ulrich
SS 2019	2530374	<a href="#">Applied Risk and Asset Management</a>	2 SWS	Seminar (S)	Ulrich
SS 2019	2530580	<a href="#">Seminar in Finance (Master, Prof. Uhrig-Homburg)</a>	2 SWS	Seminar (S)	Uhrig-Homburg, Hofmann, Reichenbacher, Eska
SS 2019	2540510	<a href="#">Masterseminar Big Data Mining in Finance</a>	2 SWS	Seminar (S)	Geyer-Schulz
SS 2019	2550493	<a href="#">Hospital Management</a>	2 SWS	Block (B)	Hansis
SS 2019	2577915	<a href="#">Strategische Unternehmensführung</a>	2 SWS	Seminar (S)	Klopfer

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
<b>Exams</b>					
WS 18/19	7900008	Applied Risk and Asset Management		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	7900037	Analyzing and Evaluating Innovation Processes		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900041	Current Issues in Innovation Management		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900106	Hospital Management		Prüfung (PR)	Nickel
WS 18/19	7900133	Digital Service Design Seminar		Prüfung (PR)	Mädche
WS 18/19	7900159	Seminar in Marketing and Sales		Prüfung (PR)	Klarmann
WS 18/19	7900163	Seminar Human Resource Management (Master)		Prüfung (PR)	Nieken
WS 18/19	7900164	Seminar Human Resources and Organizations (Master)		Prüfung (PR)	Nieken
WS 18/19	7900165	Seminar Digital Experience and Participation		Prüfung (PR)	Weinhardt
WS 18/19	7900184	Seminar in Finance (Master)		Prüfung (PR)	Ruckes
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	7900237	Case Studies Seminar: Innovation Management		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900239	Technologies for Innovation Management		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900252	Seminar in Business Administration A (Master)		Prüfung (PR)	Satzger
WS 18/19	7900267	Seminar in Business Administration A (Master)		Prüfung (PR)	Satzger
WS 18/19	7900283	Seminar Electronic Markets and User Behavior		Prüfung (PR)	Weinhardt
WS 18/19	79-2579905-02	Special Topics in Management Accounting (Master)		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	7900008	Hospital Management		Prüfung (PR)	Nickel
SS 2019	7900017	Soziale Innovationen unter die Lupe genommen		Prüfung (PR)	Weissenberger-Eibl
SS 2019	7900055	Roadmapping		Prüfung (PR)	Weissenberger-Eibl
SS 2019	7900093	Seminar in Business Administration A		Prüfung (PR)	Weinhardt
SS 2019	7900127	Seminar in Business Administration A (Master)		Prüfung (PR)	Uhrig-Homburg
SS 2019	7900242	Applied Risk and Asset Management		Prüfung (PR)	Ulrich

SS 2019	7900284	<a href="#">Digital Transformation and Business Models</a>	Prüfung (PR)	Weissenberger-Eibl
SS 2019	79-2579904-02	<a href="#">Seminar Management Accounting (Master)</a>	Prüfung (PR)	Wouters
SS 2019	79-2579905-02	<a href="#">Seminar Special Topics in Management Accounting (Master)</a>	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:*



### Automated Financial Advisory

2500002, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)**

### Learning Content

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

### Workload

The total workload for this course is approximately 90 hours.

### Literature

Literature will be distributed during the first lecture.



### Master Seminar in Information Engineering and Management

2540510, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)**

### Learning Content

The seminar serves on one hand to improve the scientific working skills. On the other hand, the student should work intensively on a given topic and develop a scientific work, that is based on a profound literature research.

The seminar can also be a implementation of software for a scientific problem (e.g. Business Games/dynamic systems) according to the individual focus in the current semester. The software has to be well documented. The written elaboration covers a description and explanation of the software as well as a discussion about limits and extensibility. Furthermore the software must be deployable und shall be presented on the infrastructure stack of the chair. An implementation of a software has to examine the scientific state of the art in a critical way, too.

A concrete description of the current topics is announced in time for the begin of the application stage.

### Workload

The total workload for this course is approximately 90 hours (3 ECTS). Depending on the realization of the work, the times may vary. The main focus is always on working independently.

**Digital Service Design Seminar**2540559, WS 18/19, 3 SWS, [Open in study portal](#)**Seminar (S)****Description**

Contemporary trends of every increasing digitalization in businesses lead to new challenges and fusion of technologies blurring the lines between the digital, physical and biological spheres, thereby calling for a new approaches for corporate management. Recently, physician Michio Kaku put it like the following: "The destiny of computers – like other mass technologies like electricity, paper, and running water- is to become invisible, that is, to disappear into the fabric of our lives, to be everywhere and nowhere, silently and seamlessly carrying out our wishes." Michio Kaku (2016)

In the Practical Seminar Digital Service Design students address a real-world challenge in businesses and apply digital service design practices and tools. Furthermore, during the time of the seminar the students prototypical implement a running digital service.

Real-world challenges will vary over time. This time, the challenges are from the domain of **Future Corporate Management**. The practical seminar is carried out in close cooperation with SAP SE and leverages state-of-the-art digital platforms for prototyping.

**Learning Content**

- Foundations
- Digital Service Design Challenges in Future Corporate Management
- Basics of Digital Service Design practices and tools
- Prototyping and development Digital Services
- Delivering digital service prototypes

**Seminar in Marketing und Vertrieb (Master)**2572181, 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 master thesis. Central aspects are identification of relevant literature sources, systematization of the field, working out central insights, writing comprehensively, and identification of research gaps.

**Annotation**

Students interested in master 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](mailto: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

**Seminar Human Resource Management (Master)**

2500006, 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 Human Resources and Organizations (Master)**

2500007, 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

**Automated Financial Advisory**

2530372, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)****Learning Content**

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

**Workload**

The total workload for this course is approximately 90 hours.

**Literature**

Literature will be distributed during the first lecture.

**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.

**Masterseminar Big Data Mining in Finance**

2540510, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)****Literature****Literature:**

- Goodfellow, I., Bengio, Y., & Courville, A. (2017). Deep Learning. MIT Press.
- Jean, N., Burke, M., Xie, M., Davis, W. M., Lobell, D. B., & Ermon, S. (2016). Combining satellite imagery and machine learning to predict poverty. *Science*, 353(6301), 790-794.
- LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. *Nature*, 521(7553), 436-444.
- Leskovec, J., Rajaraman, A., & Ullman, J. D. (2014). Mining of Massive Datasets. Cambridge University Press.
- Lopez De Prado, M. (2018). Advances in Financial Machine Learning. John Wiley & Sons

**Hospital Management**

2550493, SS 2019, 2 SWS, [Open in study portal](#)

**Block (B)****Description**

The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

**Learning Content**

The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

**Annotation**

It is planned to offer the course every semester.

**Workload**

The total workload for this course is approximately 90 hours.

**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 prediscussed. 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

**6.297 Course: Seminar in Business Administration B (Master) [T-WIWI-103476]****Responsible:** Professorenschaft des Fachbereichs Betriebswirtschaftslehre**Organisation:** KIT Department of Economics and Management**Part of:** M-WIWI-101808 - Seminarmodul  
M-WIWI-104900 - Betriebswirtschaftslehre

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2500002	Automated Financial Advisory	2 SWS	Seminar (S)	Ulrich
WS 18/19	2530293	Seminar in Finance (Master)	2 SWS	Seminar (S)	Ruckes, Hoang, Luedecke, Strych, Benz, Scholz-Daneshgari, Schubert
WS 18/19	2530374	Applied Risk and Asset Management	2 SWS	Seminar (S)	Ulrich
WS 18/19	2540510	Master Seminar in Information Engineering and Management	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	2540559	Digital Service Design Seminar	3 SWS	Seminar (S)	Mädche
WS 18/19	2572181	Seminar in Marketing und Vertrieb (Master)	SWS	Seminar (S)	Klarmann
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	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	2500006	Seminar Human Resource Management (Master)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2500007	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2530372	Automated Financial Advisory	2 SWS	Seminar (S)	Ulrich
SS 2019	2530374	Applied Risk and Asset Management	2 SWS	Seminar (S)	Ulrich
SS 2019	2530580	Seminar in Finance (Master, Prof. Uhrig-Homburg)	2 SWS	Seminar (S)	Uhrig-Homburg, Hofmann, Reichenbacher, Eska
SS 2019	2540510	Masterseminar Big Data Mining in Finance	2 SWS	Seminar (S)	Geyer-Schulz
SS 2019	2550493	Hospital Management	2 SWS	Block (B)	Hansis
SS 2019	2577915	Strategische Unternehmensführung	2 SWS	Seminar (S)	Klopfer
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
<b>Exams</b>					
WS 18/19	7500175	Seminar: Energy Informatics		Prüfung (PR)	Wagner
WS 18/19	7900008	Applied Risk and Asset Management		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	7900037	Analyzing and Evaluating Innovation Processes		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900041	Current Issues in Innovation Management		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900106	Hospital Management		Prüfung (PR)	Nickel
WS 18/19	7900133	Digital Service Design Seminar		Prüfung (PR)	Mädche
WS 18/19	7900159	Seminar in Marketing and Sales		Prüfung (PR)	Klarmann
WS 18/19	7900163	Seminar Human Resource Management (Master)		Prüfung (PR)	Nieken
WS 18/19	7900164	Seminar Human Resources and Organizations (Master)		Prüfung (PR)	Nieken
WS 18/19	7900165	Seminar Digital Experience and Participation		Prüfung (PR)	Weinhardt
WS 18/19	7900184	Seminar in Finance (Master)		Prüfung (PR)	Ruckes
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	7900237	Case Studies Seminar: Innovation Management		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900239	Technologies for Innovation Management		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900255	Seminar in Business Administration B (Master)		Prüfung (PR)	Satzger
WS 18/19	7900283	Seminar Electronic Markets and User Behavior		Prüfung (PR)	Weinhardt
WS 18/19	79-2579905-02	Special Topics in Management Accounting (Master)		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	7900008	Hospital Management		Prüfung (PR)	Nickel
SS 2019	7900017	Soziale Innovationen unter die Lupe genommen		Prüfung (PR)	Weissenberger-Eibl
SS 2019	7900055	Roadmapping		Prüfung (PR)	Weissenberger-Eibl
SS 2019	7900093	Seminar in Business Administration A		Prüfung (PR)	Weinhardt
SS 2019	7900127	Seminar in Business Administration A (Master)		Prüfung (PR)	Uhrig-Homburg
SS 2019	7900242	Applied Risk and Asset Management		Prüfung (PR)	Ulrich
SS 2019	7900284	Digital Transformation and Business Models		Prüfung (PR)	Weissenberger-Eibl
SS 2019	79-2579904-02	Seminar Management Accounting (Master)		Prüfung (PR)	Wouters

SS 2019	79-2579905-02	<b>Seminar Special Topics in Management Accounting (Master)</b>	Prüfung (PR)	Wouters
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### Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) 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:*



### Automated Financial Advisory

2500002, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)**

### Learning Content

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

### Workload

The total workload for this course is approximately 90 hours.

### Literature

Literature will be distributed during the first lecture.



### Master Seminar in Information Engineering and Management

2540510, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)**

### Learning Content

The seminar serves on one hand to improve the scientific working skills. On the other hand, the student should work intensively on a given topic and develop a scientific work, that is based on a profound literature research.

The seminar can also be a implementation of software for a scientific problem (e.g. Business Games/dynamic systems) according to the individual focus in the current semester. The software has to be well documented. The written elaboration covers a description and explanation of the software as well as a discussion about limits and extensibility. Furthermore the software must be deployable und shall be presented on the infrastructure stack of the chair. An implementation of a software has to examine the scientific state of the art in a critical way, too.

A concrete description of the current topics is announced in time for the begin of the application stage.

### Workload

The total workload for this course is approximately 90 hours (3 ECTS). Depending on the realization of the work, the times may vary. The main focus is always on working independently.



