Karlsruher Institut für Technologie

Module Handbook
Information Systems B.Sc.

SPO 2019

Winter term 2019/20

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KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT / KIT DEPARTMENT OF INFORMATICS

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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 KIT Department of Informatics. We wish you a good start into the new semester!

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

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2 About this handbook

2.1 Notes and rules

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

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

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

2.1.1 Begin and completion of a module

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

2.1.2 Module versions

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

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

2.1.3 General and partial examinations

Module examinations can be either taken in a general examination or in partial examinations. If the module examination is offered as a general examination, the entire learning content of the module will be examined in a single examamination. 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 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 loosing the examination claim. A counseling interview is mandatory.

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

2.1.6 Examiners

The examination committee has appointed the KIT examiners and lecturers listed in the module handbook for the modules and their courses as examiners for the courses they offer.

2.1.7 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.

2.1.8 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).

3 Why Information Systems?

Digitalization leads to profound changes in economy and society. The successful design of sustainable digital solutions requires competencies in the fields of information technology, business and law. By studying Information Systems, you will acquire the necessary qualifications for the digital world of work and life of the future. Become a designer of the digital economy and society with excellent, cross-sector career opportunities in start-ups, medium-sized businesses and large companies!

**Why Information Systems at KIT? Study Information Systems at KIT to successfully combine science and practice of digitization. KIT Information Systems is characterized by an interdisciplinary approach based on an interdisciplinary model. The central unique selling points and arguments for studying Information Systems at KIT are:

- Options**: You benefit from a high-quality and comprehensive range of courses offered by the two large KIT Departments of Informatics and Economics.
- Flexibility**: In both the Bachelor's and Master's programmes, you can set your own priorities and develop your personal profile. At KIT you can study both a technical and a more economic profile of Information Systems.
- Problem solving competence**: The obligatory team project for software development in the Bachelor's programme implements the KIT concept of research-oriented teaching. Students develop functional application software in a team using modern methods and tools. The further development of specific problem-solving skills also plays an important role in the Master's programme, for example in the form of design seminars in cooperation with practical experience.

The study programme Information Systems (B.Sc. / M.Sc.) will be offered at the Karlsruhe Institute of Technology (KIT) from the winter semester 2019/20.

Where can I get further information? Further information on the Bachelor's and Master's degree programmes is available at http://www.wirtschaftsinformatik.kit.edu.

3.1 Special features of the Bachelor's programme

Founded basic education KIT Information Systemes is characterized by an interdisciplinary approach based on a cross-faculty model. The study contents of the first four semesters are organized in five main areas and contain the following contents:

Subject	Contents
Information Systemes	Basic Terms of Information Systemes, Concepts and Systems for Digitization on the Levels of Individual, Group, Organization and Market
Informatics	Basic Terms of Informatics, Programming, Algorithms, Theoretical Foundations, Communication and Data Management, Applied Computer Science, Software Engineering
Mathematics & Statistics	Linear Algebra, Analysis, Development of Mathematical Models, Desciptive Statistics, Probability Theory, Elements of Estimation and Test Theory
Economics	Business Administration (Marketing, Production, Finance and Accounting), Operations Research and Economics
Law	Basics of the BGB, Public Law, Commercial Law

Team Project Software Development The team project for software development in the 5th semester implements the concept of research-oriented teaching and ensures a high level of practical experience. The students develop functional application software in a team using modern methods and tools.

Individual choices The diverse optional modules of the two KIT Departments round off the study programme. Through them, students have the opportunity to deepen their knowledge in accordance with their individual inclinations already during the Bachelor's programme. Students can opt for a focus with 9 or 18 credit points in Informatics or Economics. Further information on specific options can be found in the module handbook.

International orientation Organised exchange programmes, free language courses, courses in English and sponsored internships abroad enable students to gain international experience even during their bachelor's studies. Students benefit from numerous partnerships of the two KIT Departments with other universities within and outside Europe, e.g. in Spain, Sweden, France, the USA, Australia and Singapore.

Degree The study concludes in the 6th semester with a bachelor thesis. Upon successful completion of the program, students are awarded the academic degree "Bachelor of Science" and have the best chances of being placed in the new Master's program in Informations Systems at KIT.

4 The course of studies

4.1 Qualification goals

The graduates of the interdisciplinary, six-semester Bachelor's programme in Information Systems understand the digital transformation of business and society as a socio-technical process of shaping processes (internal digitisation) and products and services (external digitisation). They are familiar with the subject area of Information Systems in science and practice and have methodologically oriented basic knowledge in the fields of Informatics (theoretical computer science, algorithms, software technology, databases, communication networks), Economics (finance, accounting, production economics, marketing, accounting, economic interrelations of microeconomics) and Law (public law, private law, business private law, constitutional and administrative law, data protection law) as well as Mathematics, Statistics and Operations Research.

Thanks to their sound basic methodological knowledge, graduates are able to name subject-specific basic terms, methods, models and procedures and apply them in an interdisciplinary manner.

KIT Bachelor of Information Systems graduates have in-depth knowledge of Informatics, Economics and Law and understand the interrelationships between these sub-disciplines. They are able to identify, describe and communicate economic, IT and legal problems and topics. In this complex of topics they plan, analyse, compare, evaluate and optimise information systems and infrastructures in business and society. They make decisions, develop subject-specific solutions and implement their innovative ideas using methods and models from the various disciplines, taking into account given resources. They know how to document, present, validate, assess and ensure the quality of the results obtained. Their practical handling of specialist knowledge takes account of social, scientific and ethical aspects.

Due to the interdisciplinarity of the study programme, KIT Bachelor of Information Systems graduates can act effectively at the interface of these three subject areas and shape communication between the disciplines in a targeted manner. The graduates are able to work in a team and master challenges in the field of information and communication technologies.

KIT Bachelor of Information Systems graduates have the ability to work in a professional field in industry, the service sector or trade, to found their own company or to take up a Master's degree in Information Systems or a related degree.

4.2 Structure according to SPO 2019

The Bachelor's programme in Information Systems has a standard study period of six semesters and comprises 180 credit points. The basic area in the first four semesters is methodically oriented. In the fifth and sixth semesters, students deepen their specialist knowledge, which can be structured according to personal interests and goals within the curriculum.

Figure 2 shows the subject and module structure with the allocation of credit points (LP) and, as an example, a possible distribution of modules and courses in the basic area over the semesters.

<table>
<tr><th>Semester</th><th>Leistungs-punkte</th><th>Wirtschafts-informatik</th><th>Informatik</th><th>Mathematik</th><th>Wirtschafts-wissenschaften</th><th colspan="2">Rechts-wissenschaften</th><th>Seminar</th><th>Abschlussarbeit</th></tr>
<tr><td>1 (WS)</td><td>33</td><td rowspan="2">Wirtschafts-informatik I
4 LP</td><td>Grundbegriffe der Informatik*
6 LP</td><td rowspan="2">Mathematik I*
8 LP</td><td rowspan="2">Volkswirt-schaftslehre
5 LP</td><td colspan="2" rowspan="2">Einführung in das Privatrecht
5 LP</td><td rowspan="11"></td><td rowspan="11"></td></tr>
<tr><td>Programmieren*
5 LP</td></tr>
<tr><td>2 (SS)</td><td>29,5</td><td rowspan="2">Wirtschafts-informatik II
4 LP</td><td rowspan="2">Algorithmen I
6 LP</td><td>Mathematik II*
8 LP</td><td rowspan="3">Einführung in das Operations Research
9 LP</td><td rowspan="5">Wirtschafts-privatrecht
9 LP</td><td rowspan="4"></td></tr>
<tr><td>3 (WS)</td><td>28,5</td><td rowspan="4">Einführung in die Statistik
10 LP</td></tr>
<tr><td>4 (SS)</td><td>30</td><td rowspan="3">Theoretische Informatik
6 LP</td><td rowspan="3">Betriebswirt-schaftslehre
8 LP</td><td rowspan="3">Verfassungs- und Verwal-tungsrecht
6 LP</td></tr>
<tr><td>5 (WS)</td><td>30,5</td><td>Teamprojekt Software-entwicklung
8 LP</td><td rowspan="2">Angewandte Informatik
8 LP</td><td colspan="2" rowspan="2">Wahlmodul
6 LP</td><td>Seminarmodul
3 LP</td></tr>
<tr><td>6 (SS)</td><td>28,5</td><td rowspan="2">1-2 Wahlmodule
9/18 LP</td><td rowspan="2">1-2 Wahlmodule
9/18 LP</td><td rowspan="2">Bachelorarbeit
15 LP</td></tr>
<tr><td></td><td>Datenbanksysteme
4 LP</td></tr>
<tr><td></td><td>180</td><td>16</td><td>Einführung in Rechnernetze
4 LP
Softwaretechnik I*
6 LP
54-63</td><td>26</td><td>31-40</td><td>26</td><td>26</td><td>3</td><td>15</td></tr>
</table>

* Im Rahmen des Moduls ist eine Studienleistung zu erbringen (z.B. verpflichtender Übungsschein)

Figure 2: Recommended structure and subject structure of the bachelor's programme in Information Systems (german)

In the first four semesters, the modules illustrated from the subjects Information Systems, Informatics, Mathematics, Economics and Law are compulsory.

In the fifth and sixth semesters, elective modules of 9 to 18 credit points must be completed in the subjects of Informatics and Economics. In the subject Law, one or more modules with a total of 6 credit points must be selected. A software development project with 5 credit points is to be completed in the subject Information Systems. Key qualifications are taught integratively. The bachelor thesis comprises 15 credit points and is planned for the 6th semester.

It is up to the individual study plan (taking into account the relevant requirements in the study and examination regulations as well as any module regulations) in which semester the selected module examinations are started or completed.

5 Field of study structure

Mandatory	
Bachelor Thesis	15 CR
Orientation Exam	
Information Systems	16 CR
Informatics	54-63 CR
Mathematics	26 CR
Economics and Management	31-40 CR
Law	26 CR
Seminars	3 CR

5.1 Bachelor Thesis

Credits
15

Mandatory		
M-INFO-104875	Module Bachelor Thesis	15 CR

5.2 Orientation Exam

Mandatory		
M-WIWI-104843	Orientation Exam	0 CR

5.3 Information Systems

Credits
16

Mandatory		
M-INFO-104809	Team Project Software Development	8 CR
M-WIWI-104820	Information Systems I	4 CR
M-WIWI-104821	Information Systems II	4 CR

5.4 Informatics

Credits
54-63

Mandatory		
M-INFO-100030	Algorithms I	6 CR
M-WIWI-101430	Applied Informatics	8 CR
M-INFO-104921	Database Systems	4 CR
M-INFO-103455	Introduction in Computer Networks	4 CR
M-INFO-101170	Basic Notions of Computer Science	6 CR
M-INFO-101174	Programming	5 CR
M-INFO-101175	Software Engineering I	6 CR
M-INFO-101189	Theoretical Informatics	6 CR
Election block: Wahlmodule Informatik (between 9 and 18 credits)		
M-INFO-101220	Algorithms for Planar Graphs	5 CR
M-INFO-101173	Algorithms II	6 CR
M-INFO-101237	Algorithmic Methods for Hard Optimization Problems	5 CR
M-INFO-101865	Lab: Working with Database Systems	4 CR
M-INFO-101184	Mobile Robots – Practical Course	4 CR
M-INFO-101247	Lab Protocol Engineering	4 CR
M-INFO-101219	Practical Course Computer Engineering: Hardware Design	4 CR
M-INFO-101633	Practical Course Web Applications and Service-Oriented Architectures (I)	5 CR
M-INFO-101230	Basic Practical Course for the ICPC-Programming Contest	4 CR
M-INFO-100856	Computer Graphics	6 CR
M-INFO-102978	Digital Circuits Design	6 CR
M-INFO-100803	Real-Time Systems	6 CR
M-INFO-101254	Surfaces for Computer Aided Design	5 CR
M-INFO-100799	Formal Systems	6 CR
M-INFO-100756	Geometric Basics for Geometry Processing	5 CR
M-INFO-100730	Geometric Optimization	3 CR
M-WIWI-101476	Business Processes and Information Systems	9 CR
M-INFO-101235	Introduction to Data and Information Management	9 CR
M-WIWI-104069	Information Security	9 CR
M-WIWI-101440	Information Services in Networks	9 CR
M-INFO-100819	Cognitive Systems	6 CR
M-INFO-101248	Curves in CAD	5 CR
M-INFO-102557	Lego Mindstorms - Practical Course	4 CR
M-INFO-101245	MARS-Based Internship	4 CR
M-INFO-100757	Mechano-Informatics and Robotics	4 CR
M-INFO-100729	Human Computer Interaction	6 CR
M-INFO-101183	Microprocessors I	3 CR
M-INFO-101249	Mobile Computing and Internet of Things	5 CR
M-INFO-103179	Computer Organization	6 CR
M-INFO-100818	Computer Architecture	6 CR
M-INFO-100893	Robotics I - Introduction to Robotics	6 CR
M-WIWI-101438	Semantic Knowledge Management	9 CR
M-INFO-100834	Security	6 CR
M-INFO-100833	Software Engineering II	6 CR
M-INFO-100801	Telematics	6 CR
M-INFO-101636	Web Applications and Service-Oriented Architectures (I)	4 CR

5.5 Mathematics

Credits
26

Mandatory		
M-WIWI-101432	Introduction to Statistics	10 CR
M-MATH-104914	Mathematics I	8 CR
M-MATH-104915	Mathematics II	8 CR

5.6 Economics and Management

Credits
31-40

Mandatory		
M-WIWI-101492	Business Administration *First usage possible until 10/16/2019.*	8 CR
M-WIWI-105267	Business Administration *First usage possible from 10/17/2019.*	8 CR
M-WIWI-101418	Introduction to Operations Research	9 CR
M-WIWI-101431	Economics	5 CR
Election block: Betriebswirtschaftslehre ()		
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings	9 CR
M-WIWI-101460	CRM and Service Management *First usage possible until 3/30/2020.*	9 CR
M-WIWI-101434	eBusiness and Service Management	9 CR
M-WIWI-101402	eFinance	9 CR
M-WIWI-105035	Empirical Finance	9 CR
M-WIWI-101464	Energy Economics	9 CR
M-WIWI-101435	Essentials of Finance	9 CR
M-WIWI-102752	Fundamentals of Digital Service Systems	9 CR
M-WIWI-101424	Foundations of Marketing	9 CR
M-WIWI-101437	Industrial Production I	9 CR
M-WIWI-104911	Information Systems & Digital Business: Interaction	9 CR
M-WIWI-104912	Information Systems & Digital Business: Platforms	9 CR
M-WIWI-104913	Information Systems & Digital Business: Servitization	9 CR
M-WIWI-101513	Human Resources and Organizations	9 CR
M-WIWI-101466	Real Estate Management	9 CR
M-WIWI-101425	Strategy and Organization	9 CR
M-WIWI-101421	Supply Chain Management	9 CR
M-WIWI-101465	Topics in Finance I	9 CR
M-WIWI-101423	Topics in Finance II	9 CR
M-WIWI-101422	Specialization in Customer Relationship Management *First usage possible until 3/30/2020.*	9 CR
Election block: Operations Research ()		
M-WIWI-101413	Applications of Operations Research	9 CR
M-WIWI-101936	Methodical Foundations of OR	9 CR
M-WIWI-103278	Optimization under Uncertainty	9 CR
Election block: Statistik ()		
M-WIWI-101599	Statistics and Econometrics	9 CR
Election block: Volkswirtschaftslehre ()		
M-WIWI-101499	Applied Microeconomics	9 CR
M-WIWI-101403	Public Finance	9 CR
M-WIWI-101599	Statistics and Econometrics	9 CR
M-WIWI-101668	Economic Policy I	9 CR
M-WIWI-101501	Economic Theory	9 CR

5.7 Law

Credits
26

Mandatory		
M-INFO-101190	Introduction to Civil Law	5 CR
M-INFO-101191	Commercial Law	9 CR
M-INFO-105247	Constitutional and Administrative Law	6 CR
Election block: Wahlmodul Rechtswissenschaft (at least 6 credits)		
M-INFO-101253	Intellectual Property and Data Protection	6 CR

5.8 Seminars

Credits
3

Election block: Wahlmodul Seminar (at least 3 credits)		
M-INFO-102058	Seminar Module Informatics	3 CR
M-INFO-101218	Seminar Module Law	3 CR
M-WIWI-101826	Seminar Module Economic Sciences	3 CR

6 Modules

M 6.1 Module: Algorithmic Methods for Hard Optimization Problems [M-INFO-101237]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
5	Irregular	1 semester	German	3	1

Mandatory			
T-INFO-103334	Algorithmic Methods for Hard Optimization Problems	5 CR	Wagner

Competence Goal
The goal of this course is to familiarize the students with hard problems and possible approaches to solve them. Online problems may also be part of the course.

Content
There are many practical problems that cannot be solved optimally - some not at all and some not in a resonable amount of time. An example is the "bin packing problem" where a collection of

objects must be packed using a possibly small number of bins. Moreover, problems sometimes arise where knowledge about the future (or even about the present) is incomplete, but a decision

is required neverthelss ("online problems"). Regarding bin packing, for example, there must be a point in time when you close the bins and send them away. Even if there are some more objects arriving later.

M 6.2 Module: Algorithms for Planar Graphs [M-INFO-101220]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
5	Each summer term	1 semester	German	3	1

Mandatory			
T-INFO-101986	Algorithms for Planar Graphs	5 CR	Wagner

Content
A planar graph is defined as a graph that can be drawn in the plane such that no edges intersect. Planar graphs have many interesting properties that can be used to solve several problems in a particularly simple, fast and elegant way. In addition, some problems that are (NP-)hard in general graphs can be efficiently solved in planar graphs. The lecture presents a selection of these problems and corresponding algorithmic approaches.

Annotation
The module is offered irregularly.

Workload
approx. 150 h

M 6.3 Module: Algorithms I [M-INFO-100030]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	1	1

Mandatory			
T-INFO-100001	Algorithms I	6 CR	Sanders

M 6.4 Module: Algorithms II [M-INFO-101173]

Responsible: Prof. Dr. Hartmut Prautzsch
Prof. Dr. Peter Sanders
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: Informatics (Wahlmodule Informatik)

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

Mandatory			
T-INFO-102020	Algorithms II	6 CR	Prautzsch, Sanders, Wagner

M 6.5 Module: Applications of Operations Research [M-WIWI-101413]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Operations Research)

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

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

Competence Certificate
Due to a research semester of Professor Nickel in WS 19/20, the events Location Planning and Strategic SCM and Practice Seminar: Health Care Management do NOT take place in WS 19/20. Please also refer to the information at https://dol.ior.kit.edu/Lehrveranstaltungen.php for further details.

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

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

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

Competence Goal
The student

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

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

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

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

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

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

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

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

M 6.6 Module: Applied Informatics [M-WIWI-101430]

Responsible: Prof. Dr. Andreas Oberweis
Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
8	Each term	2 semester	German	2	3

Mandatory			
T-WIWI-110339	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	4 CR	Sunyaev
T-WIWI-110338	Applied Informatics – Modelling	4 CR	Oberweis, Sure-Vetter

Competence Certificate
The learning control for both courses takes the form of a written examination (60 minutes) in accordance with § 4(2), 1 SPO.

The module grade consists of the credit-weighted average of the grades for both courses.

Competence Goal
The student should:

- Becomes familiar with relevant modelling languages for describing application domains and aspects of early software system design.
- Gains insight into methods and systems of computer science for the design and development of distributed information systems (supporting electronic business),
- is able to select, design, and apply these methods and systems in a way that is appropriate for the application context.

Prerequisites
None.

Content
The course Applied Informatics - Modelling [2511030] mainly adresses the early phases of the development of database-supported information systems, distributed systems for information services, intelligent systems and software systems in general. Main topics are modelling concepts and languages for describing application domains as well as static and dynamic aspects of early software system design. The course addresses in detail the following approaches: Entity-Relationship model, advanced aspects of UML, description logic, relational model, Petri nets, and event-driven process chains.

The course Applied Informatics - Internet Computing [2511032] 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

Recommendation
Knowledge of the module *Basic Notions of Computer Science* as well as *Algorithms I* is expected.

Workload
See german version.

M 6.7 Module: Applied Microeconomics [M-WIWI-101499]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Volkswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	3

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

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

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

Competence Goal
Students

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

Prerequisites
None.

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

Recommendation
Completion of the module Economics is assumed.

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

M 6.8 Module: Basic Notions of Computer Science [M-INFO-101170]

Responsible: Dr. Sebastian Stüker
Thomas Worsch
Organisation: KIT Department of Informatics
Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 term	German	1	1

Mandatory			
T-INFO-101965	Basic Notions of Computer Science Pass	0 CR	Stüker, Worsch
T-INFO-101964	Basic Notions of Computer Science	6 CR	Stüker, Worsch

Competence Goal

- Students know the most important techniques for definitions and are able to read and understand such definitions.
- Students know the difference between syntax and semantics.
- Students know the most important notions from discrete mathematics and computer science and are able to use them for the description of problems and in proofs.

Content

- informal notion of algorithm, basics of correctness proofs
- computational complexity measures, hard problems
- big O notation, master theorem
- alphabets, words, formal languages
- finite acceptors, contextfree grammars
- inductive/recursive definitions, proofs by induction, closure
- relations and functions
- graphs

Workload
180 h

M 6.9 Module: Basic Practical Course for the ICPC-Programming Contest [M-INFO-101230]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Language	Level	Version
4	Each summer term	German	3	1

Mandatory			
T-INFO-101991	Basic Practical Course for the ICPC-Programming Contest	4 CR	Wagner

M 6.10 Module: Business Administration [M-WIWI-105267]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (mandatory) (Usage from 10/17/2019)

Credits	Recurrence	Duration	Language	Level	Version
8	Each term	2 semester	German	2	1

Mandatory			
T-WIWI-102819	Business Administration: Finance and Accounting	4 CR	Ruckes, Uhrig-Homburg, Wouters
T-WIWI-102818	Business Administration: Production Economics and Marketing	4 CR	Fichtner, Klarmann, Lützkendorf, Ruckes, Schultmann

Competence Certificate
The assessments of the courses are written examinations (90 minutes each) according to §4(2), 1 of the examination regulation.

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 be able to

- deal with advanced topics in accounting,
- describe the impacts and features of marketing instruments,
- knows the problem formulation and theories of production management, including the areas of energy, construction, real-estate and ergonomics,
- evaluate information as a competitive factor and is in control of the terminology and the methods to asses information.

Prerequisites
None

Content
The institutional framework and the modelling and formal description of a company's decisions play an essential role in this module. This module contains problems in procurement and materials management as well as in logistics. Modern production processes for goods and services are systematically presented. Marketing research and knowledge of the range of marketing instruments are fundamental for decisions in a competitive market environment. Advanced topics in accounting are also taught.

Recommendation
It is highly recommended to fulfil this module only after completing the module *Foundations in Business Administration*.

Workload
See German version.

M 6.11 Module: Business Administration [M-WIWI-101492]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (mandatory) (Usage until 10/16/2019)

Credits	Recurrence	Duration	Language	Level	Version
8	Each term	2 semester	German	2	1

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

Competence Certificate
The assessments of the courses are written examinations (90 minutes each) according to §4(2), 1 of the examination regulation.

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 be able to

- deal with advanced topics in accounting,
- describe the impacts and features of marketing instruments,
- knows the problem formulation and theories of production management, including the areas of energy, construction, real-estate and ergonomics,
- evaluate information as a competitive factor and is in control of the terminology and the methods to asses information.

Prerequisites
None

Content
The institutional framework and the modelling and formal description of a company's decisions play an essential role in this module. This module contains problems in procurement and materials management as well as in logistics. Modern production processes for goods and services are systematically presented. Marketing research and knowledge of the range of marketing instruments are fundamental for decisions in a competitive market environment. Advanced topics in accounting are also taught.

Recommendation
It is highly recommended to fulfil this module only after completing the module *Foundations in Business Administration*.

Workload
See German version.

M 6.12 Module: Business Processes and Information Systems [M-WIWI-101476]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: Informatics (Wahlmodule Informatik)

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

Election block: Wahlpflichtangebot (between 1 and 2 items)			
T-WIWI-102697	Business Process Modelling	4,5 CR	Oberweis
T-WIWI-109799	Process Mining	4,5 CR	Oberweis
Election block: Ergänzungsangebot (between 0 and 1 items)			
T-WIWI-102668	Enterprise Architecture Management	4,5 CR	Wolf
T-WIWI-104679	Foundations of Mobile Business	4,5 CR	Oberweis
T-WIWI-110541	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-102910	Special Topics of Applied Informatics	4,5 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner

Competence Certificate
The assessment mix of each course of this module is defined for each course separately. The final mark for the module is the average of the marks for each course weighted by the credits and truncated after the first decimal.

Competence Goal
Students

- design architecture models of enterprise information systems and compare alternative designs,
- explain the concepts and principles of process modeling languages and methods, apply the methods in a concrete situation and evaluate the results,
- choose an appropriate modeling language according to a given context for analysing, modeling and improving business processes.

Prerequisites
At least one of the courses "Business Process Modelling" or "Process Mining" has to be attended.

Content
Modeling the relevant aspects of a business process is the basis for efficient and effective support of this process in an enterprise information system.Detailed knowledge of languages, methods and software tools for supporting business process modeling is taught in this module.

Additionally fundamentals of software quality management are considered in this module. Maturity models like CMMI or SPICE for evaluation and improvement of a software development process are introduced.

M 6.13 Module: Cognitive Systems [M-INFO-100819]

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101356	Cognitive Systems	6 CR	Dillmann, Waibel

M 6.14 Module: Commercial Law [M-INFO-101191]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: Law (mandatory)

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

Mandatory			
T-INFO-102013	Exercises in Civil Law	9 CR	Dreier, Matz

M 6.15 Module: Computer Architecture [M-INFO-100818]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101355	Computer Architecture	6 CR	Henkel, Karl

M 6.16 Module: Computer Graphics [M-INFO-100856]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101393	Computer Graphics	6 CR	Dachsbacher
T-INFO-104313	Computer Graphics Pass	0 CR	Dachsbacher

M 6.17 Module: Computer Organization [M-INFO-103179]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Language	Level	Version
6	Each winter term	German	3	1

Mandatory			
T-INFO-103531	Computer Organization	6 CR	Karl

M 6.18 Module: Constitutional and Administrative Law [M-INFO-105247]

Responsible: Prof. Dr. Nikolaus Marsch
Organisation: KIT Department of Informatics
Part of: Law (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
6	Each term	2 semester	German	2	1

Mandatory			
T-INFO-110300	Public Law I & II	6 CR	Marsch

Workload
See German version.

M 6.19 Module: CRM and Service Management [M-WIWI-101460]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre) (Usage until 3/30/2020)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	3

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

Competence Certificate
This module will be offered for the last time in winter semester 2019/20.

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

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

Competence Goal
The student

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

Prerequisites
None

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

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

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

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

Workload
The total amount of work for this module is approximately 270 hours (9 credits). The subdivision is based on the credits of the courses of the module.
The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam periods and the time that is required to achieve the objectives of the module as an average student with an average performance.

M 6.20 Module: Curves in CAD [M-INFO-101248]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
5	Irregular	1 semester	German	3	1

Mandatory			
T-INFO-102067	Curves in CAD	5 CR	Prautzsch

Competence Goal
Basic knowledge about smooth freeform curves, and about their representations in CAD systems and in computer graphics. In particular, knowledge of control points and the geometric properties of Bézier and B-spline representations.

Content
Bézier and B-spline-Technics, polarforms, algorithms of de Casteljau, de Boor and Boehm, Oslo-Algorithm, Stärk's C^k construction, subdivision, change of representations, intersection algorithms,, interpolation with splines, and a bit on tensorproduct surfaces (= curves controlled by curves).

M 6.21 Module: Database Systems [M-INFO-104921]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics (mandatory)

Credits	Recurrence	Language	Level	Version
4	Each summer term	German	2	1

Mandatory			
T-INFO-101497	Database Systems	4 CR	Böhm

M 6.22 Module: Design, Construction and Sustainability Assessment of Buildings [M-WIWI-101467]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

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

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

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

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

Competence Goal
The student

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

Prerequisites
None

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

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

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

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

Furthermore a combination with courses in the area of

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

is recommended.

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

M 6.23 Module: Digital Circuits Design [M-INFO-102978]

Responsible: Prof. Dr.-Ing. Uwe Hanebeck
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Language	Level	Version
6	Each summer term	German	3	1

Mandatory			
T-INFO-103469	Digital Circuits Design	6 CR	Karl

M 6.24 Module: eBusiness and Service Management [M-WIWI-101434]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	8

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-109938	Digital Services	4,5 CR	Satzger, Weinhardt
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-109936	Platform Economy	4,5 CR	Dorner, Weinhardt
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 students

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

Prerequisites
None

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

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

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

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

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

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

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

M 6.25 Module: Economic Policy I [M-WIWI-101668]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Volkswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	9

Mandatory			
T-WIWI-103213	Basic Principles of Economic Policy	4,5 CR	Ott
Election block: Wahlpflichtangebot (1 item)			
T-WIWI-109121	Macroeconomic Theory	4,5 CR	Brumm
T-WIWI-102739	Public Revenues	4,5 CR	Wigger
T-WIWI-102908	Personnel Policies and Labor Market Institutions	4,5 CR	Nieken
T-WIWI-100005	Competition in Networks	4,5 CR	Mitusch

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

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

Competence Goal
Students shall be given the ability to

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

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

Content

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

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

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

M 6.26 Module: Economic Theory [M-WIWI-101501]

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

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German/English	3	3

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

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

Prerequisites
None

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

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

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

Recommendation
None

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

M 6.27 Module: Economics [M-WIWI-101431]

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

Credits	Recurrence	Duration	Language	Level	Version
5	Each term	1 semester	German	1	2

Mandatory			
T-WIWI-102708	Economics I: Microeconomics	5 CR	Puppe, Reiß

Competence Certificate
The assessment of the module is a written examination according to §4(2), 1 of the examination regulation. The grade of the module corresponds to the grade of this examination.

The main exam takes place subsequent to the lectur. The re-examination is offered at the same examination period. Only repeating candidates are entitled for taking place the re-examination. For a detailed description on the exam regulations see the information of the respective chair.

Competence Goal
It is the main aim of this module to provide basic knowledge in economic modelling. In particular, the student should be able to analyze market processes and the determinants of market results. Furthermore, she should be able to evaluate the effects of economic policy measures on market behavior and propose alternative, more effective policy measures.

In particular, the student should learn

- to apply simple microeconomic concepts,
- to analyze the structure of real world economic phenomena,
- to judge the possible effects of economic policy measures on the behavior of economic agents (in simple decision problems),
- to suggest alternative policy measures,
- to analyze as a participant of a tutorial simple economic problems by solving written exercises and to present the results of the exercises on the blackboard,
- to become familiar with the basic literature on microeconomics.

The student should gain basic knowledge in order to help in practical problems

- to analyze the structure of microeconomics relationships and to present own problem solutions,
- solve simple economic decision problems.

Prerequisites
None

Content
In the two main parts of the course, problems of microeconomic decision making (household and firm behavior) and problems of commodity allocation on markets (market equilibria and their efficiency properties of markets) are discussed. In the final part of the course, basics of imperfect competition (oligopolistic markets) and of game theory as well as welfare economics are presented.

Annotation
When personal resources are available students' tutorials will be established.

Workload
See German version.

M 6.28 Module: eFinance [M-WIWI-101402]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German/English	3	7

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

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

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

Competence Goal
The students

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

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

Content
The module "eFinance: Information engineering and management in finance" addresses current problems in the finance sector. It is investigated the role of information and knowledge in the finance sector and how information systems can solve or extenuate them. Speakers from practice will contribute to lectures with their broad knowledge. Core courses of the module deal with the background of banks and insurance companies and the electronic commerce of stocks in global finance markets. In addtion the course Derivatives offers an insight into future and forward contracts as well as the assesment of options. Exchanges and International Finance are also alternatives which provide a suplementary understanding for capital markets.

Information management topics are in the focus of the lecture "eFinance: information engineering and management for securities trading". For the functioning of the international finance markets, it is necessary that there is an efficient information flow. Also, the regulatory frameworks play an important role. In this context, the role and the functioning of (electronic) stock markets, online brokers and other finance intermediaries and their platforms are presented. Not only IT concepts of German finance intermediaries are presented, but also international system approaches will be compared. The lecture is supplemented by speakers from the practice (and excursions, if possible) coming from the Deutsche Börse and the Stuttgart Stock Exchange.

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

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

M 6.29 Module: Empirical Finance [M-WIWI-105035]

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each winter term	English	3	2

Mandatory			
T-WIWI-110216	Empirical Finance	6 CR	Ulrich
T-WIWI-110217	Python for Empirical Finance	3 CR	Ulrich

Competence Certificate
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the single courses of this module.
The assessment of "Empirical Finance" is carried out in form of a written exam (90 minutes), the assessment of "Python for Empirical Finance" is carried out in form of six biweekly Python programming tasks and offered each winter term.
The overall grade of the module is the grade of the written exam weighted with factor 0.75 and the grade for the Python programming tasks weighted with factor 0.25. The resulting grade is truncated after the first decimal.

Competence Goal
Students learn the fundamental concepts of modern portfolio theory and their realization in Python. The course focuses on the implementation of statistical concepts in Python, such that students are able to make investment decision under uncertainty after successful completion of this module.

Content
The module covers several topics, among them:

- Mean-Variance Portfolio Optimization
- Modeling Distribution of Asset Returns with Factor Models and ARMA-GARCH
- Monte-Carlo Simulation
- Parameter Estimation with Maximum Likelihood and Regressions?

Recommendation
Prior knowledge of statistics is recommended.

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

M 6.30 Module: Energy Economics [M-WIWI-101464]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	3

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

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

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

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

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

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

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

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

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

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

M 6.31 Module: Essentials of Finance [M-WIWI-101435]

Responsible: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

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

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

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
The student

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

Prerequisites
None

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

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

M 6.32 Module: Formal Systems [M-INFO-100799]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101336	Formal Systems	6 CR	Beckert

M 6.33 Module: Foundations of Marketing [M-WIWI-101424]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	5

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

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

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

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

Content
The core course of the module is “Marketing Mix”. This course is compulsory and must be examined. “Marketing Mix” contains instruments and methods that enable you to goal-oriented decisions in the operative marketing management (product management, pricing, promotion and sales management).

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

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

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

M 6.34 Module: Fundamentals of Digital Service Systems [M-WIWI-102752]

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	5

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

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

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

Competence Goal
Students

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

Prerequisites
None

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

Recommendation
None

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

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

M 6.35 Module: Geometric Basics for Geometry Processing [M-INFO-100756]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
5	Irregular	1 term	German	3	1

Mandatory			
T-INFO-101293	Geometric Basics for Geometry Processing	5 CR	Prautzsch

M 6.36 Module: Geometric Optimization [M-INFO-100730]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
3	Irregular	1 term	German	3	1

Mandatory			
T-INFO-101267	Geometric Optimzation	3 CR	Prautzsch

M 6.37 Module: Human Computer Interaction [M-INFO-100729]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101266	Human-Machine-Interaction	6 CR	Beigl
T-INFO-106257	Human-Machine-Interaction Pass	0 CR	Beigl

M 6.38 Module: Human Resources and Organizations [M-WIWI-101513]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	4

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

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

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

Prerequisites
The course "Human Resource Management" is compulsory and must be examined.

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

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

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

Recommendation
Completion of module Business Administration is recommended.

Basic knowledge of microeconomics, game theory and statistics is recommended.

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

M 6.39 Module: Industrial Production I [M-WIWI-101437]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German/English	3	3

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

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

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

Competence Goal

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

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

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

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

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

M 6.40 Module: Information Security [M-WIWI-104069]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: Informatics (Wahlmodule Informatik)

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

Mandatory			
T-WIWI-110342	Applied Informatics – Information Security	4,5 CR	Volkamer
Election block: Wahlpflichtangebot (1 item)			
T-WIWI-108439	Advanced Lab Security, Usability and Society	4,5 CR	Volkamer
T-WIWI-109786	Advanced Lab Security	4,5 CR	Volkamer

Competence Certificate
The module examination is carried out in the form of partial examinations on the selected courses of the module, with which the minimum requirement at creditpoints is fulfilled. The learning control is described in each course. The overall score of the module is made up of the sub-scores weighted with creditpoints and is cut off after the first comma point.