### Digital Service Design Seminar

2540559, WS 18/19, 3 SWS, [Open in study portal](#)

**Seminar (S)**

**Description**

Contemporary trends of every increasing digitalization in businesses lead to new challenges and fusion of technologies blurring the lines between the digital, physical and biological spheres, thereby calling for a new approaches for corporate management. Recently, physician Michio Kaku put it like the following: "The destiny of computers – like other mass technologies like electricity, paper, and running water- is to become invisible, that is, to disappear into the fabric of our lives, to be everywhere and nowhere, silently and seamlessly carrying out our wishes." Michio Kaku (2016)

In the Practical Seminar Digital Service Design students address a real-world challenge in businesses and apply digital service design practices and tools. Furthermore, during the time of the seminar the students prototypical implement a running digital service.

Real-world challenges will vary over time. This time, the challenges are from the domain of **Future Corporate Management**. The practical seminar is carried out in close cooperation with SAP SE and leverages state-of-the-art digital platforms for prototyping.

**Learning Content**

- Foundations
- Digital Service Design Challenges in Future Corporate Management
- Basics of Digital Service Design practices and tools
- Prototyping and development Digital Services
- Delivering digital service prototypes

**Seminar in Marketing und Vertrieb (Master)**

2572181, 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 master thesis. Central aspects are identification of relevant literature sources, systematization of the field, working out central insights, writing comprehensively, and identification of research gaps.

**Annotation**

Students interested in master 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](mailto: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

**Seminar Human Resource Management (Master)**2500006, 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 Human Resources and Organizations (Master)**2500007, 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

**Automated Financial Advisory**2530372, SS 2019, 2 SWS, [Open in study portal](#)**Seminar (S)****Learning Content**

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

**Workload**

The total workload for this course is approximately 90 hours.

**Literature**

Literature will be distributed during the first lecture.

**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.

**Masterseminar Big Data Mining in Finance**2540510, SS 2019, 2 SWS, [Open in study portal](#)**Seminar (S)****Literature****Literature:**

- Goodfellow, I., Bengio, Y., & Courville, A. (2017). *Deep Learning*. MIT Press.
- Jean, N., Burke, M., Xie, M., Davis, W. M., Lobell, D. B., & Ermon, S. (2016). Combining satellite imagery and machine learning to predict poverty. *Science*, 353(6301), 790-794.
- LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. *Nature*, 521(7553), 436-444.
- Leskovec, J., Rajaraman, A., & Ullman, J. D. (2014). *Mining of Massive Datasets*. Cambridge University Press.
- Lopez De Prado, M. (2018). *Advances in Financial Machine Learning*. John Wiley & Sons

**Hospital Management**2550493, SS 2019, 2 SWS, [Open in study portal](#)**Block (B)****Description**

The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

**Learning Content**

The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

**Annotation**

It is planned to offer the course every semester.

**Workload**

The total workload for this course is approximately 90 hours.

**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 prediscussed. 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

**6.298 Course: Seminar in Economic Policy [T-WIWI-102789]**

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101514 - Innovationsökonomik](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2512312	<a href="#">Cooperation seminar: Innovative applications on single board computers as well as their economic relevance</a>	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Ott, Weller, Bälz
Exams					
WS 18/19	7900094	<a href="#">Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON</a>		Prüfung (PR)	Sure-Vetter, Ott

**Competence Certificate**

The assessment is carried out through a term paper within the range of 12 to 15 pages, a presentation of the results of the work in a seminar meeting, and active participation in the discussions of the seminar meeting (§ 4 (2), 3 SPO).

The final grade is composed of the weighted graded examinations. (Essay 50%, 40% oral presentation, active participation 10%).

**Prerequisites**

None

**Recommendation**

At least one of the lectures "Theory of Endogenous Growth" or "Innovation Theory and Policy" should be attended in advance, if possible.

*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

## T

**6.299 Course: Seminar in Economics A (Master) [T-WIWI-103478]****Responsible:** Professorenschaft des Fachbereichs Volkswirtschaftslehre**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101808 - 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	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	2521310	Advanced Topics in Econometrics	2 SWS	Seminar (S)	Schientle, Chen, Görden
SS 2019	2560282	Wirtschaftspolitisches Seminar	2 SWS	Seminar (S)	Ott, Assistenten
SS 2019	2560552	Topics in Political Economics (Master)	2 SWS	Seminar (S)	Szech, Maus
SS 2019	2560554	Morals and Social Behavior (Master)	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	7900257	Date Mining		Prüfung (PR)	Nakhaezadeh
WS 18/19	7900260	Big Data Mining in Finance. Seminar in Economics A (Master)		Prüfung (PR)	Schientle
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	79sefi2	Seminar in Economics A (Master)		Prüfung (PR)	Wigger
SS 2019	7900059	Seminar in Economics B (Master)		Prüfung (PR)	Szech
SS 2019	7900060	Seminar in Economics B (Master)		Prüfung (PR)	Szech
SS 2019	79sefi2	Seminar in Economics A (Master)		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

V

### Topics in Experimental Economics

Seminar (S)

2520405, WS 18/19, SWS, [Open in study portal](#)**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 on Political Economics**

2560140, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)****Workload**

About 90 hours.

**Advanced Topics in Econometrics**

2521310, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)****Annotation**

The course will be offered in English.

**Topics in Political Economics (Master)**

2560552, 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](mailto: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.

V

**Morals and Social Behavior (Master)**

2560554, 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](mailto:david.huber@kit.edu)).

**Workload**

About 90 hours.

## T

**6.300 Course: Seminar in Economics B (Master) [T-WIWI-103477]****Responsible:** Professorenschaft des Fachbereichs Volkswirtschaftslehre**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2512312	<a href="#">Cooperation seminar: Innovative applications on single board computers as well as their economic relevance</a>	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Ott, Weller, Bälz
WS 18/19	2520405	<a href="#">Topics in Experimental Economics</a>	SWS	Seminar (S)	Reiß, Hofmann, Mitarbeiter
WS 18/19	2560140	<a href="#">Topics on Political Economics</a>	2 SWS	Seminar (S)	Szech, Engel
WS 18/19	2560141	<a href="#">Morals &amp; Social Behavior</a>	2 SWS	Seminar (S)	Szech, Huber
WS 18/19	2560400	<a href="#">Seminar in Macroeconomics</a>	2 SWS	Seminar (S)	Brumm, Krause, Pegorari
WS 18/19	2561208	<a href="#">Ausgewählte Aspekte der europäischen Verkehrsplanung und -modellierung</a>	1 SWS	Seminar (S)	Szimba
SS 2019	2521310	<a href="#">Advanced Topics in Econometrics</a>	2 SWS	Seminar (S)	Schienle, Chen, Görden
SS 2019	2560282	<a href="#">Wirtschaftspolitisches Seminar</a>	2 SWS	Seminar (S)	Ott, Assistenten
SS 2019	2560552	<a href="#">Topics in Political Economics (Master)</a>	2 SWS	Seminar (S)	Szech, Maus
SS 2019	2560554	<a href="#">Morals and Social Behavior (Master)</a>	2 SWS	Seminar (S)	Szech, Huber
Exams					
WS 18/19	7900094	<a href="#">Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON</a>		Prüfung (PR)	Sure-Vetter, Ott
WS 18/19	7900132	<a href="#">Seminar in Economics A (Master)</a>		Prüfung (PR)	Fuchs-Seliger
WS 18/19	7900259	<a href="#">Seminar in Economics B (Master)</a>		Prüfung (PR)	Schienle
WS 18/19	7900278	<a href="#">Seminar on Morals and Social Behavior</a>		Prüfung (PR)	Szech
WS 18/19	7900281	<a href="#">Seminar in Economics B (Master)</a>		Prüfung (PR)	Mitusch
WS 18/19	7900282	<a href="#">Seminar in Political Economics (Bachelor)</a>		Prüfung (PR)	Szech
WS 18/19	79191ee	<a href="#">Seminar Topics in Experimental Economics</a>		Prüfung (PR)	Reiß
WS 18/19	79sefi3	<a href="#">Seminar in Economics B (Master)</a>		Prüfung (PR)	Wigger
SS 2019	7900059	<a href="#">Seminar in Economics B (Master)</a>		Prüfung (PR)	Szech
SS 2019	7900060	<a href="#">Seminar in Economics B (Master)</a>		Prüfung (PR)	Szech
SS 2019	79sefi3	<a href="#">Seminar in Economics B (Master)</a>		Prüfung (PR)	Wigger

**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

### 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.

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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

V

### Topics in Experimental Economics

Seminar (S)

2520405, WS 18/19, SWS, [Open in study portal](#)**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 on Political Economics**

2560140, WS 18/19, 2 SWS, [Open in study portal](#)

**Seminar (S)****Workload**

About 90 hours.

**Advanced Topics in Econometrics**

2521310, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)****Annotation**

The course will be offered in English.

**Topics in Political Economics (Master)**

2560552, 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](mailto: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.

V

**Morals and Social Behavior (Master)**

2560554, 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](mailto:david.huber@kit.edu)).

**Workload**

About 90 hours.

**T****6.301 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-101808 - Seminarmodul](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Exams				
WS 18/19	7311633	<a href="#">Seminar Creating a Patent Specification</a>	Prüfung (PR)	Stork
WS 18/19	8245100014	<a href="#">Seminar in Transportation</a>	Prüfung (PR)	Vortisch, Chlond
SS 2019	76-T-MACH-00002	<a href="#">Seminar for Rail System Technology</a>	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.

**Recommendation**

None

## T

**6.302 Course: Seminar in Informatics A (Master) [T-WIWI-103479]**

**Responsible:** Professorenschaft des Fachbereichs Informatik  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101808 - Seminarmodul  
M-WIWI-104901 - Informatik (KIT-Fakultät für Wirtschaftswissenschaften)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2400125	Seminar "Privacy Awareness"	2 SWS	Seminar (S)	Boehm, Volkamer, Gerber
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	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	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	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
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	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:*

**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.

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

V

### Emerging Trends in Critical Information Infrastructures

Seminar (S)

2513400, WS 18/19, 2 SWS, [Open in study portal](#)

#### 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.

V

### Seminar Service Science, Management & Engineering

Seminar (S)

2595470, WS 18/19, 2 SWS, [Open in study portal](#)

#### 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](http://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](http://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

## 6.303 Course: Seminar in Informatics B (Master) [T-WIWI-103480]

**Responsible:** Professorenschaft des Fachbereichs Informatik

**Organisation:** KIT Department of Economics and Management

**Part of:** M-WIWI-101808 - Seminarmodul

M-WIWI-104901 - Informatik (KIT-Fakultät für Wirtschaftswissenschaften)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2400125	Seminar "Privacy Awareness"	2 SWS	Seminar (S)	Boehm, Volkamer, Gerber
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	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	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	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	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.