Competence Goal
The student

- can explain and apply the basics of information security
- knows appropriate measures to achieve different protection goals and can implement these measures
- can assess the quality of organisational protective measures, i. e. among other things knows what has to be taken into account when using the individual measures
- Understanding the differences between information security in the enterprise and in the private context
- knows the areas of application of a variety of relevant standards and knows their weaknesses
- knows and can explain the problems of information security which may arise from human-machine interaction
- can assess messages about detected security problems in a critical way
- can structure a software project in the field of information security and explain and present results in oral and written form
- can use the techniques of Human Centred Security and Privacy by Design to create user-friendly software.

Prerequisites
None

Content

- Basics and concepts of information security
- Understanding the protection objectives of information security and various attack models (including associated assumptions)
- introduction of measures to achieve the respective protection goals, taking into account different attack models
- Note: In contrast to the IT Security lecture, measures such as encryption algorithms are treated only abstractly, i. e. the idea of the measure, assumptions to the attacker and the deployment environment.
- Presentation and analysis of problems of information security arising from human-machine interaction and presentation of the Human Centered Security by Design approach.
- Introduction into organisational protective measures and standards to be observed for companies.

Annotation
This new module can be chosen from summer term 2018.

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

M 6.41 Module: Information Services in Networks [M-WIWI-101440]

Responsible: N.N.
Prof. Dr. Hartmut Schmeck
Organisation: KIT Department of Economics and Management
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	3

Election block: Wahlpflichtangebot ()			
T-INFO-101276	Data and Storage Management	4 CR	Neumair
T-INFO-101284	Integrated Network and Systems Management	4 CR	Neumair
T-WIWI-110541	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-102874	Semantic Web Technologies	4,5 CR	Sure-Vetter

Competence Certificate
The assessment mix of each course of this module is defined for each course separately. The final mark for the module is the average of the marks for each course weighted by the credits and truncated after the first decimal.

Prerequisites
None

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

M 6.42 Module: Information Systems & Digital Business: Interaction [M-WIWI-104911]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	3

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

Competence Certificate
The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO via courses of the module amounting to a total of at least 9 LP.
The overall score of the module is formed from the credit-weighted scores of the partial examinations and truncated after the first decimal place.

Competence Goal
Students

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

Content
The “Information Systems & Digital Business” modules of the research groups of Prof. Dr. Alexander Mädche (Information Systems & Service Design), Prof. Dr. Gerhard Satzger (Digital Service Innovation) and Prof. Dr. Christof Weinhardt (Information & Market Engineering), offer a comprehensive overview on important topics of digitalization – blending aspects of digital interaction, digital services and the platform economy.

Courses in this module cover the aspects of interaction between humans and information systems as well as the economic foundations of platform businesses:

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

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

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

M 6.43 Module: Information Systems & Digital Business: Platforms [M-WIWI-104912]

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	3

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

Competence Certificate
The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO via courses of the module amounting to a total of at least 9 LP.
The overall score of the module is formed from the credit-weighted scores of the partial examinations and truncated after the first decimal place.

Competence Goal
Students

- understand services from different perspectives, the concept of value creation in service systems as well as the economic foundations and key components or platforms
- get familiar with concepts, methods and tools for the design, modelling, development and management of digital services and platforms
- understand the categories and trends of platforms as providers of digital services
- gain experience in group work as well as in the analysis of case studies and the professional presentation of research results
- are enabled to design new platforms based on a business idea.

Content
The “Information Systems & Digital Business” modules of the research groups of Prof. Dr. Alexander Mädche (Information Systems & Service Design), Prof. Dr. Gerhard Satzger (Digital Service Innovation) and Prof. Dr. Christof Weinhardt (Information & Market Engineering), offer a comprehensive overview on important topics of digitalization – blending aspects of digital interaction, digital services and the platform economy.

Courses in this module cover the technical and economic aspects of digital services as well as their application in the platform economy:

- **Digital Services:** The global economy is increasingly determined by services: in industrialized countries, nearly 70% of gross value added is achieved in the tertiary sector. For the design, development and the management of services traditional “goods-focused” concepts are often insufficient or inappropriate – even more so, if companies reap the ample opportunities to offer digital services. The course is centered around the concepts of joint value creation within service systems. It covers the theoretical background of services and service innovation, technical and economic aspects of cloud and cloud labor services as well as webservices. It focusses on the potential to leverage data for novel digital services and business models and to form dynamic and scalable service value networks. It comprises hands-on experience to conceive and build novel digital, cloud-based services.

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

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

M 6.44 Module: Information Systems & Digital Business: Servitization [M-WIWI-104913]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	2

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

Competence Certificate
The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO via courses of the module amounting to a total of at least 9 LP.
The overall score of the module is formed from the credit-weighted scores of the partial examinations and truncated after the first decimal place.

Competence Goal
Students

- understand services from different perspectives and the concept of value creation in service systems
- get familiar with concepts, methods and tools for the design, modelling, development and management of digital services and interactive systems
- understand the basic characteristics and effects of interactive systems as an integral element of digital services – theoretically grounded in reference disciplines such as psychology
- get hands-on experience in conceptualizing and designing digital services and interactive systems in real use cases.

Content
The “Information Systems & Digital Business” modules of the research groups of Prof. Dr. Alexander Mädche (Information Systems & Service Design), Prof. Dr. Gerhard Satzger (Digital Service Innovation) and Prof. Dr. Christof Weinhardt (Information & Market Engineering), offer a comprehensive overview on important topics of digitalization – blending aspects of digital interaction, digital services and the platform economy.

Courses in this module cover the technical and economic aspects of digital services as well as the interaction of humans with information systems:

- **Digital Services:** The global economy is increasingly driven by services: in industrialized countries, nearly 70% of gross value added is achieved in the tertiary sector. For the design, development and the management of services traditional “goods-focused” concepts are often insufficient or inappropriate – even more so, if companies reap the ample opportunities to offer digital services. The course is centered around the concepts of joint value creation within service systems. It covers the theoretical background of services and service innovation, technical and economic aspects of cloud and cloud labor services as well as webservices. It focuses on the potential to leverage data for novel digital services and business models and to form dynamic and scalable service value networks. It comprises hands-on experience to conceive and build novel digital, cloud-based services.

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

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

M 6.45 Module: Information Systems I [M-WIWI-104820]

Responsible: Prof. Dr. Sebastian Abeck
Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: Information Systems

Credits	Recurrence	Language	Level	Version
4	Each winter term	German	1	1

Mandatory			
T-WIWI-109817	Information Systems 1	4 CR	Mädche

Competence Certificate
The module examination takes place in the form of a written examination of 60 minutes according to § 4 Abs. 2 via the course "Business Information Systems 1".

Competence Goal
The student

- understands information systems and infrastructures as a dynamic interaction of technical and non-technical elements in the generation and use of information,
- knows application areas of information systems and infrastructures in business and society,
  understands digital transformation as a socio-technical design process of (business) processes (internal digitisation) and products/services (external digitisation) in information systems and infrastructures,
- knows different types of information systems and infrastructures in business and society,
- knows the potential benefits of a targeted supply of information in business and society through the appropriate use of information systems and infrastructures.

General qualifications:

- Teamwork: communication, organization
- Problem-solving competence for socially relevant problems

Content
In the lecture "Business Information Systems 1" of the module central basics of information systems are introduced as a scientific discipline. The subject area, basic terms, scientific character and goals as well as methods in science and practice of information systems are introduced. Concepts, methods and theories as well as systems and their engineering design are discussed along the levels of individual, organization and market. The lectures are complemented by Capstone projects with real questions.

Workload
Total effort for 4 credit points: approx. 120 hours.
Presence time: 40 hours
Preparation / follow-up: 40 hours
Exam and exam preparation: 40 hours

M 6.46 Module: Information Systems II [M-WIWI-104821]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Information Systems

Credits	Recurrence	Language	Level	Version
4	Each summer term	German	1	1

Mandatory			
T-WIWI-109818	Information Systems 2	4 CR	Mädche

Competence Certificate
The module examination takes place in the form of a written examination of 60 minutes according to § 4 Abs. 2 via the course Business Information Systems 2.

Competence Goal
The student

- understands information systems and infrastructures as a dynamic interaction of technical and non-technical elements in the generation and use of information,
- knows application areas of information systems and infrastructures in business and society,
- understands digital transformation as a socio-technical design process of (business) processes (internal digitisation) and products/services (external digitisation) in information systems and infrastructures,
- knows different types of information systems and infrastructures in business and society,
- knows the potential benefits of a targeted supply of information in business and society through the appropriate use of information systems and infrastructures.

Content
In the lecture "Business Information Systems II" of the module central basics of information systems are introduced as a scientific discipline. The subject area, basic terms, scientific character and goals as well as methods in science and practice of information systems are introduced. Concepts, methods and theories as well as systems and their engineering design are discussed along the levels of individual, organization and market. The lectures are complemented by Capstone projects with real questions.

Workload
Total effort for 4 credit points: approx. 120 hours.
Presence time: 40 hours
Preparation / follow-up: 40 hours
Exam and exam preparation: 40 hours

M 6.47 Module: Intellectual Property and Data Protection [M-INFO-101253]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: Law (Wahlmodul Rechtswissenschaft)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 semester	German	3	2

Mandatory			
T-INFO-109840	Intellectual Property and Data Protection	6 CR	Matz

Content
Building onto what the students have learned in law during the first two years of Bachelor studies, the module *Law* in the third Bachelor years has the purpose of both deepening and specialising the legal studies in areas of practical importance for information economics and management...

M 6.48 Module: Introduction in Computer Networks [M-INFO-103455]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics (mandatory)

Credits	Recurrence	Language	Level	Version
4	Each summer term	German	2	1

Mandatory			
T-INFO-102015	Introduction in Computer Networks	4 CR	Zitterbart

M 6.49 Module: Introduction to Civil Law [M-INFO-101190]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: Law (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
5	Each winter term	1 semester	German	1	2

Mandatory			
T-INFO-103339	Civil Law for Beginners	5 CR	Dreier

M 6.50 Module: Introduction to Data and Information Management [M-INFO-101235]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
9	Once	1 semester	German/English	3	1

Mandatory			
T-INFO-101497	Database Systems	4 CR	Böhm
Election block: Grundlagen des Daten- und Informationsmanagements (at least 1 item as well as at least 5 credits)			
T-INFO-101305	Big Data Analytics	5 CR	Böhm
T-INFO-103552	Lab: Working with Database Systems	4 CR	Böhm
T-INFO-101317	Deployment of Database Systems	5 CR	Böhm
T-INFO-101257	Mechanisms and Applications of Workflow Systems	5 CR	Mülle
T-INFO-101977	Selling IT-Solutions Professionally	1,5 CR	Böhm
T-INFO-101975	Consulting in Practice	1,5 CR	Böhm
T-INFO-101976	Project Management in Practice	1,5 CR	Böhm

Competence Goal
The students

- see the necessity of specialised systems for information and data management and are able to define and deploy decision criteria for purchasing such software,
- are aware of the fundamental approaches in information and database systems and are able to judge their potential applications,
- understand database applications and develop simple database applications on their own,
- are able to communicate at a professional level about technical aspects of information and knowledge management

Prerequisites
None

Content
This module aims at exposing students to modern information and database systems. Beyond fundamental theory and concepts, this module covers the deployment of such technology.

M 6.51 Module: Introduction to Operations Research [M-WIWI-101418]

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

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (mandatory)

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

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

Competence Certificate
The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.

In each term (usually in March and July), one examination is held for both courses.

Competence Goal
The student

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

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

Prerequisites
None

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

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

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

M 6.52 Module: Introduction to Statistics [M-WIWI-101432]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: Mathematics

Credits	Recurrence	Duration	Language	Level	Version
10	Each term	2 semester	German	1	2

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

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

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

Competence Goal
See German version.

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

Prerequisites
Keine

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

A. Descriptive Statistics: univariate und bivariate analysis

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

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

Recommendation
In some cases, knowledge is required that is imparted within the mathematics module. The module should therefore only be attended if the course Mathematics I for Information Engineering and Management [01360] has been attended beforehand.

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

The lecture will be accompanied by an exercise, a tutorial and a computer internship, which are recommended.

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

M 6.53 Module: Lab Protocol Engineering [M-INFO-101247]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

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

Mandatory			
T-INFO-102066	Lab Protocol Engineering	4 CR	Zitterbart

M 6.54 Module: Lab: Working with Database Systems [M-INFO-101865]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Language	Level	Version
4	Each winter term	German	3	1

Mandatory			
T-INFO-103552	Lab: Working with Database Systems	4 CR	Böhm

M 6.55 Module: Lego Mindstorms - Practical Course [M-INFO-102557]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Language	Level	Version
4	Each winter term	German	3	2

Mandatory			
T-INFO-107502	Practical Course: Lego Mindstorms	4 CR	Asfour

Competence Goal
The participants are able to design and construct a robot with motors and sensors using the Lego Mindstorms kit. The students are familiar with programming the Lego EV3 components using the Java programming language. They are able to understand and solve several key problems in mobile robotics, such as autonomous navigation, detection of landmarks and objects as well as obstacle avoidance. The students know how to efficiently and independently solve problems in a small group in a given time frame and are able to systematically document their work and results.

Content
In this practical course, teams of three students build and program a mobile robot using Lego Mindstorms and the Java programming language. The robots are challenged to complete a versatile parkour including sections like the traversal of a maze, following a line, crossing a bridge or avoiding obstacle. After initial building of the robots, a section of the parkour will be set up each week and tackled by the robots, for which the students have to prepare their code beforehand. A final race of the robots on the entire parkour will be held at the end of the semester.

Recommendation
Basic knowledge in JAVA is necessary for successful completion of this course.

M 6.56 Module: MARS-Based Internship [M-INFO-101245]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
4	Each term	1 semester	German/English	3	1

Mandatory			
T-INFO-102053	MARS Basis Lab	4 CR	Prautzsch

Workload
120 h

M 6.57 Module: Mathematics I [M-MATH-104914]

Responsible: Prof. Dr. Andreas Rieder
Prof. Dr. Christian Wieners
Organisation: KIT Department of Mathematics
Part of: Mathematics

Credits	Recurrence	Duration	Language	Level	Version
8	Once	1 semester	German	1	2

Mandatory			
T-MATH-109942	Mathematics I for Information Systems - Exam	7 CR	Rieder, Weiß, Wieners
T-MATH-109943	Mathematics I for Information Systems - Exercise	1 CR	Rieder, Weiß, Wieners

Competence Certificate
The assessment in this module consists of

1. a nongraded certificate of exercise following §4(3) of the examination regulation from the exercises to mathematics I (1 credit) and
2. a written examination of 60 minutes on the lectures mathematics I following §4(2), 1 of the examination regulations (7 credits).

The grade of the module is the grade of the written examiniation.

Competence Goal
Mathematical models are an important part in economical sciences. Therefore, the students need a basic knowledge in mathematics. The aim is the instruction in a comprehension of basic methods in analysis and linear algebra.

The students learn

- to use simple concepts and structures in mathematics;
- to recognize the mathematical structure of practical applications and to solve in simple cases mathematical problems;
- to comprehend the mathematical structure of more complex applications;
- to understand the mathematical basics to develop mathematical models for applications in cooperation with experts;
- to explain as a group member in the tutorial elementary mathematical structures and to stimulate in the discussion of examples the success of the group;
- to be in time for the tutorial group and for the preparation of homeworks;
- to work with basic mathematical literature.

The provides the foundations for

- comprehending the mathematical structure of more complex applications;
- developing mathematical models for applications in cooperation with experts;
- constructing algorithmical solutions of mathematical models for applications in cooperation with experts.

Prerequisites
None

Content
The lectures mathematics I and II give an overview in basic mathematical knowledge which is required to understand modern computer science and economical sciences. Part I consist of linear algebra including the basic algebraic structures, vector spaces and linear mappings. Many algebraic concepts are important for computer science. Part II consists of analysis including an introduction into the calculus of functions of one or several variables.

Annotation
None.

Workload
See German version.

M 6.58 Module: Mathematics II [M-MATH-104915]

Responsible: Prof. Dr. Andreas Rieder
Prof. Dr. Christian Wieners
Organisation: KIT Department of Mathematics
Part of: Mathematics

Credits	Recurrence	Duration	Language	Level	Version
8	Once	1 semester	German	1	2

Mandatory			
T-MATH-109944	Mathematics II for Information Systems - Exam	7 CR	Rieder, Weiß, Wieners
T-MATH-109945	Mathematics II for Information Systems - Exercise	1 CR	Rieder, Weiß, Wieners

Competence Certificate
The assessment in this module consists of

1. a nongraded certificate of exercise following §4(3) of the examination regulation from the exercises to mathematics II (1 credit) and
2. a written examination of 60 minutes on the lectures mathematics II following §4(2), 1 of the examination regulations (7 credits).

The grade of the module is the grade of the written examiniation.

Competence Goal
Mathematical models are an important part in economical sciences. Therefore, the students need a basic knowledge in mathematics. The aim is the instruction in a comprehension of basic methods in analysis and linear algebra.

The students learn

- to use simple concepts and structures in mathematics;
- to recognize the mathematical structure of practical applications and to solve in simple cases mathematical problems;
- to comprehend the mathematical structure of more complex applications;
- to understand the mathematical basics to develop mathematical models for applications in cooperation with experts;
- to explain as a group member in the tutorial elementary mathematical structures and to stimulate in the discussion of examples the success of the group;
- to be in time for the tutorial group and for the preparation of homeworks;
- to work with basic mathematical literature.

The provides the foundations for

- comprehending the mathematical structure of more complex applications;
- developing mathematical models for applications in cooperation with experts;
- constructing algorithmical solutions of mathematical models for applications in cooperation with experts.

Prerequisites
None

Content
The lectures mathematics I and II give an overview in basic mathematical knowledge which is required to understand modern computer science and economical sciences. Part I consist of linear algebra including the basic algebraic structures, vector spaces and linear mappings. Many algebraic concepts are important for computer science. Part II consists of analysis including an introduction into the calculus of functions of one or several variables.

Workload
See German version.

M 6.59 Module: Mechano-Informatics and Robotics [M-INFO-100757]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
4	Each winter term	1 term	German/English	3	1

Mandatory			
T-INFO-101294	Mechano-Informatics and Robotics	4 CR	Asfour

Competence Goal
Based on the example of robotics students understand the synergistic effects and interdisciplinarity of mechatronics and informatics, the embedded systems, the control, and the methods and the algorithms. They are acquainted with the basic terminology and the methods which are common in robotics, signal processing, action representation, machine learning and cognitive systems. They are capable of applying fundamental state-of-the-art methods and tools for the development and programming of robots. Based on examples originating from current research conducted in the fields of humanoid robotics, the students interactively learn how to identify and formalize problems and tasks and how to develop solutions in an analytical and goal-directed way.

Content
The lecture addresses various engineering and algorithmic aspects and topics in robotics which are illustrated and explained based on examples originating from current research conducted in the field of humanoid robotics. First, this lecture gives an introduction into the mathematical fundamentals which are needed to describe a robotic system as well as the basic algorithms commonly applied in motion planning.

Subsequently, models and methods are introduced with which dynamical systems can be formalized and which can be used to encode and represent robot actions. To do so, we will discuss linear time-invariant systems in statespace as well as non-linear systems described as a set of differential equations which are driven by canonical systems. Further topics include perception, exploration, and classification of objects using haptics, and the basics as well as advanced applications of (deep) neural networks. Applications and approaches are presented which address current problems in robotics such as grasping, walking, visual and tactile visual servoing, and the classification of actions.

Recommendation
Siehe Teilleistung.

M 6.60 Module: Methodical Foundations of OR [M-WIWI-101936]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Operations Research)

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

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

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

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

Prerequisites
At least one of the courses "Nonlinear Optimization I" and "Global Optimization I" has to be examined.

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

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

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

M 6.61 Module: Microprocessors I [M-INFO-101183]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

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

Mandatory			
T-INFO-101972	Microprocessors I	3 CR	Karl

M 6.62 Module: Mobile Computing and Internet of Things [M-INFO-101249]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

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

Mandatory			
T-INFO-102061	Mobile Computing and Internet of Things	5 CR	Beigl

Prerequisites
None

M 6.63 Module: Mobile Robots – Practical Course [M-INFO-101184]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
4	Each summer term	1 semester	German/English	3	2

Mandatory			
T-INFO-101992	Mobile Robots – Practical Course	4 CR	Asfour

Competence Goal
The student is able to understand circuit diagrams and can assemble, test and debug complex PCBs. The student is familiar with programming microcontroller-based embedded systems using the C language and cross compilers. The student is able to use methods for controlling robotic sensors and actuators, can conduct experiments with robots and solve tasks in this context independently and in small groups.

Content
In this practical course, students assemble an ASURO robot in groups of two. Each student will be provided with his own robot, which he has to put into operation. While using the robots, a new set of problems will be solved each week. The students will need to prepare for each weak given the provided material. Sets of problem be solved using the C language and focus on controlling the robot's sensors and actuators as well as on the generation of reflex-based behavior. The course ends with a race, where the robots have to tackle an obstacle course.

M 6.64 Module: Module Bachelor Thesis [M-INFO-104875]

Organisation: KIT Department of Informatics
Part of: Bachelor Thesis

Credits	Recurrence	Language	Level	Version
15	Each term	German/English	3	1

Mandatory			
T-INFO-109907	Bachelor Thesis	15 CR	

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

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

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

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

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

Content
The Bachelor thesis is a written report which shows that the student can autonomously investigate a scientific problem in Information Engineering and Management. The work load for the Bachelor thesis should be 360h. The recommended project time is 4 months, the maximal project time is 5 months. The Bachelor thesis may also be written in English.

M 6.65 Module: Optimization under Uncertainty [M-WIWI-103278]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Operations Research)

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

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

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

The assessment procedures are described for each course of the module 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
The student

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

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

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

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

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

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

M 6.66 Module: Orientation Exam [M-WIWI-104843]

Responsible: Studiendekan der KIT-Fakultät für Informatik
Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

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

Part of: Orientation Exam

Credits	Recurrence	Language	Level	Version
0	Each term	German	3	1

Mandatory			
T-INFO-101531	Programming	5 CR	Koziolek, Reussner
T-INFO-101967	Programming Pass	0 CR	Koziolek, Reussner
T-MATH-109943	Mathematics I for Information Systems - Exercise	1 CR	Rieder, Weiß, Wieners
T-MATH-109942	Mathematics I for Information Systems - Exam	7 CR	Rieder, Weiß, Wieners
T-WIWI-109817	Information Systems 1	4 CR	Mädche

Modelled deadline
This module must be passed until the end of the **3. term**.

Prerequisites
None

M 6.67 Module: Practical Course Computer Engineering: Hardware Design [M-INFO-101219]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

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

Mandatory			
T-INFO-102011	Practical Course Computer Engineering: Hardware Design	4 CR	Karl
T-INFO-105983	Practical Course Computer Engineering: Hardware Design Pass	0 CR	Karl

Workload
60 h

M 6.68 Module: Practical Course Web Applications and Service-Oriented Architectures (I) [M-INFO-101633]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Language	Level	Version
5	Each winter term	German	3	2

Mandatory			
T-INFO-103119	Practical Course Web Applications and Service-Oriented Architectures (I)	5 CR	Abeck

M 6.69 Module: Programming [M-INFO-101174]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner
Prof. Dr.-Ing. Gregor Snelting

Organisation: KIT Department of Informatics

Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
5	Each winter term	1 semester	German	1	1

Mandatory			
T-INFO-101967	Programming Pass	0 CR	Koziolek, Reussner
T-INFO-101531	Programming	5 CR	Koziolek, Reussner

Competence Goal
Students should learn

- basic structures of the programming language Java and how to apply them; in particular control and simple data structures, object orientation and implementation of basic algorithms
- basics of programming methodology and the ability to autonomously write executable small to medium sized Java programs

Content

- objects and classes
- types, values and variables
- methods
- control structures
- recursion
- references, lists
- inheritance
- input and output
- exceptions
- programming methodology
- implementation of basic algorithms in Java (such as sorting algorithms)

M 6.70 Module: Public Finance [M-WIWI-101403]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Volkswirtschaftslehre)

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

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

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

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

Competence Goal
See German version.

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

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

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

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

M 6.71 Module: Real Estate Management [M-WIWI-101466]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

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

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

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

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

Competence Goal
The student

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

Prerequisites
None

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

This module is also suitable for students who want to discuss macroeconomic, business-management or financial problems in a real estate context.

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

Furthermore a combination with courses in the area of

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

is recommended.

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

M 6.72 Module: Real-Time Systems [M-INFO-100803]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Prof. Dr.-Ing. Björn Hein
Prof. Dr.-Ing. Thomas Längle

Organisation: KIT Department of Informatics

Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101340	Real-Time Systems	6 CR	Asfour, Längle

M 6.73 Module: Robotics I - Introduction to Robotics [M-INFO-100893]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Language	Level	Version
6	Each winter term	German	3	3

Mandatory			
T-INFO-108014	Robotics I - Introduction to Robotics	6 CR	Asfour

M 6.74 Module: Security [M-INFO-100834]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101371	Security	6 CR	Hofheinz, Müller-Quade

M 6.75 Module: Semantic Knowledge Management [M-WIWI-101438]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	9

Mandatory			
T-WIWI-102874	Semantic Web Technologies	4,5 CR	Sure-Vetter
Election block: Ergänzungsangebot (at least 1 item)			
T-WIWI-110340	Applied Informatics – Applications of Artificial Intelligence	4,5 CR	Sure-Vetter
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-102697	Business Process Modelling	4,5 CR	Oberweis

Competence Certificate
The assessment mix of each course of this module is defined for each course separately. The final mark for the module is the average of the marks for each course weighted by the credits and truncated after the first decimal.

Competence Goal
Students

- know the motives for the application of knowledge management in organizations
- know the basic design dimensions of holistic knowledge management (organization, human, information technology, corporate culture)
- know the main group of IT systems for knowledge management and are able to describe the relevant application scenarios and basic operating modes of these systems
- know how to use the different IT systems for knowledge management in practice
- know the basic standards for the modeling of information and processes and are able to describe their formal structures
- know how to apply the different modeling languages
- know criteria to evaluate the success of knowledge management systems and are able to apply them to assess defined knowledge management scenarios

Prerequisites
Lecture *Semantic Web Technologien [2511310]* is mandatory.

Content
In modern companies the availability and usability of knowledge is an essential factor of success for central managerial tasks and duties such as the improvement of business processes, product innovation and the amelioration of customer satisfaction.

This module illustrates the typical problems of knowledge management in organizations and presents IT methods to approach these questions. The relevant groups of knowledge management systems are analyzed and expanded in the subject areas knowledge representation/semantic modeling and document management/groupware systems.

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 workload is app. 270 hours.

M 6.76 Module: Seminar Module Economic Sciences [M-WIWI-101826]

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

Credits	Language	Level	Version
3	German	3	1

Election block: Wahlpflichtangebot (1 item)			
T-WIWI-103486	Seminar in Business Administration (Bachelor)	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103488	Seminar in Operations Research (Bachelor)	3 CR	Nickel, Rebennack, Stein
T-WIWI-103489	Seminar in Statistics (Bachelor)	3 CR	Grothe, Schienle
T-WIWI-103487	Seminar in Economics (Bachelor)	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre

Competence Certificate
The assessment is done by a seminar with at least 3 CP.
The assessment of the seminar (following §4(2), 3 ER) is described at the course description.

Competence Goal

- Students are able to independently deal with a defined problem in a specialized field based on scientific criteria.
- They are able to research, analyze the information, abstract and derive basic principles and regularities from unstructured information.
- They can solve the problems in a structured manner using their interdisciplinary know-how.
- They know how to validate the obtained results.
- Finally, they are able to logically and systematically present the results both orally and in written form in accordance with scientific guidelines (structuring, technical terminology, referencing). They can argue and defend the results professionally in the discussion.

Prerequisites
None.

Content
The module consists of a seminar, that is related to the research field of economic sciences. A complete list of available seminars is published in the internet.

Annotation
The mentioned seminars in this module handbook are place holders. For each semester, a complete list of seminars are published in the Vorlesungsverzeichnis or at the web pages of the participating institutes. Often, the seminar topics for a given semester are publishedat the end of the preceding semester. Some seminars require an early sign-in deadline at the end of the of the preceding semester.

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

M 6.77 Module: Seminar Module Informatics [M-INFO-102058]

Responsible: Dr. Ioana Gheta
Jürgen Weixler
Dr. André Wiesner

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

Part of: Seminars

Credits	Recurrence	Language	Level	Version
3	Each term	German/English	3	1

Election block: Seminar Informatik (1 item)			
T-INFO-104336	Seminar Informatics A	3 CR	Abeck
T-WIWI-103485	Seminar in Informatics (Bachelor)	3 CR	Professorenschaft des Fachbereichs Informatik

M 6.78 Module: Seminar Module Law [M-INFO-101218]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: Seminars

Credits	Recurrence	Duration	Language	Level	Version
3	Each term	1 semester	German	3	1

Mandatory			
T-INFO-101997	Seminar: Legal Studies I	3 CR	Dreier

M 6.79 Module: Software Engineering I [M-INFO-101175]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner
Prof. Dr. Walter Tichy

Organisation: KIT Department of Informatics

Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 semester	German	2	1

Mandatory			
T-INFO-101968	Software Engineering I	6 CR	Koziolek, Reussner, Tichy
T-INFO-101995	Software Engineering I Pass	0 CR	Tichy

Competence Goal
The students acquire basic knowledge about the principles, methods and tools of software engineering. They learn how to build and to maintain complex software systems in a systematic way.

Content
The content of the lecture is the entire lifecycle of software, spanning project planning, system analysis, cost estimation, design, implementation, validation, verification, and finally the maintaining of software. The covered topics include UML, design patterns, software tools, programming environments and configuration control/versioning systems.

Workload
approx. 180 h

M 6.80 Module: Software Engineering II [M-INFO-100833]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner
Prof. Dr. Walter Tichy

Organisation: KIT Department of Informatics

Part of: Informatics (Wahlmodule Informatik)

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

Mandatory			
T-INFO-101370	Software Engineering II	6 CR	Koziolek, Reussner, Tichy

Content
Requirements engineering, software development processes, software quality, software architectures, MDD, Enterprise Software Patterns software maintainability, software security, dependability, embedded software, middleware, statistic testing

M 6.81 Module: Specialization in Customer Relationship Management [M-WIWI-101422]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre) (Usage until 3/30/2020)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	5

Mandatory			
T-WIWI-102597	Operative CRM	4,5 CR	Geyer-Schulz
Election block: Ergänzungsangebot (1 item)			
T-WIWI-109938	Digital Services	4,5 CR	Satzger, Weinhardt
T-WIWI-100005	Competition in Networks	4,5 CR	Mitusch

Competence Certificate
This module will be offered for the last time in winter semester 2019/20.

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

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

Prerequisites
The course "Operative CRM" is compulsory.

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

Content
In this module, analysis methods and techniques for the management and improvement of customer relations are presented. Furthermore, modelling, implementation, introduction, change, analysis and valuation of operative CRM processes are treated. Regarding the first part, we teach analysis methods and techniques suitable for the management and improvement of customer relations. For this goal we treat the principles of customer- and service-oriented management as the foundation of successful customer relationship management. In addition, we show how knowledge of the customer can be used for decision-making at an aggregate level (e.g. planning of sortiments, analysis of customer loyality, ...). A basic requirement for this is the integration and collection of data from operative processes in a suitably defined data-warehouse in which all relevant data is kept for future analysis. The process of transfering data from the operative systems into the data warehouse is known as the ETL process (Extract / Transform / Load). The process of modelling a data-warehouse as well as the so-called extraction, transformation, and loading process for building and maintaining a data-warehouse are discussed in-depth. The data-warehouse serves as a base for flexible management reporting. In addition, various statistic methods (e.g. cluster analysis, regression analysis, stochastic models, ...) are presented which help in computing suitable key performance indicators or which support decision-making.
Regaring the operative part, we emphasize the design of operative CRM processes. This includes the modelling, implementation, introduction and change, as well as the analysis and evaluation of operative CRM processes. Petri nets and their extensions are the scientific foundation of process modelling. The link of Petri nets to process models used in industry as e.g. UML activity diagrams is presented. In addition, a framework for process innovation which aims at a radical improvement of key business processes is introduced. The following application areas of operative CRM processes are presented and discussed:
Strategic marketing processes
Operative marketing processes (campaign managament, permission marketing, ...)
Customer service processes (sales force management, field services, call center management, ...)

Workload
The total amount of work for this module is approximately 270 hours (9 credits). The subdivision is based on the credits of the courses of the module.
The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam periods and the time that is required to achieve the objectives of the module as an average student with an average performance.

M 6.82 Module: Statistics and Econometrics [M-WIWI-101599]

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

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Statistik)
Economics and Management (Volkswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	3

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

- shows an advanced understanding of Econometric techniques and statistical model building.
- is able to develop Econometric models for applied problems based on available data
- is able to apply techniques and models with statistical software, to interpret results and to judge on different approaches with appropriate statistical criteria.

Prerequisites
The course "Economics III: Introduction in Econometrics“ is compulsory and must be examined. In case the course „Economics III: Introduction in Econometrics“ has already been examined within the module „Applied Microeconomics“, the course „Economics III: Introduction in Econometrics“ is not compulsory.

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

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

M 6.83 Module: Strategy and Organization [M-WIWI-101425]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	4

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

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

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

Content
The module has a practical and action-oriented structure and provides the student with an up-to-date overview of basic skills concepts and models of strategic management and a realistic picture of possibilities and limitations rational design approaches of the organization.
The focus is firstly on internal and external strategic analysis, concept and sources of competitive advantage, Formulation of competitive and corporate strategies as well as strategy assessment and implementation. Secondly strengths and weaknesses of organizational structures and regulations are assessed on the basis of systematic criteria. Concepts for the organization of organizational structures, the regulation of organizational processes and the control organizational changes are presented.

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

M 6.84 Module: Supply Chain Management [M-WIWI-101421]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	8

Mandatory			
T-WIWI-109936	Platform Economy	4,5 CR	Dorner, Weinhardt
Election block: Ergänzungsangebot (1 item)			
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 CR	Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management	4,5 CR	Nickel
T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems	6 CR	Furmans

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

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

Competence Goal
The students

- are able to understand and evaluate the control of cross-company supply chains based on a strategic and operative view,
- are able to analyse the coordination problems within the supply chains,
- are able to identify and integrate adequate information system infrastructures to support the supply chains,
- are able to apply theoretical methods from the operations research and the information management,
- learn to elaborate solutions in a team

Prerequisites
The courseT-WIWI-107506 "Platform Economy"has to be taken.

Content
The module "Supply Chain Management" gives an overview of the mutual dependencies of information systems and of supply chains spanning several enterprises. The specifics of supply chains and their information needs set new requirements for the operational information management. In the core lecture "Platform Economy" the focus is set on markets between two parties that act through an intermediary on an Internet platform. Topics discussed are network effects, peer-to-peer markets, blockchains and market design. The course is held in English and teaches parts of the syllabus with the support of a case study in which students analyze a platform.

The module is completed by an elective course addressing appropriate optimization methods for the Supply Chain Management and for modern logistic approaches.

Annotation
The planned lectures in the next terms can be found on the websites of the respective institutes IISM, IFL and IOR.

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

M 6.85 Module: Surfaces for Computer Aided Design [M-INFO-101254]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

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

Mandatory			
T-INFO-102073	Surfaces for Computer aided Design	5 CR	Prautzsch

Competence Goal
Die Hörer und Hörerinnen der Vorlesung können grundlegende CAGD-Techniken für praktische und theoretische Arbeiten auf entsprechenden Gebieten anwenden und sind in der Lage die Qualitität von CAGD-Lösungen zu beurteilen.

Brauchen Sie dann noch für alle meine anderen Module Qualifikationsziele? Für alle diese Module wurden bislang noch keine Qualifikationsziele formuliert.

Content
Bézier and B-spline-Technics, for tensorproduct- and triangular surface patches: de Casteljau algorithm, convex surfaces, subdivision, smooth surface joints, Powell-Sabin, Clough-Tocher and Piper's elements, construction of smooth freeform surfaces, vertex enclosure problem, boxsplines.