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:*

**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**

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

**Emerging Trends in Critical Information Infrastructures**

Seminar (S)

2513400, WS 18/19, 2 SWS, [Open in study portal](#)**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**

Seminar (S)

2595470, WS 18/19, 2 SWS, [Open in study portal](#)**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](http://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](http://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

**6.304 Course: Seminar in Operations Research A (Master) [T-WIWI-103481]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2550491	<a href="#">Seminar: Recent Topics in OR</a>	SWS	Seminar (S)	Nickel, Mitarbeiter
SS 2019	2550132	<a href="#">Seminar zur Mathematischen Optimierung (MA)</a>	2 SWS	Seminar (S)	Stein, Mohr, Neumann
SS 2019	2550473	<a href="#">Seminar on Power Systems Optimization (Master)</a>	2 SWS	Seminar (S)	Rebennack, Assistenten
SS 2019	2550491	<a href="#">Seminar zur diskreten Optimierung</a>	SWS	Block (B)	Nickel, Mitarbeiter
Exams					
WS 18/19	7900217_WS1819	<a href="#">Seminar in Operations Research A (Master)</a>		Prüfung (PR)	Stein
WS 18/19	7900263	<a href="#">Seminar in Operations Research A (Master)</a>		Prüfung (PR)	Nickel
SS 2019	7900018_SS2019	<a href="#">Seminar in Operations Research A (Master)</a>		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: 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

**6.305 Course: Seminar in Operations Research B (Master) [T-WIWI-103482]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2550491	<a href="#">Seminar: Recent Topics in OR</a>	SWS	Seminar (S)	Nickel, Mitarbeiter
SS 2019	2550132	<a href="#">Seminar zur Mathematischen Optimierung (MA)</a>	2 SWS	Seminar (S)	Stein, Mohr, Neumann
SS 2019	2550473	<a href="#">Seminar on Power Systems Optimization (Master)</a>	2 SWS	Seminar (S)	Rebennack, Assistenten
SS 2019	2550491	<a href="#">Seminar zur diskreten Optimierung</a>	SWS	Block (B)	Nickel, Mitarbeiter
Exams					
SS 2019	7900018_SS2019	<a href="#">Seminar in Operations Research A (Master)</a>		Prüfung (PR)	Stein

**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

**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

**6.306 Course: Seminar in Statistics A (Master) [T-WIWI-103483]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
SS 2019	2521310	<a href="#">Advanced Topics in Econometrics</a>	2 SWS	Seminar (S)	Schienle, Chen, Görden
Exams					
WS 18/19	7900257	<a href="#">Date Mining</a>		Prüfung (PR)	Nakhaeizadeh

**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

**Advanced Topics in Econometrics**

2521310, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Annotation**

The course will be offered in English.

## T

**6.307 Course: Seminar in Statistics B (Master) [T-WIWI-103484]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104902 - Statistik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
SS 2019	2521310	<a href="#">Advanced Topics in Econometrics</a>	2 SWS	Seminar (S)	Schienle, Chen, Görden

**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

**Advanced Topics in Econometrics**

2521310, SS 2019, 2 SWS, [Open in study portal](#)

**Seminar (S)**

**Annotation**

The course will be offered in English.

## T

**6.308 Course: Seminar in Transportation [T-BGU-100014]**

- Responsible:** Bastian Chlond  
Prof. Dr.-Ing. Peter Vortisch
- Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences
- Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	6232903	<a href="#">Seminar Verkehrswesen</a>	2 SWS	Seminar (S)	Vortisch, KIT
SS 2019	6232903	<a href="#">Seminar Verkehrswesen</a>	2 SWS	Seminar (S)	Vortisch, Kagerbauer
Exams					
WS 18/19	8245100014	<a href="#">Seminar in Transportation</a>		Prüfung (PR)	Vortisch, Chlond

**Competence Certificate**

seminar paper, appr. 10 pages, and presentation, appr. 10 min.

**Prerequisites**

none

**Recommendation**

none

**Annotation**

none

T

**6.309 Course: Seminar Mobility Services (Master) [T-WIWI-103174]**

**Responsible:** Prof. Dr. Gerhard Satzger  
Carola Stryja

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	1

**Competence Certificate**

A final written exam will be conducted.

**Prerequisites**

None

**Annotation**

The course is not offered regularly.

## T

**6.310 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-101808 - Seminarmodul](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
SS 2019	2149665	<a href="#">Seminar Production Technology</a>	1 SWS	Seminar (S)	Fleischer, Lanza, Schulze, Zanger
Exams					
WS 18/19	76-T-MACH-109062	<a href="#">Seminar Production Technology</a>		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****6.311 Course: Seminar: Governance, Risk & Compliance [T-INFO-102047]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101242 - Governance, Risk & Compliance](#)  
[M-WIWI-104903 - Recht](#)  
[M-WIWI-104909 - Informatik \(KIT-Fakultät für Informatik\)](#)

Type	Credits	Version
Prüfungsleistung anderer Art	3	1

Events					
SS 2019	2400041	<a href="#">Governance, Risk &amp; Compliance</a>	2 SWS	Seminar (S)	Herzig

## T

**6.312 Course: Seminar: Legal Studies I [T-INFO-101997]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	24389	<a href="#">IT-Sicherheit und Recht</a>	2 SWS	Seminar (S)	Schallbruch
SS 2019	2400041	<a href="#">Governance, Risk &amp; Compliance</a>	2 SWS	Seminar (S)	Herzig
SS 2019	2400061	<a href="#">Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung</a>	2 SWS	Seminar (S)	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart
SS 2019	24820	<a href="#">Current Issues in Patent Law</a>	2 SWS	Seminar (S)	Melullis
Exams					
WS 18/19	7500035	<a href="#">Seminar: Legal Studies II</a>		Prüfung (PR)	Marsch
WS 18/19	7500182	<a href="#">Seminar: Legal Studies II</a>		Prüfung (PR)	Raabe, Dreier, Boehm
SS 2019	7500159	<a href="#">Seminar: Legal Studies I</a>		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

**6.313 Course: Seminar: Legal Studies II [T-INFO-105945]**

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-WIWI-101808 - Seminarmodul](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Version
Prüfungsleistung anderer Art	3	1

Events					
WS 18/19	2400014	<a href="#">Current Issues in Patent Law</a>	2 SWS	Seminar (S)	Melullis
WS 18/19	2400125	<a href="#">Seminar "Privacy Awareness"</a>	2 SWS	Seminar (S)	Boehm, Volkamer, Gerber
WS 18/19	24186	<a href="#">Patents at the point of intersection between technology, economy and law</a>	2 SWS	Seminar (S)	Dammler
WS 18/19	24389	<a href="#">IT-Sicherheit und Recht</a>	2 SWS	Seminar (S)	Schallbruch
SS 2019	2400061	<a href="#">Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung</a>	2 SWS	Seminar (S)	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart
Exams					
WS 18/19	7500035	<a href="#">Seminar: Legal Studies II</a>		Prüfung (PR)	Marsch
WS 18/19	7500182	<a href="#">Seminar: Legal Studies II</a>		Prüfung (PR)	Raabe, Dreier, Boehm

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

**6.314 Course: Service Analytics A [T-WIWI-105778]**

**Responsible:** Prof. Dr. Hansjörg Fromm  
Prof. Dr. Thomas Setzer

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101448 - Service Management](#)  
[M-WIWI-101470 - Data Science: Advanced CRM](#)  
[M-WIWI-101506 - Service Analytics](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2595501	<a href="#">Service Analytics A</a>	2 SWS	Lecture (V)	Fromm, Setzer
SS 2019	2595502	<a href="#">Übung zu Service Analytics A</a>	1 SWS	Practice (Ü)	Baier, Kühl
Exams					
WS 18/19	00104	<a href="#">Service Analytics A</a>		Prüfung (PR)	Fromm, Setzer

**Competence Certificate**

The assessment consists of a written exam (60 min) according to §4(2), 1 of the examination regulations.

**Prerequisites**

None

**Recommendation**

The lecture is addressed to students with interests and basic knowledge in the topics of Operations Research, descriptive and inductive statistics.

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

## V

**Service Analytics A**

2595501, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Today's service-oriented companies are starting to optimize the way services are planned, operated, and personalized by analyzing vast amounts of data from customers, IT-systems, or sensors. As the statistical learning and business optimization world continues to progress, skills and expertise in advanced data analytics and data and fact-based optimization become vital for companies to be competitive. In this lecture, relevant methods and tools will be considered as a package, with a strong focus on their inter-relations. Students will learn to analyze and structure large amounts of potentially incomplete and unreliable data, to apply multivariate statistics to filter data and to extract key features, to predict future behavior and system dynamics, and finally to formulate data and fact-based service planning and decision models.

More specifically, the lessons of this lecture will include:

- Co-Creation of Value Across Enterprises
- Instrumentation, Measurement, Monitoring of Service Systems
- Descriptive, predictive, and prescriptive Analytics
- Usage Characteristics and Customer Dynamics
- Big Data, Dimensionality Reduction, and Real-Time Analytics
- System Models and What-If-Analysis
- Robust Mechanisms for Service Management
- Industry Applications of Service Analytics

**Tutorials**

Students will conduct lecture accompanying, guided exercises throughout the semester.

**Workload**

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

**Literature**

- Business Forecasting, Wilson, J. H., Keating, B., McGraw-Hill, 2002
- Multivariate Data Analysis, Hair, J. F., Black, B., Babin, B., Anderson, R. E., 2008
- Analytics at Work, Davenport, T. H., Harris, J. G., Morion, R., Harward Business Press, 2010
- Business Analytics for Managers, Jank, W., Springer, 2011

**Online Sources:**

- The data deluge, The Economist, Feb. 2010
- Competing on Analytics, T. Davenport in Harward Business Review, Feb. 2007
- Mit Advanced Analytics können Händler Kundendaten optimal nutzen, McKinsey Handelsmarketing, Feb. 2011

Further readings will be provided in the lecture.

## T

**6.315 Course: Service Design Thinking [T-WIWI-102849]**

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

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101503 - Service Design Thinking](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	9	Irregular	2

**Competence Certificate**

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

**Prerequisites**

The course is compulsory and must be examined.

**Recommendation**

This course is held in English – proficiency in writing and communication is required.

Our past students recommend to take this course at the beginning of the masters program.

**Annotation**

Due to practical project work as a component of the program, access is limited.

The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.

For more information on the application process and the program itself are provided in the module component description and the program's website (<http://sdt-karlsruhe.de>).

Furthermore, the KSRI conducts an information event for applicants every year in May.

This module is part of the KSRI Teaching Program „Digital Service Systems“. For more information see the KSRI Teaching website: [www.ksri.kit.edu/teaching](http://www.ksri.kit.edu/teaching).

## T

**6.316 Course: Service Innovation [T-WIWI-102641]**

**Responsible:** Prof. Dr. Gerhard Satzger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101410 - Business & Service Engineering](#)  
[M-WIWI-101448 - Service Management](#)  
[M-WIWI-102806 - Service Innovation, Design & Engineering](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
SS 2019	2595468	<a href="#">Service Innovation</a>	2 SWS	Lecture (V)	Satzger
Exams					
WS 18/19	7900186	<a href="#">Service Innovation</a>		Prüfung (PR)	Satzger

**Competence Certificate**

The assessment consists of an 1h written exam (following §4(2) 1 of the examination regulations) and of assignments during the course as a non-exam assessment (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

**Prerequisites**

None

**Recommendation**

None

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

## V

**Service Innovation**

2595468, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

While innovation in manufacturing or agriculture can leverage a considerable body of research, experience and best practice, innovation in services has not reached the same level of maturity. In practice - while many organizations have a well-understood process for innovating in the product business - innovating in services is often still a fuzzy and complex undertaking.

In this lecture we will

- discuss the state of research
- compare product and service innovation
- understand how innovation diffusion works
- examine case studies of service innovation
- compare open vs. closed innovation
- learn how to leverage user communities to drive innovation and
- understand obstacles, and enablers and how to manage, incentivize and foster service innovation

**Learning Content**

While innovation in manufacturing can leverage a considerable body of research, experience and best practice, innovation in services has not reached the same level of maturity. In practice, while many organizations have a well-understood process for innovating in the product business, innovating in services is often still a fuzzy and complex undertaking. In this lecture we will discuss the state of research, compare product and service innovation and understand how innovation diffusion works. We examine case studies on service innovation, compare open vs. closed innovation and learn how to apply different innovation tools, methods and strategies (e.g. service design thinking as a human-centered approach to innovation or technology and strategic foresight, as methods supporting the generation of assumptions on the impact of technology).

**Annotation**

The credits have been changed from 5 to 4,5.

**Workload**

Total workload: approximately 136 hours

Attendance time: 30 hours

Self-study: 105 hours

**Literature**

- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.). (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Lusch, R. F., & Nambisan, S. (2015). Service innovation: A service-dominant logic perspective. *MIS quarterly*, 39(1).
- Christensen, Clayton M. (2003). *The Innovator's Dilemma - when new technologies cause great firms to fail*. Boston, Massachusetts: Harvard Business Review Press.
- Rogers, S. (2003). *Diffusion of innovations*. 5. ed. New York: Free Press.
- Chesbrough, H. W. (2011). *Open services innovation - rethinking your business to grow and compete in a new era*. 1. ed. San Francisco: Jossey-Bass.
- Uebernicketel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). *Design Thinking: Das Handbuch*. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Runco, M.A. (2014). *Creativity – Theories and Themes: Research, Development, and Practice*. 2. ed. Amsterdam: Academic Press

T

**6.317 Course: Service Oriented Computing [T-WIWI-105801]**

**Responsible:** Prof. Dr. York Sure-Vetter  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	2

Exams				
WS 18/19	7900024	<a href="#">Service Oriented Computing</a>	Prüfung (PR)	Sure-Vetter
SS 2019	7900038	<a href="#">Service Oriented Computing</a>	Prüfung (PR)	Sure-Vetter

**Competence Certificate**

Please note that the exam will be offered to first-time applicants in the winter semester 2018/2019. A last examination possibility exists in the summer semester 2019 (only for repeaters).

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation or of an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

**Prerequisites**

None

## T

**6.318 Course: Simulation Game in Energy Economics [T-WIWI-108016]**

**Responsible:** Dr. Massimo Genoese  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101451 - Energiewirtschaft und Energiemärkte](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	2581025	<a href="#">Simulation Game in Energy Economics</a>	2 SWS	Lecture / Practice (VÜ)	Genoese

**Competence Certificate**

Examination as written assignment and oral presentation (§4 (2), 1 SPO).

**Prerequisites**

None

**Recommendation**

Visiting the course "Introduction to Energy Economics"

**Annotation**

See German version.

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

## V

**Simulation Game in Energy Economics**

2581025, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture / Practice (VÜ)**

**Learning Content**

- Introduction
- Agents and market places in the electricity industry
- Selected planning tasks of energy service companies
- Methods of modelling in the energy sector
- Agent-based simulation: The PowerACE model
- Simulation game: Simulation in energy economics (electricity and emission trading, investment decisions)

The lecture is structured in a theoretical and a practical part. In the theoretical part, the students are taught the basics to carry out simulations themselves in the practical part which comprises amongst others the simulation of the power exchange. The participants of the simulation game take a role as a power trader in the power market. Based on various sources of information (e.g. prognosis of power prices, available power plants, fuel prices), they can launch bids in the power exchange.

**Workload**

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

**Literature****Elective literature:**

Möst, D. und Genoese, M. (2009): Market power in the German wholesale electricity market. The Journal of Energy Markets (47–74). Volume 2/Number 2, Summer 2009

T

**6.319 Course: Simulation of Stochastic Systems [T-WIWI-106552]**

**Responsible:** Prof. Dr. Oliver Grothe  
Prof. Dr. Steffen Rebennack

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-103289 - Stochastische Optimierung](#)  
[M-WIWI-104899 - Operations Research](#)

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

**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

**6.320 Course: Site Management [T-BGU-103427]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101884 - Lean Management im Bauwesen](#)  
[M-BGU-101888 - Projektmanagement im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each summer term	1

Events					
SS 2019	6241807	<a href="#">Bauleitung</a>	1 SWS	Lecture (V)	Steffek

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

T

**6.321 Course: Smart Energy Infrastructure [T-WIWI-107464]**

**Responsible:** Dr. Armin Ardone  
Dr. Dr. Andrej Marko Pustisek

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101452 - Energiewirtschaft und Technologie](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2581023	<a href="#">(Smart) Energy Infrastructure</a>	2 SWS	Lecture (V)	Ardone, Pustisek
Exams					
WS 18/19	7981023	<a href="#">Smart Energy Infrastructure</a>		Prüfung (PR)	Fichtner

**Competence Certificate**

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

**Prerequisites**

None.

**Annotation**

New course starting winter term 2017/2018.

## T

**6.322 Course: Smart Grid Applications [T-WIWI-107504]**

**Responsible:** Prof. Dr. Christof Weinhardt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103720 - eEnergy: Markets, Services and Systems](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2540452	<a href="#">Smart Grid Applications</a>	2 SWS	Lecture (V)	Staudt, van Dinther
WS 18/19	2540453	<a href="#">Übung zu Smart Grid Applications</a>	2 SWS	Lecture (V)	Staudt, Mengelkamp
Exams					
WS 18/19	7900235	<a href="#">Smart Grid Applications</a>		Prüfung (PR)	Weinhardt
WS 18/19	7900288	<a href="#">Smart Grid Applications</a>		Prüfung (PR)	Weinhardt

**Competence Certificate**

The assessment consists of a written exam (60 min) (according to §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**

None

**Recommendation**

None

**Annotation**

The lecture will be read for the first time in winter term 2018/19.

## T

**6.323 Course: Social Choice Theory [T-WIWI-102859]**

**Responsible:** Prof. Dr. Clemens Puppe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101500 - Microeconomic Theory](#)  
[M-WIWI-101504 - Collective Decision Making](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Events					
SS 2019	2520537	<a href="#">Social Choice Theory</a>	2 SWS	Lecture (V)	Puppe, Müller
SS 2019	2520539	<a href="#">Übung zu Social Choice Theory</a>	1 SWS	Practice (Ü)	Puppe, Müller

**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

**Social Choice Theory**

2520537, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The course provides a comprehensive treatment of preference and judgement aggregation, including proofs of general results that have Arrow's famous impossibility theorem and Gibbard's oligarchy theorem as corollaries. The second part of the course is devoted to voting theory. Among other things, we prove the Gibbard-Satterthwaite theorem.

**Workload**

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

**Literature**

Main texts:

- Hervé Moulin: Axioms of Cooperative Decision Making, Cambridge University Press, 1988
- Christian List and Clemens Puppe: Judgement Aggregation. A survey, in: Handbook of rational & social choice, P.Anand, P.Pattanaik, C.Puppe (Eds.), Oxford University Press 2009.

Secondary texts:

- Amartya Sen: Collective Choice and Social Welfare, Holden-Day, 1970
- Wulf Gaertner: A Primer in Social Choice Theory, revised edition, Oxford University Press, 2009
- Wulf Gaertner: Domain Conditions in Social Choice Theory, Oxford University Press, 2001

T

## 6.324 Course: Sociotechnical Information Systems Development [T-WIWI-109249]

**Responsible:** Prof. Dr. Ali Sunyaev

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101472 - Informatik](#)  
[M-WIWI-101628 - Vertiefung Informatik](#)  
[M-WIWI-101630 - Wahlpflicht Informatik](#)  
[M-WIWI-104901 - Informatik \(KIT-Fakultät für Wirtschaftswissenschaften\)](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
WS 18/19	2512400	<a href="#">Entwicklung Soziotechnischer Informationssysteme</a>	SWS	Practical course (P)	Sunyaev, Kromat
Exams					
SS 2019	7900016	<a href="#">Sociotechnical Information Systems Development</a>		Prüfung (PR)	Sunyaev

### Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of an implementation and a final thesis documenting the development and use of the application.

### Prerequisites

None.

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

V

### Entwicklung Soziotechnischer Informationssysteme

2512400, WS 18/19, SWS, [Open in study portal](#)

**Practical course (P)**

### Description

The aim of this course is to provide a practical introduction into developing socio-technical information systems, such as web platforms, mobile apps, or desktop applications. Course participants will create (individually or in groups) software solutions for specific problems from various practical domains. The course tasks comprise requirements assessment, system design, and software implementation. Furthermore, course participants will gain insights into software quality assurance methods and software documentation.

### Workload

4 ECTS = approx. 120 h

**6.325 Course: Software Quality Management [T-WIWI-102895]**

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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	1

Events					
SS 2019	2511208	<a href="#">Software Quality Management</a>	2 SWS	Lecture (V)	Oberweis
SS 2019	2511209	<a href="#">Übungen zu Software-Qualitätsmanagement</a>	1 SWS	Practice (Ü)	Oberweis, N.N.
Exams					
WS 18/19	7900027	<a href="#">Software Quality Management</a>		Prüfung (PR)	Oberweis
SS 2019	7900031	<a href="#">Software Quality Management</a>		Prüfung (PR)	Oberweis

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**

None

**Annotation**

This course was formerly named "Software Technology: Quality Management".

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

**Software Quality Management**

2511208, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

This lecture imparts fundamentals of active software quality management (quality planning, quality testing, quality control, quality assurance) and illustrates them with concrete examples, as currently applied in industrial software development. Keywords of the lecture content are: software and software quality, process models, software process quality, ISO 9000-3, CMM(I), BOOTSTRAP, SPICE, software tests.

**Annotation**

This course was formerly named "Software Technology: Quality Management".

**Workload**

Lecture 30h  
 Exercise 15h

Preparation of lecture 30h  
 Preparation of exercises 30h  
 Exam preparation 44h  
 Exam 1h

Total: 150h

**Literature**

- Helmut Balzert: Lehrbuch der Software-Technik. Spektrum-Verlag 2008
- Peter Liggesmeyer: Software-Qualität, Testen, Analysieren und Verifizieren von Software. Spektrum Akademischer Verlag 2002
- Mauro Pezzè, Michal Young: Software testen und analysieren. Oldenbourg Verlag 2009

Further literature is given in lectures.

T

**6.326 Course: Spatial Economics [T-WIWI-103107]****Responsible:** Prof. Dr. Ingrid Ott**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101485 - Verkehrsinfrastrukturpolitik und regionale Entwicklung](#)  
[M-WIWI-101496 - Wachstum und Agglomeration](#)  
[M-WIWI-101497 - Agglomeration und Innovation](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Exams				
WS 18/19	7900075	<a href="#">Spatial Economics</a>	Prüfung (PR)	Ott

**Competence Certificate**

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**

None

**Recommendation**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required. The attendance of the course Introduction to economic policy [2560280] is recommended.

**Annotation**

Due to the research semester of Prof. Dr. Ingrid Ott, the course is not offered in the winter term 2018/19.



## T

**6.327 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-101410 - Business & Service Engineering](#)  
[M-WIWI-101411 - Information Engineering](#)  
[M-WIWI-101506 - Service Analytics](#)  
[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](http://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

## 6.328 Course: Special Topics of Enterprise Information Systems [T-WIWI-102676]

**Responsible:** Prof. Dr. Andreas Oberweis

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101472 - 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 term	1

Events					
WS 18/19	2511228	<a href="#">Spezialvorlesung Betriebliche Informationssysteme: Industrie 4.0</a>	2 SWS	Lecture (V)	Koschmider
Exams					
WS 18/19	7900029	<a href="#">Special Topics of Enterprise Information Systems: Industry 4.0</a>		Prüfung (PR)	Oberweis

### Competence Certificate

The assessment of this course is a written examination (60 min.) or (if necessary) oral examination (30 min.) according to §4(2) of the examination regulation.

Please note that the exam "Special Lecture on Business Information Systems: Industry 4.0" will be offered for the last time in summer semester 2019 (only for repeaters).