M 6.86 Module: Team Project Software Development [M-INFO-104809]

Responsible: Prof. Dr. Sebastian Abeck
Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: Information Systems

Credits	Recurrence	Language	Level	Version
8	Each term	German	3	1

Mandatory			
T-INFO-109823	Team Project Software Development	8 CR	Abeck, Reussner

M 6.87 Module: Telematics [M-INFO-100801]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101338	Telematics	6 CR	Zitterbart

M 6.88 Module: Theoretical Informatics [M-INFO-101189]

Responsible: Prof. Dr. Jörn Müller-Quade
Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 semester	German/English	2	1

Mandatory			
T-INFO-103235	Theoretical Foundations of Computer Science	6 CR	Müller-Quade, Sanders, Wagner

Competence Certificate
The assessment of the module consists of a written examination according to §4(2), 1 of the examination regulations. The grade of the module corresponds to the grade of the written examination. Further details see the german section.

Competence Goal
The student

- has a deeper insight into the fundamentals of theoretical computer science and knows the computation models and proof techniques,
- understands the limits and possibilities of computer science in relation to the solution of definable but only partially predictable problems
- knows basic aspects of computer science in contrast to specific circumstances, such as specific computers or programming languages and also can phrase general statements about the solvability of problems
- is able to apply the proof techniques learned for the specification of systems of computer science and for the systematic design of programs and algorithms

Content
There are important problems whose solutions can clearly be defined but one will never be able to calculate such a solution systematically. Other problems are "likely" to be solved only through trial and error. Other topics of the module provide the basis for circuit design, design of compilers, and many others. Most results are rigorously proved. The proof techniques learned by the way are important for the specification of systems of computer science and for the systematic design of programs and algorithms.

The module provides a deep insight into the principles and methods of theoretical computer science. In particular, this will be discussed on the basic properties of Formal Languages as foundations of programming languages and communication protocols (regular, context-free Chomsky hierarchy), machine models (finite automata, pushdown automata, Turing machines, non determinism, and relations to families of formal languages), equivalence of sufficiently powerful computation models (Church's thesis), non computable important functions (halting problem,...), Gödel's incompleteness theorem and introduction to complexity theory, NP-complete problems and polynomial reductions.

Workload
approx. 210 h

M 6.89 Module: Topics in Finance I [M-WIWI-101465]

Responsible: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	7

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-107505	Financial Accounting for Global Firms	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-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg
T-WIWI-110511	Strategic Finance and Technoloy Change	1,5 CR	Ruckes

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

- has advanced skills in modern finance
- is able to apply these skills in practice in the fields of finance and accounting, financial markets and banking

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

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

Content
The module *Topics in Finance I* is based on the module *Essentials of Finance*. The courses deal with advanced issues concerning the fields of finance and accounting, financial markets and banking from a theoretical and practical point of view.

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

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

M 6.90 Module: Topics in Finance II [M-WIWI-101423]

Responsible: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Betriebswirtschaftslehre)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	8

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-109941	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-107505	Financial Accounting for Global Firms	4,5 CR	Luedecke
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg
T-WIWI-110511	Strategic Finance and Technoloy Change	1,5 CR	Ruckes

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

- has advanced skills in modern finance
- is able to apply these skills in practice in the fields of finance and accounting, financial markets and banking

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

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

Content
The module *Topics in Finance II* is based on the module *Essentials of Finance*. The courses deal with advanced issues concerning the fields of finance and accounting, financial markets and banking from a theoretical and practical point of view.

Annotation
The course T-WIWI-102790 "Special Taxation" will no longer be offered in the module as of winter semester 2018/1019.

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

M 6.91 Module: Web Applications and Service-Oriented Architectures (I) [M-INFO-101636]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: Informatics (Wahlmodule Informatik)

Credits	Recurrence	Language	Level	Version
4	Each winter term	German	3	1

Mandatory			
T-INFO-103122	Web Applications and Service-Oriented Architectures (I)	4 CR	Abeck

7 Courses

T 7.1 Course: Advanced Lab Informatics (Master) [T-WIWI-110541]

Responsible: Professorenschaft des Fachbereichs Informatik
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101440 - Information Services in Networks
M-WIWI-101476 - Business Processes and Information Systems

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	1

Events					
WS 19/20	2512301	Linked Data and the Semantic Web	3 SWS		Sure-Vetter, Acosta Deibe, Käfer, Heling
WS 19/20	2512501	Project lab Cognitive automobiles and robots	3 SWS	Practical course (P)	Zöllner
WS 19/20	2512600	Project lab Information Service Engineering	2 SWS	Practical course (P)	Sack
Exams					
WS 19/20	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
WS 19/20	7900046	Sicherheit		Prüfung (PR)	Volkamer
WS 19/20	7900102	Advanced Lab Information Service Engineering		Prüfung (PR)	Sack
WS 19/20	7900107	Advanced Lab Cognitive Automobile and Robots		Prüfung (PR)	Zöllner
WS 19/20	7900116	Advanced Lab Security, Usability and Society		Prüfung (PR)	Volkamer
WS 19/20	7900187	Real-World Challenges in Data Science und Analytics		Prüfung (PR)	Sure-Vetter

Competence Certificate
The alternative exam assessment consists of:

- a practical work
- a presentation and
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

Prerequisites
None

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:

V Linked Data and the Semantic Web

2512301, WS 19/20, 3 SWS, Language: German/English, Open in study portal

Notes
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

V **Project lab Cognitive automobiles and robots** **Practical course (P)**
2512501, WS 19/20, 3 SWS, Language: German/English, Open in study portal

Notes
Learning objectives:

- Students can practically apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles.
- The students master the analysis and solution of corresponding problems in the team.
- The students can evaluate, document and present their concepts and results.

Workload:

The workload of 4.5 credits consists of time of attendance at the test site for the practical implementation of the chosen solution, as well as the time for literature research and planning / specification of the planned solution. In addition, a short report and a presentation of the work carried out will be prepared.

V **Project lab Information Service Engineering** **Practical course (P)**
2512600, WS 19/20, 2 SWS, Language: English, Open in study portal

Notes
The ISE project 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, Knowledge Graphs, and Machine Learning. The solution of the given research problem requires the development of a software implementation.

The project will be worked on in teams of 3-4 students each, guided by a tutor from the teaching staff.

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.

The project course will be restricted to 15 participants.

Participation in the lecture "Information Service Engineering" (summer semester) is required.

ISE Tutor Team:

- Dr. Mehwish Alam
- M. Sc. Rima Türker
- M. Sc. Russa Biswas
- M. Sc. Fabian Hoppe
- M. Sc. Genet Asefa Gesese
- B. Sc. Tabea Tietz

T 7.2 Course: Advanced Lab Informatics (Master) [T-WIWI-110548]

Responsible: Professorenschaft des Fachbereichs Informatik
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101438 - Semantic Knowledge Management

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	1

Events					
WS 19/20	2512301	Linked Data and the Semantic Web	3 SWS		Sure-Vetter, Acosta Deibe, Käfer, Heling
WS 19/20	2512501	Project lab Cognitive automobiles and robots	3 SWS	Practical course (P)	Zöllner
WS 19/20	2512600	Project lab Information Service Engineering	2 SWS	Practical course (P)	Sack
Exams					
WS 19/20	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
WS 19/20	7900046	Sicherheit		Prüfung (PR)	Volkamer
WS 19/20	7900047	Praktikum Betriebliche Informationssysteme: Realisierung innovativer Dienste für Studierende		Prüfung (PR)	Oberweis
WS 19/20	7900102	Advanced Lab Information Service Engineering		Prüfung (PR)	Sack
WS 19/20	7900107	Advanced Lab Cognitive Automobile and Robots		Prüfung (PR)	Zöllner
WS 19/20	7900116	Advanced Lab Security, Usability and Society		Prüfung (PR)	Volkamer
WS 19/20	7900187	Real-World Challenges in Data Science und Analytics		Prüfung (PR)	Sure-Vetter

Competence Certificate
The alternative exam assessment consists of:

- a practical work
- a presentation and
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

Prerequisites
None

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:

V Linked Data and the Semantic Web

2512301, WS 19/20, 3 SWS, Language: German/English, Open in study portal

Notes
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

V **Project lab Cognitive automobiles and robots** **Practical course (P)**
2512501, WS 19/20, 3 SWS, Language: German/English, Open in study portal

Notes
Learning objectives:

- Students can practically apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles.
- The students master the analysis and solution of corresponding problems in the team.
- The students can evaluate, document and present their concepts and results.

Workload:

The workload of 4.5 credits consists of time of attendance at the test site for the practical implementation of the chosen solution, as well as the time for literature research and planning / specification of the planned solution. In addition, a short report and a presentation of the work carried out will be prepared.

V **Project lab Information Service Engineering** **Practical course (P)**
2512600, WS 19/20, 2 SWS, Language: English, Open in study portal

Notes
The ISE project 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, Knowledge Graphs, and Machine Learning. The solution of the given research problem requires the development of a software implementation.

The project will be worked on in teams of 3-4 students each, guided by a tutor from the teaching staff.

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.

The project course will be restricted to 15 participants.

Participation in the lecture "Information Service Engineering" (summer semester) is required.

ISE Tutor Team:

- Dr. Mehwish Alam
- M. Sc. Rima Türker
- M. Sc. Russa Biswas
- M. Sc. Fabian Hoppe
- M. Sc. Genet Asefa Gesese
- B. Sc. Tabea Tietz

T 7.3 Course: Advanced Lab Security [T-WIWI-109786]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104069 - Information Security

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each winter term	2

Events					
WS 19/20	2512100	Security	4 SWS	Practical course (P)	Baumgart, Volkamer, Mayer, Zarei
Exams					
WS 19/20	7900046	Sicherheit		Prüfung (PR)	Volkamer

Competence Certificate
The alternative exam assessment 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 19/20, 4 SWS, Language: German, Open in study portal

Practical course (P)

Notes
The lab deals with the IT security of everyday utensils. Implemented security mechanisms are first theoretically investigated and put to the test with practical attacks. Finally, countermeasures and suggestions for improvement are worked out. The lab is offered within the competence center for applied security technologies (KASTEL) and is supervised by several institutes.

The success control takes the form of a final presentation, a thesis and the handing over of the developed code.

More information on https://ilias.studium.kit.edu/goto_produktiv_crs_998421.html

T 7.4 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-104069 - Information Security

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	2

Events					
WS 19/20	2512551	Practical lab Security, Usability and Society	3 SWS	Practical course (P)	Volkamer, Landesberger von Antburg, Mayer
Exams					
WS 19/20	7900116	Advanced Lab Security, Usability and Society		Prüfung (PR)	Volkamer

Competence Certificate
The alternative exam assessment 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 Practical lab Security, Usability and Society

2512551, WS 19/20, 3 SWS, Open in study portal

Practical course (P)

Notes
Kick-off Meeting (compulsory attendance) on 18.10.2019 at 11:00 in room 3A-11.2

T 7.5 Course: Advanced Topics in Economic Theory [T-WIWI-102609]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101501 - Economic Theory

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Events					
SS 2019	2520527	Advanced Topics in Economic Theory	2 SWS	Lecture (V)	Mitusch, Scheffel
SS 2019	2520528	Übung zu Advanced Topics in Economic Theory	1 SWS	Practice (Ü)	Pegorari
Exams					
SS 2019	00227	Advanced Topics in Economic Theory		Prüfung (PR)	Mitusch, Scheffel
SS 2019	7900291	Advanced Topics in Economic Theory		Prüfung (PR)	Mitusch, Scheffel

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, Language: English, 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 á la Debreu ("The Theory of Value", 1959) and Hildenbrand/Kirman ("Equilibrium Analysis",1988). The second part deals with asymmetric information and introduces the basic techniques of contract theory.
The course is largely based on the textbook "Microeconomic Theory" (Chapters 1-5, 10, 13-20) by A.Mas-Colell, M.D.Whinston, and J.R.Green.

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

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

T 7.6 Course: Algorithmic Methods for Hard Optimization Problems [T-INFO-103334]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: M-INFO-101237 - Algorithmic Methods for Hard Optimization Problems

Type	Credits	Recurrence	Version
Oral examination	5	Irregular	1

T 7.7 Course: Algorithms for Planar Graphs [T-INFO-101986]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: M-INFO-101220 - Algorithms for Planar Graphs

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2019	24614	Algorithmen für planare Graphen (mit Übungen)	2 SWS	Lecture / Practice (VÜ)	Wagner, Brückner
Exams					
SS 2019	7500018	Algorithms for Planar Graphs		Prüfung (PR)	Wagner

T 7.8 Course: Algorithms I [T-INFO-100001]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: M-INFO-100030 - Algorithms I

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	24500	Algorithms I	4 SWS	Lecture / Practice (VÜ)	Sinz, Iser
Exams					
SS 2019	7500266	Algorithms I		Prüfung (PR)	Sinz

T 7.9 Course: Algorithms II [T-INFO-102020]

Responsible: Prof. Dr. Hartmut Prautzsch
Prof. Dr. Peter Sanders
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: M-INFO-101173 - Algorithms II

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24079	Algorithms II	4 SWS	Lecture (V)	Sanders, Lamm, Heuer
Exams					
SS 2019	7500464	Algorithms II		Prüfung (PR)	Sanders

T 7.10 Course: Analysis of Multivariate Data [T-WIWI-103063]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101599 - Statistics and Econometrics

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Events					
WS 19/20	2550550		2 SWS	Lecture (V)	Grothe
WS 19/20	2550551		2 SWS	Practice (Ü)	Grothe, N.N.

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites
None

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

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

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

V 2550550, WS 19/20, 2 SWS, Open in study portal **Lecture (V)**

Learning Content
Multivariate Data
Basics of multivariate estimating and testing
Correlation Analysis
Variance Analysis
Factor- and Principal Component Analysis
Discriminant function analysis
Cluster Analysis

Literature
Comprehensive lecture notes

T 7.11 Course: Applied Informatics – Applications of Artificial Intelligence [T-WIWI-110340]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101438 - Semantic Knowledge Management

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2511314	Applications of Artificial Intelligence	2 SWS	Lecture (V)	Sure-Vetter
WS 19/20	2511315	Exercises to Applied Informatics – Applications of Artificial Intelligence	1 SWS	Practice (Ü)	Sure-Vetter, Weller
Exams					
WS 19/20	7900091	Applied Informatics - Applications of Artificial Intelligence		Prüfung (PR)	Sure-Vetter

Competence Certificate
Written Examination (60 min) according to §4, Abs. 2, 1 of the examination regulations or oral examination of 20 minutes according to §4, Abs. 2, 2 of the examination regulations. The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites
None.

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

Annotation
Replaces from winter semester 2019/2020 T-WIWI-109263 "Applications of Artificial Intelligence".

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

V Applications of Artificial Intelligence
2511314, WS 19/20, 2 SWS, Language: German, Open in study portal — **Lecture (V)**

Notes
The lecture provides insights into the fundamentals of artificial intelligence. Basic methods of artificial intelligence and their applications in industry are presented.

Applications of the AI is a sub-area of computer science dealing with the automation of intelligent behavior. In general, it is a question of mapping human intelligence. Methods of artificial intelligence are presented in various areas such as, for example, question answering systems, speech recognition and image recognition.

The lecture gives an introduction to the basic concepts of artificial intelligence. Essential theoretical foundations, methods and their applications are presented and explained.

This lecture aims to provide students with a basic knowledge and understanding of the structure, analysis and application of selected methods and technologies on artificial intelligence. The topics include, among others, knowledge modeling, machine learning, text mining, uninformed search, and intelligent agents.

Learning objectives:

The students

- consider current research topics in the field of artificial intelligence and in particular learn about the topics of knowledge modeling, machine learning, text mining and uninformed search.
- interdisciplinary thinking.
- technological approaches to current problems.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 60 hours
- Exam and exam preperation: 30 hours

V

Exercises to Applied Informatics – Applications of Artificial Intelligence

2511315, WS 19/20, 1 SWS, Language: German, Open in study portal

Practice (Ü)

Notes
The exercises are oriented on the lecture applications of AI.

Multiple exercises are held that capture the topics, held in the lecture Applications of AI and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

This lecture aims to provide students with a basic knowledge and understanding of the structure, analysis and application of selected methods and technologies on artificial intelligence. The topics include, among others, knowledge modeling, machine learning, text mining, uninformed search, and intelligent agents.

Learning objectives:

The students

- consider current research topics in the field of artificial intelligence and in particular learn about the topics of knowledge modeling, machine learning, text mining and uninformed search.
- interdisciplinary thinking.
- technological approaches to current problems.

T 7.12 Course: Applied Informatics – Information Security [T-WIWI-110342]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104069 - Information Security

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2511550	Information Security	2 SWS	Lecture (V)	Volkamer
SS 2019	2511551	Exercise Information Security	1 SWS	Practice (Ü)	Volkamer, Mayer
Exams					
WS 19/20	7900074	Applied Informatics - Information Security		Prüfung (PR)	Volkamer

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

Annotation
Replaces from summer term 2020 T-WIWI-108387 "Information Security".

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

V Information Security

2511550, SS 2019, 2 SWS, Open in study portal — **Lecture (V)**

Description

- Basics and concepts of information security
- Understanding the protection objectives of information security and various attack models (including associated assumptions)
- introduction of measures to achieve the respective protection goals, taking into account different attack models
- Note: In contrast to the IT Security lecture, measures such as encryption algorithms are treated only abstractly, i. e. the idea of the measure, assumptions to the attacker and the deployment environment.
- Presentation and analysis of problems of information security arising from human-machine interaction and presentation of the Human Centered Security by Design approach.
- Introduction into organisational protective measures and standards to be observed for companies

Learning Content

- Basics and concepts of information security
- Understanding the protection objectives of information security and various attack models (including associated assumptions)
- introduction of measures to achieve the respective protection goals, taking into account different attack models
- Note: In contrast to the IT Security lecture, measures such as encryption algorithms are treated only abstractly, i. e. the idea of the measure, assumptions to the attacker and the deployment environment.
- Presentation and analysis of problems of information security arising from human-machine interaction and presentation of the Human Centered Security by Design approach.
- Introduction into organisational protective measures and standards to be observed for companies.