### Prerequisites

None

## T

**6.329 Course: Specialization in Food Process Engineering [T-CIWVT-101875]**

**Responsible:** Dr. Volker Gaukel  
**Organisation:** KIT Department of Chemical and Process Engineering  
**Part of:** [M-CIWVT-101119 - Vertiefung Lebensmittelverfahrenstechnik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung mündlich	9	1

Events					
WS 18/19	22207	<a href="#">Lebensmittelkunde und -funktionalität</a>	2 SWS	Lecture (V)	Watzl
WS 18/19	22209	<a href="#">Hilfs- und Effektstoffe</a>	1 SWS	Lecture (V)	Karbstein
WS 18/19	22246	<a href="#">Extrusion technology in food processing</a>	1 SWS	Lecture (V)	Emin
SS 2019	22215	<a href="#">Produktgestaltung: Beispiele aus der Praxis</a>	2 SWS	Lecture (V)	Bröckel, Esper, Hirth, Karbstein, Kind, Müller, Nirschl, Sass, Türk
SS 2019	22633	<a href="#">Microbiology for Engineers</a>	2 SWS	Lecture (V)	Schwartz
SS 2019	6601	<a href="#">Grundlagen der Lebensmittelchemie I</a>	2 SWS	Lecture (V)	Bunzel

**Prerequisites**

The Module "Principles of Food Process Engineering" must be passed.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The module [M-CIWVT-101120 - Principles of Food Process Engineering](#) must have been passed.

T

## 6.330 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-101638 - Ökonometrie und Statistik I](#)  
[M-WIWI-101639 - Ökonometrie und Statistik II](#)  
[M-WIWI-104902 - Statistik](#)

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

Events					
WS 18/19	2521350	<a href="#">Statistische Modellierung von Allgemeinen Regressionsmodellen</a>	2 SWS	Lecture (V)	Heller
Exams					
WS 18/19	7900146	<a href="#">Statistical Modeling of generalized regression models</a>		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

**6.331 Course: Stochastic Calculus and Finance [T-WIWI-103129]**

**Responsible:** Dr. Mher Safarian  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101639 - Ökonometrie und Statistik II](#)  
[M-WIWI-104902 - Statistik](#)

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

Events					
WS 18/19	2521331	<a href="#">Stochastic Calculus and Finance</a>	2 SWS	Lecture (V)	Safarian
Exams					
WS 18/19	7900225	<a href="#">Stochastic Calculus and Finance</a>		Prüfung (PR)	Safarian

**Competence Certificate**

The assessment of this course consists of a written examination (§4(2), 1 SPOs, 180 min.) and of possible additional assignments during the course (§4 (3) SPO).

**Prerequisites**

None

**Annotation**

For more information see <http://statistik.econ.kit.edu/>

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

V

**Stochastic Calculus and Finance**

2521331, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)****Description**

The course will provide rigorous yet focused training in stochastic calculus and finance. The program will cover modern approaches in stochastic calculus and mathematical finance. Topics to be covered:

1. Stochastic Calculus. Stochastic Processes, Brownian Motion and Martingales, Stopping Times, Local martingales, Doob-Meyer Decomposition, Quadratic Variation, Stochastic Integration, Ito Formula, Girsanov Theorem, Jump-diffusion Processes. Stable and tempered stable processes. Levy processes.
2. Mathematical Finance: Pricing Models. The Black-Scholes Model, State prices and Equivalent Martingale Measure, Complete Markets and Redundant Security Prices, Arbitrage Pricing with Dividends, Term-Structure Models (One Factor Models, Cox-Ingersoll-Ross Model, Affine Models), Term-Structure Derivatives and Hedging, Mortgage-Backed Securities, Derivative Assets (Forward Prices, Future Contracts, American Options, Look-back Options), Option pricing with tempered stable and Levy-Processes and volatility clustering, Optimal Portfolio and Consumption Choice (Stochastic Control and Merton continuous time optimization problem), Equilibrium models, Consumption-Based CAPM, Numerical Methods.

### Learning Content

The course will provide rigorous yet focused training in stochastic calculus and finance. The program will cover modern approaches in stochastic calculus and mathematical finance. Topics to be covered:

1. Stochastic Calculus. Stochastic Processes, Brownian Motion and Martingales, Stopping Times, Local martingales, Doob-Meyer Decomposition, Quadratic Variation, Stochastic Integration, Ito Formula, Girsanov Theorem, Jump-diffusion Processes. Stable and tempered stable processes. Levy processes.
2. Mathematical Finance: Pricing Models. The Black-Scholes Model, State prices and Equivalent Martingale Measure, Complete Markets and Redundant Security Prices, Arbitrage Pricing with Dividends, Term-Structure Models (One Factor Models, Cox-Ingersoll-Ross Model, Affine Models), Term-Structure Derivatives and Hedging, Mortgage-Backed Securities, Derivative Assets (Forward Prices, Future Contracts, American Options, Look-back Options), Option pricing with tempered stable and Levy-Processes and volatility clustering, Optimal Portfolio and Consumption Choice (Stochastic Control and Merton continuous time optimization problem), Equilibrium models, Consumption-Based CAPM, Numerical Methods.

Stochastic processes (Poisson-process, Brownian motion, martingales), stochastic Integral (Integral, quadratic und co-variation, Ito-formula), stochastic differential equation for price-processes, trading strategies, option pricing(Feynman-Kac), neutral risk rating(equivalent martingale measure, Girsanov theorem), term structure models

### Workload

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

### Literature

To be announced in lecture.

#### Elective literature:

- Dynamic Asset Pricing Theory, Third Edition. by Darrell Duffie, Princeton University Press, 1996
- Stochastic Calculus for Finance II: Continuous-Time Models, by Steven E. Shreve , Springer, 2003
- An Introduction to Stochastic Integration (Probability and its Applications) by Kai L. Chung , Ruth J. Williams , Birkhaueser,
- Methods of Mathematical Finance by Ioannis Karatzas , Steven E. Shreve , Springer 1998
- Kim Y.S. ,Rachev S.T. ,Bianchi M-L, Fabozzi F. Financial market models with Levy processes and time-varying volatility, Journal of Banking and Finance, 32/7,1363-1378, 2008.
- Hull, J., Options, Futures, & Other Derivatives, Prentice Hall, Sixth Edition, (2005).

## T

**6.332 Course: Strategic Management of Information Technology [T-WIWI-102669]****Responsible:** Thomas Wolf**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101472 - 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	1

Events					
SS 2019	2511602	<a href="#">Strategic Management of Information Technology</a>	2 SWS	Lecture (V)	Wolf
SS 2019	2511603	<a href="#">Übungen zu Strategisches Management der betrieblichen Informationsverarbeitung</a>	1 SWS	Practice (Ü)	Wolf
Exams					
WS 18/19	7900030	<a href="#">Strategic Management of Information Technology</a>		Prüfung (PR)	
SS 2019	7900034	<a href="#">Strategic Management of Information Technology</a>		Prüfung (PR)	Wolf

**Competence Certificate**

The assessment of this course is a written (60 min.) or (if necessary) oral examination according (30 min.) to §4(2) of the examination regulation.

**Prerequisites**

None

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

## V

**Strategic Management of Information Technology**2511602, SS 2019, 2 SWS, [Open in study portal](#)**Lecture (V)****Learning Content**

The following topics will be covered: strategic planing of ICT, architecture of ICT, overall planning of ICT, outsourcing, operation and controlling of ICT.

**Literature**

- Nolan, R., Croson, D.: Creative Destruction: A Six-Stage Process for Transforming the Organization. Harvard Business School Press, Boston Mass. 1995
- Heinrich, L. J., Burgholzer, P.: Informationsmanagement, Planung, Überwachung, Steuerung d. Inform.-Infrastruktur. Oldenbourg, München 1990
- Nolan, R.: Managing the crises in data processing. Harvard Business Review, Vol. 57, Nr. 2 1979
- Österle, H. et al.: Unternehmensführung und Informationssystem. Teubner, Stuttgart 1992
- Thome, R.: Wirtschaftliche Informationsverarbeitung. Verlag Franz Vahlen, München 1990

T

**6.333 Course: Strategic Transport Planning [T-BGU-103426]**

**Responsible:** Volker Waßmuth  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	6232808	<a href="#">Strategische Verkehrsplanung</a>	2 SWS	Lecture (V)	Waßmuth
Exams					
WS 18/19	8240103426	<a href="#">Strategic Transport Planning</a>		Prüfung (PR)	Vortisch

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None



T

## 6.334 Course: Strategy and Management Theory: Developments and "Classics" [T-WIWI-106190]

**Responsible:** Prof. Dr. Hagen Lindstädt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103119 - Strategie und Management: Fortgeschrittene Themen](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Irregular	1

Events					
WS 18/19	2577922	<a href="#">Strategy and Management Theory: Developments and "Classics"</a>	2 SWS	Seminar (S)	Lindstädt, Klopfer, Graf
SS 2019	2577923	<a href="#">Workshop aktuelle Themen Strategie und Management (Master)</a>	2 SWS	Seminar (S)	Lindstädt
Exams					
WS 18/19	7900120	<a href="#">Strategy and Management Theory: Developments and "Classics"</a>		Prüfung (PR)	Lindstädt

### Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation).

### Prerequisites

None

### Recommendation

Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

### Annotation

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the winter term 2017/18.

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

V

## Strategy and Management Theory: Developments and "Classics"

2577922, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)

### Notes

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

### Learning Content

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

### Workload

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

**Workshop aktuelle Themen Strategie und Management (Master)**2577923, SS 2019, 2 SWS, [Open in study portal](#)**Seminar (S)****Notes**

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

**Learning Content**

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

**Workload**

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

T

**6.335 Course: Supplementary Claim Management [T-BGU-103428]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101888 - Projektmanagement im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each summer term	1

Events					
SS 2019	6241811	<a href="#">Nachtragsmanagement</a>	1 SWS	Lecture (V)	Haghsheno, Pietsch
Exams					
WS 18/19	8240103428	<a href="#">Supplementary Claim Management</a>		Prüfung (PR)	Haghsheno

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

## T

**6.336 Course: Supply Chain Management [T-MACH-105181]**

**Responsible:** Dr.-Ing. Knut Alicke  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101280 - Logistik in Wertschöpfungsnetzwerken](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	6	Each winter term	1

Events					
WS 18/19	2117062	<a href="#">Supply chain management</a>	3 SWS	Lecture (V)	Alicke
WS 18/19	2117063	<a href="#">Übungen zu 'Supply chain management' (mach und wiwi)</a>	1 SWS	Practice (Ü)	Alicke
Exams					
WS 18/19	76-T-MACH-105181	<a href="#">Supply Chain Management</a>		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

**Supply chain management**

2117062, WS 18/19, 3 SWS, [Open in study portal](#)

**Lecture (V)**

**Description****Media:**

presentations

**Learning Content**

- Bullwhip-Effect, Demand Planning & Forecasting
- Conventional planning processes (MRP + MRPII)
- Stock keeping strategy
- Data acquisition and analysis
- Design for logistics (Postponement, Mass Customization, etc.)
- Logistic partnerships (VMI, etc.)
- Distribution structures (central vs. distributed, Hub&Spoke)
- SCM-metrics (performance measurement) e-business
- Special sectors as well as guest lectures

**Workload**

regular attendance: 42 hours

self-study: 138 hours

**Literature**

Alicke, K.: Planung und Betrieb von Logistiknetzwerken

Simchi-Levi, D., Kaminsky, P.: Designing and Managing the Supply Chain

Goldratt, E., Cox, J.: The Goal

T

## 6.337 Course: Supply Chain Management in the Automotive Industry [T-WIWI-102828]

**Responsible:** Tilman Heupel  
Hendrik Lang

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101412 - Industrielle Produktion III](#)  
[M-WIWI-101471 - Industrielle Produktion II](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581957	<a href="#">Supply Chain Management in the automotive industry</a>	2 SWS	Lecture (V)	Lang, Heupel
Exams					
WS 18/19	7981957	<a href="#">Supply Chain Management in the Automotive Industry</a>		Prüfung (PR)	Schultmann

### Competence Certificate

The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

### Prerequisites

None

### Recommendation

None

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

V

## Supply Chain Management in the automotive industry

2581957, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

- Automotive industry significance
- The automotive supply chain
- Adding value structures of the automotive supply chain and mastering of the production systems as factors of success in the SCM
- Strategic procurement logistics
- Risk management
- Quality engineering and management in the automotive supply chain
- Cost engineering and management in the automotive supply chain
- Purchasing (Supplier selection, contract management)
- Performance measurement of the supply chain / organization

### Annotation

None.