Literature

- P. Gerber, M. Ghiglieri, B. Henhapl, O. Kulyk, K. Marky, P. Mayer, B. Reinheimer, and M. Volkamer, *Human Factors in Security*. Springer, Jan. 2018, pp. 83–98.
- C. Eckert, *IT-Sicherheit: Konzepte-Verfahren-Protokolle*. Walter de Gruyter, 2013

T 7.13 Course: Applied Informatics – Modelling [T-WIWI-110338]

Responsible: Prof. Dr. Andreas Oberweis
Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101430 - Applied Informatics

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2511030	Applied Informatics - Modelling	2 SWS	Lecture (V)	Oberweis, Sure-Vetter, Schiefer
WS 19/20	2511031	Exercises to Applied Informatics - Modelling	1 SWS	Practice (Ü)	Oberweis, Sure-Vetter, Schiefer, Käfer
Exams					
WS 19/20	7900003	Applied Informatics - Modelling		Prüfung (PR)	Oberweis, Sure-Vetter

Competence Certificate
The assessment consists of a written examination (60 min) in the first week after lecture period (according to Section 4 (2),1 of the examination regulation).

Prerequisites
None

Annotation
Replaces from winter semester 2019/2020 T-WIWI-102652 "Applied Informatics I - Modeling".

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

V Applied Informatics - Modelling

2511030, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Notes
In the context of complex information systems, modelling is of central importance, e.g. – in the context of systems to be developed – for a better understanding of their functionality or in the context of existing systems for supporting maintenance and further development.

Modelling, in particular modelling of information systems, forms the core part of this lecture. The lecture is organized in two parts. The first part mainly covers the modelling of static aspectes, the second part covers the modelling of dynamic aspects of information systems.

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and description logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

Learning objectives:

Students

- explain the strengths and weaknesses of various modeling approachesfor Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- model given problems in Description Logics and apply description logic rules,
- describe the main ontology concepts and languages and explain SPARQL queries,
- create and evaluate a relational database schema and express queries in relational algebra.

Workload:

- Total effort: 120-150 hours
- Presence time: 45 hours
- Self study: 75-105 hours

V

Exercises to Applied Informatics - Modelling

2511031, WS 19/20, 1 SWS, Language: German, Open in study portal

Practice (Ü)

Notes
The exercises are related to the lecture Applied Informatics I - Modelling.

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

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and description logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

Learning objectives:

Students

- explain the strengths and weaknesses of various modeling approaches for Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- model given problems in Description Logics and apply description logic rules,
- describe the main ontology concepts and languages and explain SPARQL queries,
- create and evaluate a relational database schema and express queries in relational algebra.

T 7.14 Course: Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-110339]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101430 - Applied Informatics

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2019	2511032	Applied Informatics II - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	2 SWS	Lecture (V)	Sunyaev
SS 2019	2511033	Übungen zu Angewandte Informatik II – Internet Computing	1 SWS	Practice (Ü)	Sunyaev
Exams					
WS 19/20	7900004	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services		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

Recommendation
Knowledge of content of the modules Basic Notions of Computer Science and Algorithms I is expected.

Annotation
Replaces from winter semester 2019/2020 T-WIWI-109445 "Applied Informatics - Internet Computing".

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, Language: German, Open in study portal

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

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

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

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

Literature
Tba in the lecture.

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

Responsible: Prof. Dr. Nora Szech
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2560550	Auction and Mechanism Design	2 SWS	Lecture (V)	Szech
SS 2019	2560551	Übung zu Auction and Mechanism Design	1 SWS	Practice (Ü)	Szech, Huber
Exams					
SS 2019	7900161	Auction & Mechanism Design		Prüfung (PR)	Szech
SS 2019	7900207	Exam Auction & Mechanism Design (2)		Prüfung (PR)	Szech

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be earned through successful participation in the excercise. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites
None

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

Annotation
The lecture will be held in English.

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

V Auction and Mechanism Design

2560550, SS 2019, 2 SWS, Language: English, Open in study portal — **Lecture (V)**

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

Annotation
The lecture will be held in English.

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

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

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

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

T 7.16 Course: Bachelor Thesis [T-INFO-109907]

Organisation: KIT Department of Informatics
Part of: M-INFO-104875 - Module Bachelor Thesis

Type	Credits	Recurrence	Version
Final Thesis	15	Each term	1

Final Thesis
This course represents a final thesis. The following periods have been supplied:

Submission deadline	4 months
Maximum extension period	1 months
Correction period	6 weeks

This thesis requires confirmation by the examination office.

T 7.17 Course: Basic Notions of Computer Science [T-INFO-101964]

Responsible: Dr. Sebastian Stüker
Thomas Worsch

Organisation: KIT Department of Informatics

Part of: M-INFO-101170 - Basic Notions of Computer Science

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24001	Grundbegriffe der Informatik	3 SWS	Lecture (V)	Worsch
Exams					
SS 2019	75400100	Basic Notions of Computer Science		Prüfung (PR)	Worsch

T 7.18 Course: Basic Notions of Computer Science Pass [T-INFO-101965]

Responsible: Dr. Sebastian Stüker
Thomas Worsch

Organisation: KIT Department of Informatics

Part of: M-INFO-101170 - Basic Notions of Computer Science

Type	Credits	Recurrence	Version
Completed coursework	0	Each winter term	1

Events					
WS 19/20	24002	Übungen zu Grundbegriffe der Informatik	1 SWS	Practice (Ü)	Worsch

T 7.19 Course: Basic Practical Course for the ICPC-Programming Contest [T-INFO-101991]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: M-INFO-101230 - Basic Practical Course for the ICPC-Programming Contest

Type	Credits	Recurrence	Version
Completed coursework	4	Each summer term	2

Events					
SS 2019	24872	Basispraktikum zum ICPC Programmierwettbewerb	2 SWS	Practical course (P)	Sanders, Wagner, Tillmann, Zeitz
Exams					
SS 2019	7500020	Basic Practical Course for the ICPC-Programming Contest		Prüfung (PR)	Wagner

T 7.20 Course: Basic Principles of Economic Policy [T-WIWI-103213]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101668 - Economic Policy I

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2560280	Basic Principles of Economic Policy	2 SWS	Lecture (V)	Ott
SS 2019	2560281	Exercises of Basic Principles of Economic Policy	1 SWS	Practice (Ü)	Ott, Scheu, Bälz
Exams					
SS 2019	7900106	Basic Principles of Economic Policy		Prüfung (PR)	Ott

Competence Certificate
The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

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

Annotation
Description:

Theory of general economic policy and discussion of current economic policy topics:

- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning objectives:

Students learn:

- To apply basic concepts of micro- and macroeconomic theories to economic policy issues.
- to develop arguments on how state intervention in the market can be legitimized from a welfare economic perspective
- to derive theory-based policy recommendations.

Learning content:

- Market interventions: microeconomic perspective
- Market interventions: macroeconomic perspective
- Institutional economic aspects
- Economic policy and welfare economics
- Economic policy makers: Political-economic aspects

Workload:

- Total effort at 4.5 LP: approx. 135 hours
- Presence time: approx. 30 hours
- Self-study: approx. 105 hours

Media:

See course announcement

References:

See course announcement

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

V **Basic Principles of Economic Policy** **Lecture (V)**
2560280, SS 2019, 2 SWS, Language: German, Open in study portal

Description
Theory of general economic policy and discussion of current economic policy issues:

- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning Content

- Market interventions: microeconomic and macroeconomic perspective
- Institutional economic aspects
- Economic policy and welfare economics
- Economic policy makers: Political-economic aspects

Workload

- Total effort at 4.5 LP: approx. 135 hours
- Presence time: approx. 30 hours
- Self-study: approx. 105 hours

Literature

- Klump, Rainer (2013): Wirtschaftspolitik. Pearson Studium
- Baldwin, Richard und Charles Wyplosz (2015): The Economics of European Integration, McGraw-Hill Education, London
- Lecture slides
- Exercises

V

Exercises of Basic Principles of Economic Policy

2560281, SS 2019, 1 SWS, Language: German, Open in study portal

Practice (Ü)

Literature

- Klump, Rainer (2013): Wirtschaftspolitik. Pearson Studium
- Baldwin, Richard und Charles Wyplosz (2015): The Economics of European Integration, McGraw-Hill Education, London
- Lecture slides
- Exercises

T 7.21 Course: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]

Responsible: Gerd Gutekunst
Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101403 - Public Finance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2560134	Basics of German Company Tax Law and Tax Planning	3 SWS	Lecture (V)	Wigger, Gutekunst
Exams					
SS 2019	790unbe	Basics of German Company Tax Law and Tax Planning		Prüfung (PR)	Wigger
WS 19/20	790unbe	Basics of German Company Tax Law and Tax Planning		Prüfung (PR)	Wigger

Competence Certificate
The assessment consists of a written exam (90 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.

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

V Basics of German Company Tax Law and Tax Planning

2560134, WS 19/20, 3 SWS, Language: German, Open in study portal **Lecture (V)**

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

T 7.22 Course: Big Data Analytics [T-INFO-101305]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101235 - Introduction to Data and Information Management

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

Events					
WS 19/20	24114	Big Data Analytics	3 SWS	Lecture (V)	Böhm
Exams					
SS 2019	7500078	Big Data Analytics		Prüfung (PR)	Böhm
SS 2019	7500280	Big Data Analytics		Prüfung (PR)	Böhm
WS 19/20	7500087	Big Data Analytics		Prüfung (PR)	Böhm

T 7.23 Course: Business Administration: Finance and Accounting [T-WIWI-102819]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-105267 - Business Administration

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2610026	Business Administration: Finance and Accounting	2 SWS	Lecture (V)	Ruckes, Wouters
WS 19/20	2610027		2 SWS	Tutorial (Tu)	Strych
WS 19/20	2610029		2 SWS	Tutorial (Tu)	Strych
Exams					
SS 2019	7900036	Business Administration: Finance and Accounting		Prüfung (PR)	Ruckes, Wouters

Competence Certificate
The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation.
The assessment takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Annotation
Key qualifications can be shown in an active participation through presentations of solutions and discussions in the tutorials which accompany the course. Each part of the course is taught by instructors specialised in the field of that part.

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

V Business Administration: Finance and Accounting

2610026, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content

- **Investment and Finance:**
  - Valuation of Bonds and Stocks
  - Capital Budgeting
  - Portfolio Theory
- **Financial Accounting**
- **Management Accounting**

Annotation
Key qualifications can be shown in an active participation through presentations of solutions and discussions in the tutorials which accompany the course. Each part of the course is taught by instructors specialised in the field of that part.

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

Literature
Extensive bibliographic information will be given in the materials to the lecture.

T 7.24 Course: Business Administration: Production Economics and Marketing [T-WIWI-102818]

Responsible: Prof. Dr. Wolf Fichtner
Prof. Dr. Martin Klarmann
Prof. Dr.-Ing. Thomas Lützkendorf
Prof. Dr. Martin Ruckes
Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101492 - Business Administration
M-WIWI-105267 - Business Administration

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2019	2500027	Tutorien zu BWL PM	2 SWS	Tutorial (Tu)	Klarmann, Strych, Assistenten
SS 2019	2600024	Business Administration: Production Economics and Marketing	2 SWS	Lecture (V)	Klarmann, Schultmann, Fichtner
Exams					
SS 2019	7900258	Business Administration: Production Economics and Marketing		Prüfung (PR)	Klarmann, Schultmann

Competence Certificate
The assessment consists of a written exam (90 minutes) according to Section 4(2), 1 of the examination regulation.

Prerequisites
None

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

V Business Administration: Production Economics and Marketing

2600024, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
1. Marketing:

Marketing is an organizational function to handle situations, activities, and processes for creating, communicating, and delivering value to customers in a best way. (Customer) relationship management comprises collecting, aggregating, and analyzing information (e.g., developements in the society, changing conditions of markets, alterations w.r.t. buying behavior) to benefit different target groups.

Main topics will deal with market research and optimized application of marketing mix instruments with emphasis on 'marketing and the web','innovation management', and 'international marketing'.

2. Production economics

In the part of production economics the student will learn basics in the field of production theory, procurement and resource aquisitions, production and operations management and industrial engineering.

Aspects of electrical engineering industry, technological foresights, construction industry andreal estate markets will be treated.

3. Information systems

In today's economy, information is a competetive factor that calls for an interdisciplinary investigation from economics and business administration, informatics and law. In this part of the lecture, selected topics from information engineering and management and their impact in market competition are presented

Topics include: Information in a company, Information processing: From an agent to business networks, social networks, service value networks, market engineering

Learning Content
The course is made up of the following topics:

Marketing

- Foundations of marketing
- Strategic marketing
- Cosumer behaviour
- Product
- Price
- Promotion
- Sales
- Marketing Metrics

Production economics

In the part of production economics the student will learn basics in the field of production theory, procurement and resource aquisitions, production and operations management and industrial engineering.

Aspects of energy economics, technological foresights, construction industry and real estate markets will be treated.

Annotation
Key qualifications can be shown in an active participation through presentations of solutions and discussions in the tutorials which accompany the course.

Each part of the course is taught by instructors specialised in the field of that part.

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

Literature
Further literature references are announced in the materials to the lecture.

T 7.25 Course: Business Process Modelling [T-WIWI-102697]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101438 - Semantic Knowledge Management
M-WIWI-101476 - Business Processes and Information Systems

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2511210	Business Process Modelling	2 SWS	Lecture (V)	Oberweis
WS 19/20	2511211	Exercise Business Process Modelling	1 SWS	Practice (Ü)	Oberweis, Schüler, Schreiber
Exams					
SS 2019	7900047	Business Process Modelling		Prüfung (PR)	Oberweis
WS 19/20	7900015	Business Process Modelling		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 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Notes
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.

Learning objectives:

Students

- describe goals of business process modeling and aplly different modeling languages,
- choose the appropriate modeling language according to a given context,
- use suitable tools for modeling business processes,
- apply methods for analysing and assessing process modells to evaluate specific quality characteristics of the process model.

Recommendations:

Knowledge of course Applied Informatics I - Modelling is expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

T 7.26 Course: Business Strategies of Banks [T-WIWI-102626]

Responsible: Prof. Dr. Wolfgang Müller
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 19/20	2530299	Business Strategies of Banks	2 SWS	Lecture (V)	Müller
Exams					
SS 2019	7900079	Business Strategies of Banks		Prüfung (PR)	Müller

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

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

V Business Strategies of Banks

2530299, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.
The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

Learning Content
The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.
The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

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

Literature
Elective literature:

- A script is disseminated chapter by chapter during the course of the lecture.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2000, Bankbetriebslehre, 6th edition, Springer

T 7.27 Course: Civil Law for Beginners [T-INFO-103339]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101190 - Introduction to Civil Law

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	2

Events					
WS 19/20	24012	Civil Law for Beginners	4 SWS	Lecture (V)	Matz
Exams					
SS 2019	7500041	Civil Law for Beginners		Prüfung (PR)	Dreier, Matz
WS 19/20	7500012	Civil Law for Beginners		Prüfung (PR)	Matz, Dreier

T 7.28 Course: Cognitive Systems [T-INFO-101356]

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: M-INFO-100819 - Cognitive Systems

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	24572	Kognitive Systeme	4 SWS	Lecture / Practice (VÜ)	Dillmann, Waibel, Stüker, Meißner
Exams					
SS 2019	7500157	Cognitive Systems		Prüfung (PR)	Dillmann, Waibel

T 7.29 Course: Competition in Networks [T-WIWI-100005]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101422 - Specialization in Customer Relationship Management
M-WIWI-101499 - Applied Microeconomics
M-WIWI-101668 - Economic Policy I

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 19/20	2561204	Competition in Networks	2 SWS	Lecture (V)	Mitusch
WS 19/20	2561205	Übung zu Wettbewerb in Netzen	1 SWS	Practice (Ü)	Wisotzky, Mitusch, Corbo
Exams					
SS 2019	7900274	Competition in Networks		Prüfung (PR)	Mitusch

Competence Certificate
Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC).
Examination is offered every semester and can be retried at any regular examination date.

Prerequisites
None.

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

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

V Competition in Networks

2561204, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
Network or infrastructure industries like telecommunication, transport, and utilities form the backbone of modern economies. The lecture provides an overview of the economic characteristics of network industries. The planning of networks is complicated by the multitude of aspects involved (like spatial differentiation and the like). The interactions of different companies - competition or cooperation or both - are characterized by complex interdependencies within the networks: network effects, economies of scale, effects of vertical integration, switching costs, standardization, compatibility etc. appear increasingly in these sectors and even tend to appear in combination. Additionally, government interventions can often be observed, partly driven by the aims of competition policy and partly driven by the aims industrial policy. All these issues are brought up, analyzed formally (in part) and illustrated by several examples in the lecture.

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

Literature
Will be announced in the lecture.

T 7.30 Course: Computer Architecture [T-INFO-101355]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Prof. Dr. Wolfgang Karl

Organisation: KIT Department of Informatics

Part of: M-INFO-100818 - Computer Architecture

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	2424570	Computer structures	3 SWS	Lecture (V)	Karl
Exams					
SS 2019	7500190	Computer Architecture		Prüfung (PR)	Karl

T 7.31 Course: Computer Graphics [T-INFO-101393]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: M-INFO-100856 - Computer Graphics

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24081	Computergrafik	4 SWS	Lecture (V)	Schudeiske, Dachsbacher
Exams					
SS 2019	7500257	Computer Graphics		Prüfung (PR)	Dachsbacher

T 7.32 Course: Computer Graphics Pass [T-INFO-104313]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: M-INFO-100856 - Computer Graphics

Type	Credits	Recurrence	Version
Completed coursework	0	Each winter term	1

Events					
WS 19/20	24083	Übungen zu Computergrafik	SWS	Lecture / Practice (VÜ)	Zirr, Rapp, Schrade

T 7.33 Course: Computer Organization [T-INFO-103531]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: M-INFO-103179 - Computer Organization

Type	Credits	Version
Written examination	6	1

Events					
WS 19/20	24502	Computer Organization	3 SWS	Lecture (V)	Henkel, Bauer
WS 19/20	24505	Übungen zu Rechnerorganisation	2 SWS	Practice (Ü)	Henkel
Exams					
SS 2019	7500240	Computer Organization		Prüfung (PR)	Henkel

T 7.34 Course: Consulting in Practice [T-INFO-101975]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101235 - Introduction to Data and Information Management

Type	Credits	Recurrence	Version
Completed coursework	1,5	Irregular	1

Events					
WS 19/20	24664	Praxis der Unternehmensberatung	2 SWS	Lecture (V)	Böhm, Lang

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

V Praxis der Unternehmensberatung

24664, WS 19/20, 2 SWS, Open in study portal

Lecture (V)

Description
The market for consulting sevices grows annually by 20% and is therefore one of the leading growth sectors and professional fields in the future. This trend is in particular driven by the IT industry. Here, widely used standard software moves the focus of the future professional field from software development to consulting. In this context, consulting services have usually a broad definition, reaching from pure IT-focused consulting (e.g., deployment of SAP) to strategic consulting (strategy, organisation etc). In contrast to common rumors, a qualification in business studies is not a must. This opens up a diversified and exciting field with exceptional development perspectives for computer science students. The copurse deals thematically with the two fields consulting in general and function-specific consulting (with IT consulting as an example).