### Workload

The total workload for this course is approximately 105.0 hours. For further information see German version.

### Literature

Will be announced in the course.

T

## 6.338 Course: Supply Chain Management in the Process Industry [T-WIWI-102860]

**Responsible:** Prof. Dr. Stefan Nickel  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-102805 - Service Operations](#)  
[M-WIWI-104899 - Operations Research](#)

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

Events					
WS 18/19	2550494	<a href="#">Supply Chain Management in the Process Industry</a>	3 SWS	Lecture / Practice (VÜ)	Blackburn
Exams					
WS 18/19	7900266	<a href="#">Supply Chain Management in the Process Industry</a>		Prüfung (PR)	Nickel

### Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation) (individual grading), case study presentation by student teams (team grading) and classroom participation (individual grading). The examination is held in the term of the lecture.

### Prerequisites

None

### Recommendation

Basic knowledge as conveyed in the module Introduction to Operations Research is assumed. Advanced knowledge of Operations Research (e.g., as conveyed in the lectures Facility Location and Strategic SCM, Tactical and operational SCM) is recommended.

### Annotation

The number of participants is restricted due to the execution of interactive case studies and the resulting examination effort. Due to these capacity restrictions, registration before course start is required according to the information on the course website. The course is planned to be held 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

## Supply Chain Management in the Process Industry

2550494, WS 18/19, 3 SWS, [Open in study portal](#)

Lecture / Practice (VÜ)

### Learning Content

The course "Supply Chain Management in the Process Industry" covers fundamental concepts in the field of supply chain management with special focus on process industry. Strategic, planning and operational topics within the end-to-end supply chain are examined, covering relevant approaches in design, processes and performance measurement. Additional focus within the course is on showing the interdisciplinary linkages SCM has with information systems, performance management, project management, risk management and sustainability management. The course is enriched by various insights from the world's leading chemical company BASF, provided by executive management as real life examples and cases.

### Annotation

The number of participants is restricted due to the execution of interactive case studies and the resulting examination effort. Due to these capacity restrictions, registration before course start is required according to the information on the course website. The course is planned to be held 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**

- Chopra, S./Meindl, P.: Supply Chain Management – Strategy, Planning, & Operations, 4th edition, Upper Saddle River, 2009.
- Various case studies, which will be provided during the course

T

## 6.339 Course: Supply Chain Management with Advanced Planning Systems [T-WIWI-102763]

**Responsible:** Claus J. Bosch  
Dr. Mathias Göbelt

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101412 - Industrielle Produktion III](#)  
[M-WIWI-101471 - Industrielle Produktion II](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each summer term	1

Events					
SS 2019	2581961	<a href="#">Supply Chain Management with Advanced Planning Systems</a>	2 SWS	Lecture (V)	Göbelt, Bosch
Exams					
WS 18/19	7981961	<a href="#">Supply Chain Management with Advanced Planning Systems</a>		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

### Recommendation

None

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

V

## Supply Chain Management with Advanced Planning Systems

2581961, SS 2019, 2 SWS, [Open in study portal](#)

Lecture (V)

### Learning Content

#### 1. Introduction to Supply Chain Management

- 1.1. Supply Chain Management Fundamentals
- 1.2. Supply Chain Management Analytics

#### 2. Structure of Advanced Planning Systems

#### 3. SAP SCM

- 3.1. Introduction / SCM Solution Map
- 3.2. Demand Planning
- 3.3. Supply Network Planning
- 3.4. Production Planning and Detailed Scheduling
- 3.5. Deployment
- 3.6. Transportation Planning and Vehicle Scheduling
- 3.7. [Optional] Global Available to Promise

#### 4. SAP SCM in Practice

- 4.1. Success Stories
- 4.2. SAP Implementation Methodology



**Annotation**

This lecture has 3,5 Credits since summer term 2014.

**Workload**

The total workload for this course is approximately 105 hours. For further information see German version.

**Literature**

will be announced in the course

## T

## 6.340 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-102832 - Operations Research im Supply Chain Management](#)  
[M-WIWI-104899 - Operations Research](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	3

Events					
SS 2019	2550486	<a href="#">Taktisches und operatives SCM</a>	2 SWS	Lecture (V)	Nickel
SS 2019	2550487	<a href="#">Übungen zu Taktisches und operatives SCM</a>	1 SWS	Practice (Ü)	Pomes
Exams					
WS 18/19	7900220	<a href="#">Tactical and Operational Supply Chain Management</a>		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 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.

### 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 6.341 Course: Tax Law I [T-INFO-101315]

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101216 - Recht der Wirtschaftsunternehmen](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	24168	<a href="#">Tax Law I</a>	2 SWS	Lecture (V)	Dietrich
Exams					
WS 18/19	7500066	<a href="#">Tax Law I</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500052	<a href="#">Tax Law I</a>		Prüfung (PR)	Dreier, Matz

T

**6.342 Course: Tax Law II [T-INFO-101314]**

**Responsible:** Detlef Dietrich  
Prof. Dr. Thomas Dreier

**Organisation:** KIT Department of Informatics

**Part of:** [M-INFO-101216 - Recht der Wirtschaftsunternehmen](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	24646	<a href="#">Tax Law II</a>	2 SWS	Lecture (V)	Dietrich
Exams					
WS 18/19	7500067	<a href="#">Tax Law II</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500053	<a href="#">Tax Law II</a>		Prüfung (PR)	Dreier, Matz

**T****6.343 Course: Technical Conditions Met [T-WIWI-106623]****Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101453 - Angewandte strategische Entscheidungen](#)

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

**6.344 Course: Technologies for Innovation Management [T-WIWI-102854]**

**Responsible:** Dr. Daniel Jeffrey Koch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	2

Events					
WS 18/19	2545106	<a href="#">Technologien für das Innovationsmanagement</a>	2 SWS	Block (B)	Koch
Exams					
WS 18/19	7900239	<a href="#">Technologies for Innovation Management</a>	Prüfung (PR)		Weissenberger-Eibl

**Competence Certificate**

Presentation and individual paper (ca. 15 pages) as Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

**Prerequisites**

None

**Recommendation**

Prior attendance of the course Innovationsmanagement: Konzepte, Strategien und Methoden [2545015] is recommended.

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

## V

**Technologien für das Innovationsmanagement**

2545106, WS 18/19, 2 SWS, [Open in study portal](#)

**Block (B)**

**Learning Content**

The seminar "Technologies for Innovation Management" will focus on the early phase or fuzzy front end in innovation management. Technologies can be of great importance here, above all in the supply of information. In globally distributed R & D organizations, it is necessary to collect as much information as possible on new technological developments in the early phase of the innovation process. Information and communication technologies can be supported.

**Literature**

Will be announced in the first session.

T

**6.345 Course: Technology Assessment [T-WIWI-102858]**

**Responsible:** Dr. Daniel Jeffrey Koch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-101507 - Innovationsmanagement](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

**Competence Certificate**

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

**Prerequisites**

None

**Recommendation**

Prior attendance of the course *Innovation Management*[2545015] is recommended.

**Annotation**

See German version.



## T

**6.346 Course: Telecommunication and Internet Economics [T-WIWI-102713]**

**Responsible:** Prof. Dr. Kay Mitusch  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101406 - Netzwerkökonomie](#)  
[M-WIWI-101409 - Electronic Markets](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Events					
WS 18/19	2561232	<a href="#">Telecommunication and Internet Economics</a>	2 SWS	Lecture (V)	Mitusch
WS 18/19	2561233	<a href="#">Übung zu Telekommunikations- und Internetökonomie</a>	1 SWS	Practice (Ü)	Mitusch
Exams					
WS 18/19	7900270	<a href="#">Telecommunication and Internet Economics</a>		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**

Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics. Prior attendance of the lecture „Competition in Networks“ [26240] or "Industrial Organisation" is helpful in any case but not considered a formal precondition. The english taught course "Communications Economics" is complementary and recommendet for anyone interested in the sector.

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

## V

**Telecommunication and Internet Economics**

2561232, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

Among the network sectors the telecommunication and internet sector is the most dynamic one and the one with and highest variety of phenomena. Problems of natural monopoly still exist in some parts. But there is also competition, not only at the service level but also at the infrastructural level. Both levels are characterized by (vertical) quality differentiations and by high technology dynamics. What should the regulation of this sector look like? How should the mutual network access prices of two telecommunication providers be regulated and how can regulators set incentives for infrastructure investments?

The internet is a free market par excellence, because everybody can open internet businesses without high entry costs. Why then can a company like ebay dominate the market for internet-auction platforms so strongly? The causes of market concentration on the internet will be analyzed. So will be the economic implications of the Next Generations Networks.

**Workload**

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

**Literature**

J.-J. Laffont, J. Tirole (2000): Competition in Telecommunications, MIT Press.

Zarnekow, Wulf, Bronstaedt (2013): Internetwirtschaft: Das Geschäft des Datentransports im Internet.

Further literature will be provided during the lecture

T

**6.347 Course: Telecommunications Law [T-INFO-101309]**

**Responsible:** Prof. Dr. Nikolaus Marsch  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101217 - Öffentliches Wirtschaftsrecht](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	24632	<a href="#">Telekommunikationsrecht</a>	2 SWS	Lecture (V)	Hermstrüwer
Exams					
WS 18/19	7500049	<a href="#">Telecommunications Law</a>		Prüfung (PR)	Marsch
SS 2019	7500085	<a href="#">Telecommunications Law</a>		Prüfung (PR)	Marsch

T

## 6.348 Course: Tendering, Planning and Financing in Public Transport [T-BGU-101005]

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each term	1

Events					
SS 2019	6232807	<a href="#">Wettbewerb, Planung und Finanzierung im ÖPNV</a>	2 SWS	Lecture (V)	Pischon
Exams					
WS 18/19	8245101005	<a href="#">Tendering, Planning and Financing in Public Transport</a>		Prüfung (PR)	Vortisch

### Competence Certificate

oral exam, appr. 20 min.

### Prerequisites

none

### Recommendation

none

### Annotation

none

## T

**6.349 Course: Theory of Endogenous Growth [T-WIWI-102785]**

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101478 - Innovation und Wachstum](#)  
[M-WIWI-101496 - Wachstum und Agglomeration](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Exams				
WS 18/19	7900078	<a href="#">Theory of Endogenous Growth</a>	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.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

**Prerequisites**

None

**Recommendation**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

**Annotation**

Due to the research semester of Prof. Dr. Ingrid Ott, the course is not offered in the winter term 2018/19.

## T

**6.350 Course: Topics in Experimental Economics [T-WIWI-102863]**

**Responsible:** Prof. Dr. Johannes Philipp Reiß  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101505 - Experimentelle Wirtschaftsforschung](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
WS 18/19	2520405	<a href="#">Topics in Experimental Economics</a>	SWS	Seminar (S)	Reiß, Hofmann, Mitarbeiter
Exams					
WS 18/19	79191ee	<a href="#">Seminar Topics in Experimental Economics</a>	Prüfung (PR)		Reiß

**Competence Certificate**

The assessment consists of a written exam (following §4(2), 1 of the examination regulation).

**Prerequisites**

None

**Recommendation**

Basic knowledge of Experimental Economics is assumed. Therefore, it is strongly recommended to attend the course Experimental Economics beforehand.

**Annotation**

The course is offered in summer 2020 for the next time, not in summer 2018.

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

## V

**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.

**T****6.351 Course: Trademark and Unfair Competition Law [T-INFO-101313]**

**Responsible:** Dr. Yvonne Matz  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101215 - Recht des Geistigen Eigentums](#)  
[M-WIWI-104903 - Recht](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
WS 18/19	24136	<a href="#">Trademark and Unfair Competition Law</a>	2 SWS	Lecture (V)	Matz
Exams					
WS 18/19	7500061	<a href="#">Trademark and Unfair Competition Law</a>		Prüfung (PR)	Dreier, Matz
SS 2019	7500051	<a href="#">Trademark and Unfair Competition Law</a>		Prüfung (PR)	Dreier, Matz

T

**6.352 Course: Traffic Engineering [T-BGU-101798]**

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	6232703	<a href="#">Straßenverkehrstechnik</a>	2 SWS	Lecture / Practice (VÜ)	Vortisch, Mitarbeiter/innen
Exams					
WS 18/19	8240101798	<a href="#">Traffic Engineering</a>		Prüfung (PR)	Vortisch

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

T

**6.353 Course: Traffic Flow Simulation [T-BGU-101800]**

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	6232804	<a href="#">Simulation von Verkehr</a>	2 SWS	Lecture / Practice (VÜ)	Vortisch, Mitarbeiter/innen
Exams					
WS 18/19	8240101800	<a href="#">Traffic Flow Simulation</a>		Prüfung (PR)	Vortisch

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None



## T

**6.354 Course: Traffic Management and Transport Telematics [T-BGU-101799]**

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	6232802	<a href="#">Verkehrsmanagement und Telematik</a>	2 SWS	Lecture / Practice (VÜ)	Vortisch
Exams					
WS 18/19	8240101799	<a href="#">Traffic Management and Transport Telematics</a>		Prüfung (PR)	Vortisch

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

## T

**6.355 Course: Transport Economics [T-WIWI-100007]**

**Responsible:** Prof. Dr. Kay Mitusch  
Dr. Eckhard Szimba

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-101406 - Netzwerkökonomie](#)  
[M-WIWI-101468 - Umwelt- und Ressourcenökonomie](#)  
[M-WIWI-101485 - Verkehrsinfrastrukturpolitik und regionale Entwicklung](#)  
[M-WIWI-104908 - Volkswirtschaftslehre](#)

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

Events					
SS 2019	2560230	<a href="#">Transport Economics</a>	SWS	Lecture (V)	Mitusch, Szimba
SS 2019	2560231	<a href="#">Übung zu Transportökonomie</a>	SWS	Practice (Ü)	Mitusch, Wisotzky, Szimba
Exams					
WS 18/19	7900269	<a href="#">Transport Economics</a>		Prüfung (PR)	Mitusch

**Competence Certificate**

The assessment 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.

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

## V

**Transport Economics**

2560230, SS 2019, SWS, [Open in study portal](#)

**Lecture (V)**

**Learning Content**

The course shall provide an overview of transport economics. It will be demonstrated, using new microeconomic models, which impacts regulation and pricing in transport have on the economic actions of individuals and logisticans and which benefits and costs apply. The following topics will be discussed:

- demand and supply in transport
- empirical analysis of transport demand
- assessment of transport infrastructure projects
- external effects in transport
- transport policy
- cost structures of transport infrastructure
- Project evaluation from the perspective of the public sector

**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.

(for literature to prepare the lecture - see additional literature)

**Literature:**

Aberle, G: Transportwirtschaft: einzelwirtschaftliche und gesamtwirtschaftliche Grundlagen München; Wien: Oldenbourg, 2003.

Blauwens, G., De Baere, P. and Van der Voorde, E. (2006): Transport Economics.

Frerich, J; Müller, G: Europäische Verkehrspolitik, Landverkehrspolitik München; Wien: Oldenbourg, 2004.

Dasgupta, A, Pearce, D (1972): Cost-Benefit Analysis, MacMillan, London.

Europäische Kommission (2008): Guide to Cost Benefit Analysis of Investment Projects, online unter [Ortúzar, J. d. D. and Willumsen, L. \(1990\): Modelling Transport.](http://ec.europa.eu/regional_policy/sources/Ben-Akiva, M., Meerseman, H., and Van de Voorde, E. (2008): Recent developments in transport modelling: Lessons for the freight sector.</a></p></div><div data-bbox=)

T

**6.356 Course: Transportation Data Analysis [T-BGU-100010]**

**Responsible:** Dr.-Ing. Martin Kagerbauer  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101065 - Verkehrsmodellierung und Verkehrsmanagement](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	6232901	<a href="#">Empirische Daten im Verkehrswesen</a>	2 SWS	Lecture / Practice (VÜ)	Kagerbauer
Exams					
WS 18/19	8245100010	<a href="#">Transportation Data Analysis</a>		Prüfung (PR)	Kagerbauer

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

T

**6.357 Course: Transportation Systems [T-BGU-106610]**

**Responsible:** Prof. Dr.-Ing. Peter Vortisch  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101064 - Grundlagen des Verkehrswesens](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	6200406	<a href="#">Transportation Systems</a>	2 SWS	Lecture (V)	Vortisch
Exams					
WS 18/19	8230106610	<a href="#">Transportation Systems</a>		Prüfung (PR)	Vortisch

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

## T

**6.358 Course: Tunnel Construction and Blasting Engineering [T-BGU-101846]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101110 - Verfahrenstechnik im Baubetrieb](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	6241903	<a href="#">Tunnelbau und Sprengtechnik</a>	2 SWS	Lecture (V)	Haghsheno, Scheuble, Matz
Exams					
WS 18/19	8240101846	<a href="#">Tunnel Construction and Blasting Engineering</a>		Prüfung (PR)	Haghsheno

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

**T****6.359 Course: Turnkey Construction I - Processes and Methods [T-BGU-103430]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101884 - Lean Management im Bauwesen](#)  
[M-BGU-101888 - Projektmanagement im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	1,5	Each summer term	1

Events					
SS 2019	6241808	<a href="#">Schlüsselfertiges Bauen I</a>	1 SWS	Lecture (V)	Teizer
Exams					
WS 18/19	8240103430	<a href="#">Turnkey Construction I - Processes and Methods</a>		Prüfung (PR)	Haghsheno

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None

## T

**6.360 Course: Turnkey Construction II - Trades and Technology [T-BGU-103431]**

**Responsible:** Prof. Dr.-Ing. Shervin Haghsheno  
**Organisation:** KIT Department of Civil Engineering, Geo- and Environmental Sciences  
**Part of:** [M-BGU-101884 - Lean Management im Bauwesen](#)  
[M-BGU-101888 - Projektmanagement im Bauwesen](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	6241809	<a href="#">Schlüselfertiges Bauen II (Gewerke und Technik)</a>	2 SWS	Lecture / Practice (VÜ)	Teizer, Denzer
Exams					
WS 18/19	8240103431	<a href="#">Turnkey Construction II - Trades and Technology</a>		Prüfung (PR)	Haghsheno

**Prerequisites**

None

**Recommendation**

None

**Annotation**

None



## T 6.361 Course: Valuation [T-WIWI-102621]

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101480 - Finance 3](#)  
[M-WIWI-101482 - Finance 1](#)  
[M-WIWI-101483 - Finance 2](#)  
[M-WIWI-101510 - Cross-Functional Management Accounting](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

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

Events					
WS 18/19	2530212	<a href="#">Valuation</a>	2 SWS	Lecture (V)	Ruckes
WS 18/19	2530213	<a href="#">Übungen zu Valuation</a>	1 SWS	Practice (Ü)	Ruckes, Scholz-Daneshgari
Exams					
WS 18/19	7900057	<a href="#">Valuation</a>		Prüfung (PR)	Ruckes
SS 2019	7900072	<a href="#">Valuation</a>		Prüfung (PR)	Ruckes

### Competence Certificate

See German version.

### Prerequisites

None

### Recommendation

None

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

## V

### Valuation

2530212, WS 18/19, 2 SWS, [Open in study portal](#)

Lecture (V)

### Description

Firms prosper when they create value for their shareholders and stakeholders. This is achieved by investing in projects that yield higher returns than their according cost of capital. Students are told the basic tools for firm and project valuation as well as ways to implement these tools in order to enhance a firm's value and improve its investment decisions. Among other things, the course will deal with the valuation of firms and individual projects using discounted cash flow and relative valuation approaches and the valuation of flexibility deploying real options.

### Learning Content

Topics:

- Projections of cash flows
- Estimation of the cost of capital
- Valuation of the firm
- Mergers and acquisitions
- Real options

### Literature

#### Elective Literature

Titman/Martin (2013): *Valuation - The Art and Science of Corporate Investment Decisions*, 2nd. ed. Pearson International.

## T

**6.362 Course: Virtual Engineering I [T-MACH-102123]**

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

**Part of:** [M-MACH-101283 - Virtual Engineering A](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	2

Events					
WS 18/19	2121352	<a href="#">Virtual Engineering I</a>	2 SWS	Lecture (V)	Ovtcharova
WS 18/19	2121353	<a href="#">Exercises Virtual Engineering I</a>	2 SWS	Practice (Ü)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102123	<a href="#">Virtual Engineering I</a>		Prüfung (PR)	Ovtcharova

**Competence Certificate**

Written examination 90 min.

**Prerequisites**

None

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

## V

**Virtual Engineering I**

2121352, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description****Media:**

Lecture notes

**Learning Content**

The lecture communicates IT aspects required for understanding virtual product development processes. For this purpose, the focus is set on systems used in industry supporting the process chain of Virtual Engineering:

- Product Lifecycle Management is an approach for managing product related data across the entire lifecycle of the product, beginning with the concept phase until disassembling and recycling.
- CAx-systems for virtual product development allow modeling digital products regarding design, construction, manufacturing and maintenance.
- Validation systems enable the analysis of products regarding statics, dynamics, safety and manufacturing feasibility.

The objective of the lecture is to clarify the relationship between construction and validation operations by applying virtual prototypes and VR/AR/MR visualization techniques in combination with PDM/PLM-systems. This is taught by introducing each particular system in applied exercises.

## V

**Exercises Virtual Engineering I**

2121353, WS 18/19, 2 SWS, [Open in study portal](#)

**Practice (Ü)**

**Learning Content**

In this module, the practical application of different CAx software systems is exemplarily conducted in small groups, the main focus being the CAD systems CATIA V5 (DASSAULT SYSTEMES) and NX 5 (Siemens PLM Software).

**Workload**

Regular attendance: 31,5 hours, self-study: 10,5 hours

**Literature**

Exercise notes

## T

**6.363 Course: Virtual Engineering II [T-MACH-102124]**

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

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	2

Events					
SS 2019	2122378	<a href="#">Virtual Engineering II</a>	2 SWS	Lecture (V)	Ovtcharova, Mitarbeiter
Exams					
WS 18/19	76-T-MACH-102124	<a href="#">Virtual Engineering II</a>		Prüfung (PR)	Ovtcharova

**Competence Certificate**

Written examination 90 min.

**Prerequisites**

None

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

## V

**Virtual Engineering II**

2122378, SS 2019, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description****Media:**

Lecture notes

**Learning Content**

The lecture presents the IT aspects required for understanding virtual product development processes:

- Corresponding models can be visualized in Virtual Reality Systems, from individual parts to complete assemblies.
- Virtual Prototypes combine CAD-data and information about properties of components and assemblies for immersive visualization, functionality tests and functional validation in VR/AR/MR environments.
- Integrated Virtual Product Development explains product development processes from the point of view of Virtual Engineering.

The objective of this lecture is to clarify the relationship between construction and validation operations by using virtual prototypes and VR/AR/MR visualization techniques in combination with PDM/PLM-systems. This will be achieved by introducing each particular IT-system with practical-oriented exercises.

## T

**6.364 Course: Virtual Engineering Lab [T-MACH-106740]**

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

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
WS 18/19	2123350	<a href="#">Virtual Engineering Lab</a>	SWS	Project (PRO)	Ovtcharova, Mitarbeiter
SS 2019	2123350	<a href="#">Virtual Engineering Lab</a>	SWS	Project (PRO)	Ovtcharova
Exams					
WS 18/19	76-T-MACH-106740	<a href="#">Virtual Engineering Lab</a>		Prüfung (PR)	Ovtcharova

**Competence Certificate**

Assessment of another type (graded), procedure see webpage.