The structure of the course is oriented along the phases of a consulting project:

- Diagnosis: The consultant as an analytic problem solver.
- Strategic adjustment/redesign of the core processes: Optimisation/redesign of essential business functionality to solve the diagnosed problems in cooperation with the client.
- Implementation: Installation of the solutions in the clients`s organisation for assuring the implementation.

Emphasised topics in the course are:

- Elementary problem solving: Problem definition, structuring of problems and focussing through the usage of tools (e.g., logic and hypothesis trees), creative techniques, solution systems etc.
- Obtaining information effectively: Access of information sources, interview techniques etc.
- Effective communication of findings/recommendations. Analysis/planning of communication (media, audience, formats), communication styles (e.g., top-down vs. bottom-up), special topics (e.g., arrangement of complex information) etc.
- Efficient teamwork: Tools for optimising efficient work, collaboration with clients, intellectual and process leadership in the team etc.

T 7.35 Course: Curves in CAD [T-INFO-102067]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: M-INFO-101248 - Curves in CAD

Type	Credits	Recurrence	Version
Oral examination	5	Irregular	1

T 7.36 Course: Customer Relationship Management [T-WIWI-102595]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101460 - CRM and Service Management

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2540508	Customer Relationship Management	2 SWS	Lecture (V)	Geyer-Schulz
WS 19/20	2540509	Übung zu Customer Relationship Management	1 SWS	Practice (Ü)	Schweigert
Exams					
SS 2019	7900279	Customer Relationship Management		Prüfung (PR)	Geyer-Schulz

Competence Certificate
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites
None

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

V Customer Relationship Management

2540508, WS 19/20, 2 SWS, Language: English, Open in study portal **Lecture (V)**

Learning Content
The course begins with an introduction into Service Management as the strategic concept which also covers all CRM applications. The course is divided in the basics of Service Management as well as different topics within this concept like external and internal marketing, quality management and organizational requirements.

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

Time of attendance

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

Self-study

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

Sum: 135h 00m

Literature

Christian Grönroos. Service Management and Marketing : A Customer Relationship Management Approach. Wiley, Chichester, 2nd edition, 2000.

Elective literature:

Jill Dyché. The CRM Handbook: A Business Guide to Customer Relationship Management. Addison-Wesley, Boston, 2nd edition, 2002.

Ronald S. Swift. Accelerating Customer Relationships: Using CRM and RelationshipTechnologies. Prentice Hall, Upper Saddle River, 2001.

Stanley A. Brown. Customer Relationship Management: A Strategic Imperative in theWorld of E-Business. John Wiley, Toronto, 2000.

T 7.37 Course: Data and Storage Management [T-INFO-101276]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: M-WIWI-101440 - Information Services in Networks

Type	Credits	Recurrence	Version
Oral examination	4	Each winter term	1

Events					
WS 19/20	24074	Data and Storage Management	2 SWS	Lecture (V)	Neumair

T 7.38 Course: Data Mining and Applications [T-WIWI-103066]

Responsible: Rheza Nakhaeizadeh
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101599 - Statistics and Econometrics

Type	Credits	Recurrence	Version
Oral examination	4,5	Each summer term	2

Events					
SS 2019	2520375	Data Mining and Applications	2/4 SWS	Lecture (V)	Nakhaeizadeh
Exams					
SS 2019	7900102	Data Mining and Applications (Lecture)		Prüfung (PR)	Nakhaeizadeh

Competence Certificate

- Conduction of a larger emprical 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, Language: German, Open in study portal

Lecture (V)

Learning Content
Part one: Data Mining

Why Data Mining?

- What is Data Mining?
- History of Data Mining
- Conferences and Journals on Data Mining
- Potential Applications
- Data Mining Process:
- Business Understanding
- Data Understanding
- Data Preparation
- Modeling
- Evaluation
- Deployment
- Interdisciplinary aspects of Data Mining
- Data Mining tasks
- Data Mining Algorithms (Decision Trees, Association Rules,
- Regression, Clustering, Neural Networks)
- Fuzzy Mining
- OLAP and Data Warehouse
- Data Mining Tools
- Trends in Data Mining

Part two: Examples of application of Data Mining

- Success parameters of Data Mining Projects
- Application in industry
- Application in Commerce

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature
U. Fayyad, G. Piatetsky-Shapiro, P. Smyth, R. Uthurusamy, editors, Advances in Knowledge Discovery and Data Mining, AAAI/MIT Press, 1996 (order on-line from Amazon.com or from MIT Press).

- Jiawei Han, Micheline Kamber, Data Mining : Concepts and Techniques, 2nd edition, Morgan Kaufmann, ISBN 1558609016, 2006.
- David J. Hand, Heikki Mannila and Padhraic Smyth, Principles of Data Mining , MIT Press, Fall 2000
- Trevor Hastie, Robert Tibshirani, Jerome Friedman, The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Springer Verlag, 2001.
- Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson Addison wesley (May, 2005). Hardcover: 769 pages. ISBN: 0321321367
- Ripley, B.D. (1996) Pattern Recognition and Neural Networks, Cambridge: Cambridge University Press.
- Ian witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques, 2nd Edition, Morgan Kaufmann, ISBN 0120884070, 2005.

T 7.39 Course: Database Systems [T-INFO-101497]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101235 - Introduction to Data and Information Management
M-INFO-104921 - Database Systems

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2019	24516	Datenbanksysteme	2 SWS	Lecture (V)	Böhm, Mülle
Exams					
SS 2019	7500166	Database Systems		Prüfung (PR)	Böhm

T 7.40 Course: Decision Theory [T-WIWI-102792]

Responsible: Prof. Dr. Karl-Martin Ehrhart
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101499 - Applied Microeconomics

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2520365	Decision Theory	2 SWS	Lecture (V)	Ehrhart
SS 2019	2520366	Übungen zu Entscheidungstheorie	1 SWS	Practice (Ü)	Ehrhart
Exams					
SS 2019	7900254	Decision Theory		Prüfung (PR)	Ehrhart

Competence Certificate
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
The exam is offered each semester.

Prerequisites
None

Recommendation
Knowledge in mathematics and statistics is required.

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

V Decision Theory

2520365, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
In the first part of the course we deal with problems of decision making under uncertainty and introduce models like expected utility theory, stochastic dominance, risk aversion, and prospect. theory. We also consider the empirical validity of the different approaches.

In the second part the concepts learned in the first part are applied for example to search models and Bayesian games.

Learning Content
This course deals with problems of decision making particularly under uncertainty. We introduce the expected utility theory of Neumann/Morgenstern and the prospect theory of Kahnemann/Tversky and discuss the concepts of stochastic dominance, risk aversion, loss aversion, reference points etc. We also consider the empirical validity of the different approaches. Additionally, the lecture provides an introduction to the theory of findings (epistemology), particularly with respect to decision theory.

Annotation
The course "Decision Theory" [2520365] will not be offered any more in M.Sc. from winter term 2015/2016 on.

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

Literature

- Ehrhart, K.-M. und S.K. Berninghaus (2012): Decision Theory, Script, KIT.
- Hirshleifer und Riley (1997): The Analytics of Uncertainty and Information. London: Cambridge University Press, 4. Edtion.
- Berninghaus, S.K., K.-M. Ehrhart und W. Güth (2006): Strategische Spiele. Berlin u.a.: Springer, 3., Edtion

T 7.41 Course: Deployment of Database Systems [T-INFO-101317]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101235 - Introduction to Data and Information Management

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

Events					
WS 19/20	2400020	Datenbankeinsatz	3 SWS	Lecture (V)	Schäler
Exams					
SS 2019	7500090	Deployment of Database Systems		Prüfung (PR)	Böhm
WS 19/20	7500007	Deployment of Database Systems		Prüfung (PR)	Böhm

T 7.42 Course: Derivatives [T-WIWI-102643]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101402 - eFinance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2530550	Derivatives	2 SWS	Lecture (V)	Uhrig-Homburg
SS 2019	2530551	Übungen zu Derivate	1 SWS	Practice (Ü)	Uhrig-Homburg, Eska
Exams					
SS 2019	7900111	Derivatives		Prüfung (PR)	Uhrig-Homburg

Competence Certificate
The assessment takes place in the form of a written examination (75 minutes) according to §4(2), 1 SPO. The examination takes place during the semester break. 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 excercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites
None

Recommendation
None

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

V Derivatives

2530550, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
The lecture deals with the application areas and valuation of financial derivatives. After an overview of the most important derivatives and their relevance, forwards and futures are analysed. Then, an introduction to the Option Pricing Theory follows. The main emphasis is on option valuation in discrete and continuous time models. Finally, construction and usage of derivatives are discussed, e.g. in the context of risk management.

Learning Content
The lecture deals with the application areas and valuation of financial derivatives. After an overview of the most important derivatives and their relevance, forwards and futures are analysed. Then, an introduction to the Option Pricing Theory follows. The main emphasis is on option valuation in discrete and continuous time models. Finally, construction and usage of derivatives are discussed, e.g. in the context of risk management.

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

Literature

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

Elective literature:

Cox/Rubinstein (1985): Option Markets, Prentice Hall

T 7.43 Course: Design, Construction and Sustainability Assessment of Buildings I [T-WIWI-102742]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101467 - Design, Construction and Sustainability Assessment of Buildings

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2586404	Design and Construction of Buildings	2 SWS	Lecture (V)	Lützkendorf
WS 19/20	2586405	Übung zu Bauökologie I	1 SWS	Practice (Ü)	Worschech

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
A combination with the module *Real Estate Management* and with engineering science modules in the area of building physics and structural design is recommended.

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

V Design and Construction of Buildings

2586404, WS 19/20, 2 SWS, Language: German, Open in study portal — **Lecture (V)**

Description
Taking low-energy buildings as an example the course is an introduction to cheap, energy-efficient, resource-saving and health-supporting design, construction and operation of buildings. Questions of the implementation of the principles of a sustainable development within the building sector are discussed on the levels of the whole building, its components, building equipment as well as the materials. Besides technical interrelationships basics dimensioning and various approaches to ecological and economical assessment play a role during the lectures, as well as the different roles of people involved into the building process. Topics are the integration of economical and ecological aspects into the design process, strategies of energy supply, low-energy and passive buildings, active and passive use of solar energy, selection and assessment of construction details, selection and assessment of insulation materials, greened roofs plus health and comfort.

Learning Content
Taking low-energy buildings as an example the course is an introduction to cheap, energy-efficient, resource-saving and health-supporting design, construction and operation of buildings. Questions of the implementation of the principles of a sustainable development within the building sector are discussed on the levels of the whole building, its components, building equipment as well as the materials. Besides technical interrelationships basics dimensioning and various approaches to ecological and economical assessment play a role during the lectures, as well as the different roles of people involved into the building process. Topics are the integration of economical and ecological aspects into the design process, strategies of energy supply, low-energy and passive buildings, active and passive use of solar energy, selection and assessment of construction details, selection and assessment of insulation materials, greened roofs plus health and comfort.

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

Literature
Elective literature:

See german version.

T 7.44 Course: Design, Construction and Sustainability Assessment of Buildings II [T-WIWI-102743]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101467 - Design, Construction and Sustainability Assessment of Buildings

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2585403	Übung zu Bauökologie II	1 SWS	Practice (Ü)	Ströbele
SS 2019	2585404	Sustainability Assessment of Buildings	2 SWS	Lecture (V)	Lützkendorf, Ströbele
Exams					
SS 2019	7900178	Design, Construction and Sustainability Assessment of Buildings II		Prüfung (PR)	Lützkendorf
SS 2019	7900194	Design, Construction and Sustainability Assessment of Buildings II		Prüfung (PR)	Lützkendorf

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
A combination with the module *Real Estate Management* and with engineering science modules from the areas building physics and structural designis recommended.

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

V Sustainability Assessment of Buildings

2585404, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
The course identifies problems concerning the economical and environmental assessment of buildings along their lifecycle and discusses suitable procedures and tools supporting the decision making process. For example, the course addresses topics like operating costs, heat cost allocation, comparisons of heating costs, applied economical assessment methods, life cycle assessment as well as related design and assessment tools (e.g. element catalogues, databases, emblems, tools) and assessment procedures (e.g. carbon footprint, MIPS, KEA), which are currently available.

Learning Content
The course identifies problems concerning the economical and environmental assessment of buildings along their lifecycle and discusses suitable procedures and tools supporting the decision making process. For example, the course addresses topics like operating costs, heat cost allocation, comparisons of heating costs, applied economical assessment methods, life cycle assessment as well as related design and assessment tools (e.g. element catalogues, databases, emblems, tools) and assessment procedures (e.g. carbon footprint, MIPS, KEA), which are currently available.

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

Literature
Elective literature:

See german version.

T 7.45 Course: Digital Circuits Design [T-INFO-103469]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: M-INFO-102978 - Digital Circuits Design

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	24007	Digitaltechnik und Entwurfsverfahren	3 SWS	Lecture (V)	Hanebeck, Bromberger
Exams					
SS 2019	7500254	Digital Circuits Design		Prüfung (PR)	Henkel, Karl, Tahoori

T 7.46 Course: Digital Services [T-WIWI-109938]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101422 - Specialization in Customer Relationship Management
M-WIWI-101434 - eBusiness and Service Management
M-WIWI-102752 - Fundamentals of Digital Service Systems
M-WIWI-104912 - Information Systems & Digital Business: Platforms
M-WIWI-104913 - Information Systems & Digital Business: Servitization

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	4

Events					
SS 2019	2595466	Digital Services (formerly Foundations of Digital Services A)	2 SWS	Lecture (V)	Satzger, Weinhardt, Sure-Vetter, Kühl
SS 2019	2595467	Exercise Digital Services (formerly Foundations of Digital Services A)	1 SWS	Practice (Ü)	Hirt, Kloker
Exams					
SS 2019	00016	Foundations of Digital Services A		Prüfung (PR)	Satzger

Competence Certificate
The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations). By successful completion of the exercises (§4(2), 3 SPO 2007 respectively §4(3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites
see below

Annotation
This course replaces T-WIWI-105771 "Foundations of Digital Services A" as of winter semester 2019/2020.

Students who wish to register for the examination in the summer semester 2019 please select the examination "Foundations of Digital Services A".

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

V Digital Services (formerly Foundations of Digital Services A)

2595466, SS 2019, 2 SWS, Language: English, Open in study portal — **Lecture (V)**

Description
The world is moving more and more towards “service-led” economies: in developed countries services already account for around 70% of gross value added. In order to design, engineer, and manage services, traditional “goods-oriented”models are often inappropriate. In addition, the rapid development of information and communication technology (ICT) pushes the economic importance of services that are rendered electronically (eServices) and, thus, drives competitive changes: increased interaction and individualization open up new dimensions of “value co-creation” between providers and customers; dynamic and scalable service value networks replace static value chains; digital services can be globally delivered and exchanged across today’s geographic boundaries; Building on a systematic categorization of (e)Services and on the general notion of “value co-creation”, we cover concepts and foundations for engineering and managing IT-based services, allowing for further specialization in subsequent KSRI courses. Topics include service innovation, service economics, service modeling as well as the transformation and coordination of service value networks. In addition, case studies, hands-on exercises and guest lectures will illustrate the applicability of the concepts. English language is used throughout the course to acquaint students with international environments.

Learning Content
The world is moving more and more towards "service-led" economies: in developed countries services already account for around 70% of gross value added. In order to design, engineer, and manage services, traditional "goods-oriented" models are often inappropriate. In addition, the rapid development of information and communication technology (ICT) pushes the economic importance of services that are rendered electronically (eServices) and, thus, drives competitive changes: increased interaction and individualization open up new dimensions of "value co-creation" between providers and customers; dynamic and scalable service value networks replace static value chains; digital services can be globally delivered and exchanged across today's geographic boundaries;

Building on a systematic categorization of (e)Services and on the general notion of "value co-creation", we cover concepts and foundations for engineering and managing IT-based services, allowing for further specialization in subsequent KSRI courses. Topics include service innovation, service economics, service modeling as well as the transformation and coordination of service value networks.

In addition, case studies, hands-on exercises and guest lectures will illustrate the applicability of the concepts. English language is used throughout the course to acquaint students with international environments.

Annotation
Former title "Foundations of Digital Services A"

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature

- Anderson, J./ Nirmalya, K. / Narus, J. (2007), Value Merchants.
- Lovelock, C. / Wirtz, J. (2007) Services Marketing, 6th ed.
- Meffert, H./Bruhn, M. (2006), Dienstleistungsmarketing, 5. Auflage,
- Spohrer, J. et al. (2007), Steps towards a science of service systems. In: IEEE Computer, 40 (1), p. 70-77
- Stauss, B. et al. (Hrsg.) (2007), Service Science – Fundamentals Challenges and Future Developments.
- Teboul, (2007), Services is Front Stage.
- Vargo, S./Lusch, R. (2004) Evolving to a New Dominant Logic for Marketing, in: Journal of Marketing 68(1): 1–17.
- Shapiro, C. / Varian, H. (1998), Information Rules - A Strategic Guide to the Network Economy

T 7.47 Course: Economics and Behavior [T-WIWI-102892]

Responsible: Prof. Dr. Nora Szech
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2560137	Economics and Behavior	2 SWS	Lecture (V)	Ehrlich, Puppe
WS 19/20	2560138	Übung zu Economics and Behavior	1 SWS	Practice (Ü)	Ehrlich

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
A bonus can be earned through successful participation in the excercise. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites
None

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

Annotation
The lecture will be held in English.

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

V Economics and Behavior

2560137, WS 19/20, 2 SWS, Language: English, Open in study portal

Lecture (V)

Notes
The course covers topics from behavioral economics with regard to contents and methods. In addition, the students gain insight into the design of economic experiments. Furthermore, the students will become acquainted with reading and critically evaluating current research papers in the field of behavioral economics.