T

**6.365 Course: Virtual training factory 4.X [T-MACH-106741]**

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

**Part of:** [M-MACH-101281 - Virtual Engineering B](#)  
[M-MACH-101283 - Virtual Engineering A](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each term	1

Events					
WS 18/19	2123351	<a href="#">Virtual training factory 4.X</a>	SWS	Seminar / Practical course (S/P)	Ovtcharova, Mitarbeiter
SS 2019	2123351	<a href="#">Virtual training factory 4.X</a>	SWS	Seminar / Practical course (S/P)	Ovtcharova
Exams					
WS 18/19	76-T-MACH-106741	<a href="#">Virtual training factory 4.X</a>		Prüfung (PR)	Ovtcharova

**Competence Certificate**

Assessment of another type (graded), procedure see webpage.

## T

**6.366 Course: Warehousing and Distribution Systems [T-MACH-105174]**

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

**Part of:** [M-MACH-101263 - Einführung in die Logistik](#)  
[M-MACH-101277 - Materialfluss in Logistiksystemen](#)  
[M-MACH-101278 - Materialfluss in vernetzten Logistiksystemen](#)  
[M-MACH-101279 - Technische Logistik](#)  
[M-MACH-101280 - Logistik in Wertschöpfungsnetzwerken](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2118097	<a href="#">Warehousing and distribution systems</a>	2 SWS	Lecture (V)	Furmans
Exams					
WS 18/19	76-T-MACH-105174	<a href="#">Warehousing and Distribution Systems</a>		Prüfung (PR)	Furmans, Mittwollen
SS 2019	76-T-MACH-105174	<a href="#">Warehousing and Distribution Systems</a>		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

**6.367 Course: Water Chemistry and Water Technology I [T-CIWVT-101900]****Responsible:** Prof. Dr. Harald Horn**Organisation:** KIT Department of Chemical and Process Engineering**Part of:** [M-CIWVT-101121 - Wasserchemie und Wassertechnologie I](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	6	Each winter term	1

Events					
WS 18/19	22621	<a href="#">Water Technology</a>	2 SWS	Lecture (V)	Horn
WS 18/19	22622	<a href="#">Excercises to Water Technology</a>	1 SWS	Practice (Ü)	Horn, und Mitarbeiter
WS 18/19	22664	<a href="#">Praktikum Wassertechnologie und Wasserbeurteilung</a>	2 SWS	Practical course (P)	Horn, Abbt-Braun, und Mitarbeiter

**Prerequisites**

T-CIWVT-103351 - Wasserchemisches Praktikum must be passed.

## T

**6.368 Course: Water Chemistry and Water Technology II [T-CIWVT-101901]**

**Responsible:** Prof. Dr. Harald Horn  
**Organisation:** KIT Department of Chemical and Process Engineering  
**Part of:** [M-CIWVT-101122 - Wasserchemie und Wassertechnologie II](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Version
Prüfungsleistung mündlich	9	1

Events					
WS 18/19	22603	<a href="#">Naturwissenschaftliche Grundlagen der Wasserbeurteilung</a>	2 SWS	Lecture (V)	Abbt-Braun
SS 2019	22605	<a href="#">Membrane Technologies in Water Treatment</a>	2 SWS	Lecture (V)	Horn, Saravia

**Prerequisites**

The module "Water Chemistry and Water Technology I" must be passed.

**Modeled Conditions**

The following conditions have to be fulfilled:

1. The module [M-CIWVT-101121 - Water Chemistry and Water Technology I](#) must have been passed.

## T

**6.369 Course: Web Science [T-WIWI-103112]**

**Responsible:** Prof. Dr. York Sure-Vetter  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101472 - 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 winter term	1

Events					
WS 18/19	2511312	<a href="#">Web Science</a>	2 SWS	Lecture (V)	Sure-Vetter
WS 18/19	2511313	<a href="#">Exercises to Web Science</a>	1 SWS	Practice (Ü)	Sure-Vetter, Heling
Exams					
WS 18/19	7900031	<a href="#">Web Science</a>		Prüfung (PR)	Sure-Vetter
SS 2019	7900032	<a href="#">Web Science</a>		Prüfung (PR)	Sure-Vetter

**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 (20 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

**Annotation**

New course starting winter term 2015/2016.

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

## V

**Web Science**

2511312, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)**

**Description**

Web Science is the emergent study of the people and technologies, applications, processes and practices that shape and are shaped by the World Wide Web. Web Science aims to draw together theories, methods and findings from across academic disciplines, and to collaborate with industry, business, government and civil society, to develop our knowledge and understanding of the Web: the largest socio-technical infrastructure in human history.

The lecture provides an introduction to basic concepts of Web Science. Essential theoretical foundations, phenomena and approaches are presented and explained.

**Learning Content**

This course aims to provide students with a basic knowledge and understanding about the structure and analysis of selected web phenomena and technologies. Topics include the small world problem, network theory, social network analysis, graph search and technologies/standards/architectures.

**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**

- Networks, Crowds, and Markets: Reasoning About a Highly Connected World, by David Easley and Jon Kleinberg, 2010 (free online book: <http://www.cs.cornell.edu/home/kleinber/networks-book/>)
- Thelwall, M. (2009). Social network sites: Users and uses. In: M. Zelkowitz (Ed.), Advances in Computers 76. Amsterdam: Elsevier (pp. 19-73)

**Exercises to Web Science**2511313, WS 18/19, 1 SWS, [Open in study portal](#)**Practice (Ü)****Description**

Multiple exercises are held that capture the topics, held in the lecture Web Science 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 course aims to provide students with a basic knowledge and understanding about the structure and analysis of selected web phenomena and technologies. Topics include the small world problem, network theory, social network analysis, graph search and technologies/standards/architectures.

**Workload**

The total workload for the lecture Web Science is given out on the description of the lecture.

**Literature**

- Networks, Crowds, and Markets: Reasoning About a Highly Connected World, by David Easley and Jon Kleinberg, 2010 (free online book: <http://www.cs.cornell.edu/home/kleinber/networks-book/>)
- Thelwall, M. (2009). Social network sites: Users and uses. In: M. Zelkowitz (Ed.), Advances in Computers 76. Amsterdam: Elsevier (pp. 19-73)

**T****6.370 Course: Wildcard Key Competences Seminar 1 [T-WIWI-104680]****Organisation:** University**Part of:** [M-WIWI-101808 - Seminarmodul](#)

Type	Credits	Version
Studienleistung	1	1

**T****6.371 Course: Wildcard Key Competences Seminar 3 [T-WIWI-104682]****Organisation:** University**Part of:** [M-WIWI-101808 - Seminarmodul](#)

Type	Credits	Version
Studienleistung	3	1

**T****6.372 Course: Wildcard Key Competences Seminar 4 [T-WIWI-104683]****Organisation:** University**Part of:** [M-WIWI-101808 - Seminar modul](#)

Type	Credits	Version
Prüfungsleistung anderer Art	1	1

**T****6.373 Course: Wildcard Key Competences Seminar 5 [T-WIWI-104684]****Organisation:** University**Part of:** [M-WIWI-101808 - Seminar modul](#)

Type	Credits	Version
Prüfungsleistung anderer Art	2	1



**T****6.374 Course: Wildcard Key Competences Seminar 6 [T-WIWI-104685]****Organisation:** University**Part of:** [M-WIWI-101808 - Seminarmodul](#)

Type	Credits	Version
Prüfungsleistung anderer Art	3	1

**T****6.375 Course: Wildcard Key Competences Seminar 8 [T-WIWI-105956]****Organisation:** University**Part of:** [M-WIWI-101808 - Seminarmodul](#)

Type	Credits	Version
Prüfungsleistung anderer Art	4	1

T

## 6.376 Course: Workshop Business Wargaming – Analyzing Strategic Interactions [T-WIWI-106189]

**Responsible:** Prof. Dr. Hagen Lindstädt

**Organisation:** KIT Department of Economics and Management

**Part of:** [M-WIWI-103119 - Strategie und Management: Fortgeschrittene Themen](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	2577912	<a href="#">Workshop Business Wargaming - Analyzing Strategic Interactions</a>	2 SWS	Seminar (S)	Lindstädt

### Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation).

### Prerequisites

None

### Recommendation

Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

### Annotation

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the summer term 2018.

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

V

## Workshop Business Wargaming - Analyzing Strategic Interactions

2577912, SS 2019, 2 SWS, [Open in study portal](#)

Seminar (S)

### Notes

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

### Learning Content

In this course, students simulate and analyze real-life conflict situations using Business Wargaming methods. The students will be able to understand the underlying structure and dynamics of various conflicts, this includes making own conclusions as well as deriving strategic recommendations.

### Workload

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

T

## 6.377 Course: Workshop Current Topics in Strategy and Management [T-WIWI-106188]

**Responsible:** Prof. Dr. Hagen Lindstädt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-103119 - Strategie und Management: Fortgeschrittene Themen](#)  
[M-WIWI-104900 - Betriebswirtschaftslehre](#)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Irregular	1

Events					
WS 18/19	2577921	<a href="#">Workshop Current Topics in Strategy and Management</a>	2 SWS	Seminar (S)	Lindstädt, Burkardt, Müller
Exams					
WS 18/19	7900171	<a href="#">Workshop Current Topics in Strategy and Management</a>		Prüfung (PR)	Lindstädt

### Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation).

### Prerequisites

None

### Recommendation

Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

### Annotation

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.  
 The course is planned to be held for the first time in the winter term 2017/18.

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

V

## Workshop Current Topics in Strategy and Management

2577921, WS 18/19, 2 SWS, [Open in study portal](#)

Seminar (S)

### Learning Content

In this lecture, current economic trends will be discussed from a perspective of competition analysis and corporate strategies. Using appropriate frameworks, the students will be able to analyze collectively selected case studies and derive business strategies.

### Annotation

This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

### Workload

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

T

**6.378 Course: X-ray Optics [T-MACH-109122]**

**Responsible:** Dr. Arndt Last  
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** [M-MACH-101291 - Mikrofertigung](#)  
[M-MACH-101292 - Mikrooptik](#)  
[M-WIWI-104907 - Ingenieurwissenschaften](#)

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each term	1

Events					
WS 18/19	2141007	<a href="#">X-ray Optics</a>	2 SWS	Lecture (V)	Last
SS 2019	2141007	<a href="#">Röntgenoptik</a>	2 SWS	Lecture (V)	Last
Exams					
WS 18/19	76-T-MACH-109122	<a href="#">X-ray Optics</a>		Prüfung (PR)	Last
SS 2019	76-T-MACH-109122	<a href="#">X-ray Optics</a>		Prüfung (PR)	Last

**Competence Certificate**

oral exam (about 20 min)

**Prerequisites**

none

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

V

**X-ray Optics**

2141007, WS 18/19, 2 SWS, [Open in study portal](#)

**Lecture (V)****Learning Content**

The lecture covers general principles of optics as well as basics, functioning and application of reflective, refractive and diffractive X-ray optical elements and systems. Selected X-ray analytical imaging methods and the necessary optical elements are discussed including their potentials and limitations.

**Annotation**

Lecture dates will be fixed in agreement with the students, see institutes website.

A visit at synchrotron ANKA is possible if requested.

**Workload**

lecture times plus assignment to review

**Literature**

M. Born und E. Wolf

Principles of Optics, 7th (expanded) edition  
 Cambridge University Press, 2010

A. Erko, M. Idir, T. Krist und A. G. Michette  
 Modern Developments in X-Ray and Neutron Optics  
 Springer Series in Optical Sciences, Vol. 137  
 Springer-Verlag Berlin Heidelberg, 2008

D. Attwood

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