The students

- gain insight into fundamental topics in behavioral economics;
- get to know different research methods in the field of behavioral economics;
- learn to critically evaluate experimental designs;
- get introduced to current research papers in behavioral economics;
- become acquainted with the technical terminology in English.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

The grade will be determined in a final written exam. Students can earn a bonus to the final grade by successfully participating in the exercises.

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

The lecture will be held in English.

Recommendations:

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

Literature

Kahnemann, Daniel: Thinking, Fast and Slow. Farrar, Straus and Giroux, 2011.

Ariely, Dan: Predictably irrational. New York: Harper Collins, 2008.

Ariely, Dan: The Upside of Irrationality. New York: HarperCollins, 2011.

T 7.48 Course: Economics I: Microeconomics [T-WIWI-102708]

Responsible: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101431 - Economics

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	1

Events					
WS 19/20	2610012	Economics I: Microeconomics	3 SWS	Lecture (V)	Puppe

Competence Certificate
The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation.

There may be offered a practice exam in the middle of the semester. The results of this exam may be used to improve the grade of the main exam. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by one grade (0.3 or 0.4). A detailed descritpion of the examination modalities will be given by the respective lecturer.

The main exam takes place subsequent to the lectur. The re-examination is offered at the same examination period. As a rule, only repeating candidates are entitled for taking place the re-examination. For a detailed description on the exam regulations see the information of the respective chair.

Prerequisites
None

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

V Economics I: Microeconomics

2610012, WS 19/20, 3 SWS, Language: German, Open in study portal

Lecture (V)

Description
The students learn the basic concepts in Microeconomics and some basics in game theory. The student will understand the working of markets in modern economies and the role of decision making. Furthermore, she should be able to understand simple game theoretic argumentation in different fields of Economics.

In the two main parts of the course problems of microeconomic decision making (household behavior, firm behavior) and problems of commodity allocation on markets (market equilibria and efficiency of markets) as well are discussed. In the final part of the course basics of imperfect competition (oligopolistic markets) and of game theory are presented.

Workload
The total workload for this course is approximately 150 hours.

Literature

- H. Varian, Grundzüge der Mikroökonomik, 5. edition (2001), Oldenburg Verlag
- Pindyck, Robert S./Rubinfeld, Daniel L., Mikroökonomie, 6. Aufl., Pearson. Münschen, 2005
- Frank, Robert H., Microeconomics and Behavior, 5. Aufl., McGraw-Hill, New York, 2005

T 7.49 Course: Economics III: Introduction in Econometrics [T-WIWI-102736]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101599 - Statistics and Econometrics

Type	Credits	Recurrence	Version
Written examination	5	Each summer term	1

Events					
SS 2019	2520016	Economics III: Introduction in Econometrics	2 SWS	Lecture (V)	Schienle
SS 2019	2520017	Übungen zu VWL III	2 SWS	Practice (Ü)	Schienle, Buse
Exams					
SS 2019	7900119	Economics III: Introduction in Econometrics		Prüfung (PR)	Schienle
SS 2019	7900225	Economics III: Introduction in Econometrics		Prüfung (PR)	Schienle

Competence Certificate
The assessment consists of an 1h written exam according to Section 4(2), 1 of the examination regulation.

Prerequisites
None

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

V Economics III: Introduction in Econometrics

2520016, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
Simple and multiple linear regression (estimating parameters, confidence interval, testing, prognosis, testing assumptions)

Multi equation models

Dynamic models

Workload
180 hours (6.0 Credits)

Literature

- Von Auer: Ökonometrie ISBN 3-540-00593-5
- Goldberger: A course in Econometrics ISBN 0-674-17544-1
- Gujarati. Basic Econometrics ISBN 0-07-113964-8
- Schneeweiß: Ökonometrie ISBN 3-7908-0008-2

Elective literature:

Additional literature will be suggested in course

T 7.50 Course: eFinance: Information Systems for Securities Trading [T-WIWI-109941]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101402 - eFinance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101434 - eBusiness and Service Management
M-WIWI-101465 - Topics in Finance I
M-WIWI-104912 - Information Systems & Digital Business: Platforms

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2540454	eFinance: Information Systems for Securities Trading	2 SWS	Lecture (V)	Weinhardt, Notheisen
WS 19/20	2540455	Übungen zu eFinance: Wirtschaftsinformatik für den Wertpapierhandel	1 SWS	Practice (Ü)	Jaquart, Soufi

Competence Certificate
Success is monitored by means of ongoing elaborations and presentations of tasks and an examination (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Prerequisites
see below

Recommendation
None

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

V eFinance: Information Systems for Securities Trading

2540454, WS 19/20, 2 SWS, Language: English, 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 Röhrl (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners"". Oxford University Press, New York

Elective literature:

- Gomber, Peter (2000): "Elektronische Handelssysteme - Innovative Konzepte und Technologien". Physika Verlag, Heidelberg
- Schwartz, Robert A., Reto Francioni (2004): "Equity Markets in Action - The Fundamentals of Liquidity, Market Structure and Trading". Wiley, Hoboken, NJ

T 7.51 Course: Empirical Finance [T-WIWI-110216]

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-105035 - Empirical Finance

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	2500001	Empirical Finance	4 SWS	Lecture (V)	Ulrich

Competence Certificate
The assessment consists of a written exam (90 minutes) according to §4(2) of the examination regulation.

Prerequisites
None.

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

V Empirical Finance

2500001, WS 19/20, 4 SWS, Language: English, Open in study portal

Lecture (V)

Description
The aim of this course is to introduce the student to empirical data work in financial economics and investments. Students will learn and implement modern portfolio theory and the most important concepts to estimate expected returns and volatility.

Learning Content
The course covers several topics, among them:

Mean-Variance Portfolio Optimization

Modeling Distribution of Asset Returns: Factor Models, ARMA-GARCH

Monte-Carlo Simulation

Parameter Estimation with Maximum Likelihood and Regressions

Workload
The total workload for this course is approximately 180 hours.

T 7.52 Course: Energy Policy [T-WIWI-102607]

Responsible: Prof. Dr. Martin Wietschel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101464 - Energy Economics

Type	Credits	Recurrence	Version
Written examination	3,5	Each summer term	3

Events					
SS 2019	2581959	Energy Policy	2 SWS	Lecture (V)	Wietschel
Exams					
SS 2019	7981959	Energy Policy		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.

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

V Energy Policy

2581959, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
The course deals with material and energy policy of policy makers and includes the effects of such policies on the economy as well as the involvement of industrial and other stakeholders in the policy design. At the beginning the neoclassical environment policy is discussed. Afterwards the Sustainable Development concept is presented and strategies how to translate the concept in policy decision follows. In the next part of the course an overview about the different environmental instruments classes, evaluation criteria for these instruments and examples of environmental instruments like taxes or certificates will be discussed. The final part deals with implementation strategies of material and energy policy.

Learning Content
The course deals with material and energy policy of policy makers and includes the effects of such policies on the economy as well as the involvement of industrial and other stakeholders in the policy design. At the beginning the neoclassical environment policy is discussed. Afterwards the Sustainable Development concept is presented and strategies how to translate the concept in policy decision follows. In the next part of the course an overview about the different environmental instruments classes, evaluation criteria for these instruments and examples of environmental instruments like taxes or certificates will be discussed. The final part deals with implementation strategies of material and energy policy.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature
Will be anounced in the lecture.

T 7.53 Course: Enterprise Architecture Management [T-WIWI-102668]

Responsible: Thomas Wolf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101476 - Business Processes and Information Systems

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2511600	Enterprise Architecture Management	2 SWS	Lecture (V)	Wolf
WS 19/20	2511601	Exercises to Enterprise Architecture Management	1 SWS	Practice (Ü)	Wolf
Exams					
SS 2019	7900043	Enterprise Architecture Management		Prüfung (PR)	Wolf
WS 19/20	7900010	Enterprise Architecture Management		Prüfung (PR)	Oberweis

Competence Certificate
Please note that the exam for first writers will be offered for the last time in winter semester 2019/2020. A last examination possibility exists in the summer semester 2020 (only for repeaters).

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 19/20, 2 SWS, Language: German, Open in study portal — **Lecture (V)**

Notes
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).

Learning objectives:

Students understand the connection between enterprise strategy, business processes and business objects and IT architecture; they know methods to depict these connections and how they can be developed based on each other.

T 7.54 Course: Exercises in Civil Law [T-INFO-102013]

Responsible: Prof. Dr. Thomas Dreier
Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: M-INFO-101191 - Commercial Law

Type	Credits	Recurrence	Version
Examination of another type	9	Each term	2

Events					
SS 2019	24504	Advanced Civil Law	2 SWS	Lecture (V)	Matz
SS 2019	24506	Exercises in Civil Law	2 SWS	Lecture (V)	Dreier
SS 2019	24926	Case Studies in Civil Law	2 SWS	Practice (Ü)	Kleiner, Käde
WS 19/20	24011	Commercial and Corporate Law	2 SWS	Lecture (V)	Wiele
Exams					
SS 2019	7500099	Wirtschaftsprivatrecht		Prüfung (PR)	Dreier, Matz
WS 19/20	7500108	Commercial Law		Prüfung (PR)	Dreier, Matz

T 7.55 Course: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-101421 - Supply Chain Management
M-WIWI-101936 - Methodical Foundations of OR

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	4

Exams				
SS 2019	7900233	Facility Location and Strategic Supply Chain Management	Prüfung (PR)	Nickel

Competence Certificate
Due to a research semester of Professor Nickel in WS 19/20, the course "Facility Location and Strategic Supply Chain Management" does NOT take place in WS 19/20. In particular, neither WS 19/20 nor SS 20 will offer an exam for the lecture. The follow-up exam to the lecture in WS 18/19 takes place in SS 19 and is exclusively for students in the second examination.

The assessment consists of a written exam (60 min) according to Section 4 (2), 1 of the examination regulation.

The exam takes place in every semester.

Prerequisite for admission to examination is the 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 winter term. The planned lectures and courses for the next three years are announced online.

T 7.56 Course: Financial Accounting and Cost Accounting [T-WIWI-102816]

Responsible: Dr. Jan-Oliver Strych
Organisation: KIT Department of Informatics
KIT Department of Economics and Management
Part of: M-WIWI-101492 - Business Administration

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2600002		2 SWS	Lecture (V)	Strych
WS 19/20	2600003	Übung zu Rechnungswesen	2 SWS	Practice (Ü)	Strych
Exams					
SS 2019	7900040	Financial Accounting and Cost Accounting		Prüfung (PR)	Ruckes

Competence Certificate
The assessment consists of a written exam following §4, Abs. 2, 1 of the examination regulation.
The examination takes place in every semester. Re-examinations are offered at eyery ordinary examination date.

Prerequisites
None

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

V 2600002, WS 19/20, 2 SWS, Open in study portal **Lecture (V)**

Learning Content
1. Introduction to accounting standards (IFRS, HGB)
2. Annual report and financial statements
3. Selected topics in financial accounting
4. Operational efficiency analysis
5. Financial Statement Analysis
6. Value-based management
7. Taxes
8. Creative accounting and compliance
9. Budgeting and benchmarking
10. Reporting

Annotation
It is recommended to have some skills about financial accounting on an introductory level.

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

T 7.57 Course: Financial Accounting for Global Firms [T-WIWI-107505]

Responsible: Dr. Torsten Luedecke
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2530242	Financial Accounting for Global Firms	2 SWS	Lecture (V)	Luedecke
WS 19/20	2530243	Übung zu Financial Accounting for Global Firms	SWS	Practice (Ü)	Luedecke
Exams					
SS 2019	7900195	Financial Accounting for Global Firms		Prüfung (PR)	Luedecke

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None

Recommendation
Basic knowledge in corporate finance and accounting.

Annotation
New lecture in the winter term 2017/18.

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

V Financial Accounting for Global Firms

2530242, WS 19/20, 2 SWS, Language: English, Open in study portal

Lecture (V)

Description
Increasing globalization coupled with related regulations continues to put pressure on moving towards a common global accounting framework - International Financial Reporting Standards (IFRS). Currently, more than 100 countries use IFRS, so if a firm's business include global transactions, it is critical to know about the impact of IFRS on the financial reporting process and business. In the EU, IFRS are compulsory for listed companies's consolidated statements but have also gained factual significance for companies without statutory duty to use IFRS. The course introduces the conceptual framework of IFRS, discuss the primary financial statements according to IFRS and explains the underlying principles, concepts, and methods to prepare the financial statements. Special focus is given to some more complex accounting issues related to revenue recognition from contracts with customers, consolidation of different types of intercorporate investments, and foreign currency translation.

Learning Content
The lecture covers the following topics:

- The context of financial accounting for global firms
- The mechanics of financial accounting
- Accounting frameworks and concepts
- Content and presentation of financial statements
- Preparing financial statements
- Revenue recognition from contracts
- Tangible and intangible non-current assets
- Financial assets, liabilities, and equity
- Consolidation and the assessment of control
- Investment in associates and joint arrangements
- Business combinations
- Foreign currency translation

Literature
Alexander, D. and C. Nobes (2017): Financial Accounting – An International Introduction, 6th ed., Pearson.

T 7.58 Course: Financial Econometrics [T-WIWI-103064]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101599 - Statistics and Econometrics

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	2

Competence Certificate
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Annotation
The course takes place each second summer term: 2018/2020....

T 7.59 Course: Financial Intermediation [T-WIWI-102623]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2530232	Financial Intermediation	2 SWS	Lecture (V)	Ruckes
WS 19/20	2530233	Übung zu Finanzintermediation	1 SWS	Practice (Ü)	Ruckes, Hoang, Benz
Exams					
SS 2019	7900078	Financial Intermediation		Prüfung (PR)	Ruckes

Competence Certificate
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
The exam is offered each semester.

Prerequisites
None

Recommendation
None

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

V Financial Intermediation

2530232, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Competition in the banking sector
- Stability of the financial system
- The macroeconomic role of financial intermediation

Learning Content

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Stability of the financial system
- The macroeconomic role of financial intermediation
- Principles of the prudential regulation of banks

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

Literature
Elective literature:

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6th edition, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2nd edition, MIT Press.

T 7.60 Course: Financial Management [T-WIWI-102605]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101435 - Essentials of Finance

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2530216	Financial Management	2 SWS	Lecture (V)	Ruckes
SS 2019	2530217	Übung zu Financial Management	1 SWS	Practice (Ü)	Ruckes, Schubert
Exams					
SS 2019	7900074	Financial Management		Prüfung (PR)	Ruckes

Competence Certificate
The assessment consists of a written exam (60 min.) according to Section 4 (2), 1 of the examination regulation.
The exam takes place at every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
Knowledge of the content of the course Business Administration: Finance and Accounting [25026/25027] is recommended.

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

V Financial Management

2530216, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
Analytical methods and theories in the field 'Capital investments and financing' with the main focus on:

- Capital Structure
- Dividend policy
- Essentials of valuation
- Investment decisions
- Short term/ long term finance
- Working Capital Management

Learning Content
Analytical methods and theories in the field of corporate finance with the main focus on:

- Liquidity and Working Capital Management
- Sources of short term/ long term finance
- Capital Structure
- Dividend policy

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

Literature
Elective literature:

- Ross, Westerfield, Jaffe, Jordan (2009): Modern Financial Management, McGraw-Hill International Edition
- Berk, De Marzo (2016): Corporate Finance, 4th edition, Pearson Addison Wesley

T 7.61 Course: Formal Systems [T-INFO-101336]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: M-INFO-100799 - Formal Systems

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24086	Formale Systeme	4 SWS	Lecture / Practice (VÜ)	Beckert, Ulbrich
Exams					
SS 2019	7500009	Formal Systems		Prüfung (PR)	Beckert
WS 19/20	7500036	Formal Systems		Prüfung (PR)	Beckert

T 7.62 Course: Foundations of Interactive Systems [T-WIWI-109816]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101434 - eBusiness and Service Management
M-WIWI-102752 - Fundamentals of Digital Service Systems
M-WIWI-104911 - Information Systems & Digital Business: Interaction
M-WIWI-104913 - Information Systems & Digital Business: Servitization

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2540560	Foundations of Interactive Systems	3 SWS	Lecture (V)	Mädche
Exams					
SS 2019	7900247	Foundations of Interactive Systems		Prüfung (PR)	Mädche

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None

Recommendation
None

Annotation
New course starting summer term 2019.

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

V Foundations of Interactive Systems

2540560, SS 2019, 3 SWS, Language: English, Open in study portal

Lecture (V)

Notes
Advanced information and communication technologies make interactive systems ever-present in the users' private and business life. They are an integral part of smartphones, devices in the smart home, mobility vehicles as well as at the working place.

With the continuous growing capabilities of computers, the design of the interaction between human and computer becomes even more important. This lecture introduces foundations on design processes and principles for interactive systems.

The lecture focuses on foundational concepts, theories, practices and methods for the design of interactive systems. The students get the foundational knowledge to guide the design of interactive systems in business and private life.

Learning goals:

The students

- Have basic understanding of conceptual and theoretical foundations of interactive systems
- know design processes and techniques for interactive systems
- is able to apply design principles for the design of important classes of interactive systems

T 7.63 Course: Foundations of Mobile Business [T-WIWI-104679]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101476 - Business Processes and Information Systems

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	4

Events					
SS 2019	2511226	Grundlagen für mobile Business	2 SWS	Lecture (V)	Schiefer
SS 2019	2511227	Übungen zu Grundlagen für mobile Business	1 SWS	Practice (Ü)	Schiefer
Exams					
SS 2019	7900001	Foundations of mobile Business		Prüfung (PR)	Oberweis
WS 19/20	7900118	Foundations of mobile Business		Prüfung (PR)	Oberweis

Competence Certificate
The assessment of this course is a written (60 min.) or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites
None

Annotation
Lecture and exercises are integrated.

T 7.64 Course: Fundamentals of Production Management [T-WIWI-102606]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101437 - Industrial Production I

Type	Credits	Recurrence	Version
Written examination	5,5	Each summer term	1

Events					
SS 2019	2581950	Fundamentals of Production Management	2 SWS	Lecture (V)	Schultmann
SS 2019	2581951	Übungen Grundlagen der Produktionswirtschaft	2 SWS	Practice (Ü)	Müller, Naber
Exams					
SS 2019	7981950	Fundamentals of Production Management		Prüfung (PR)	Schultmann
WS 19/20	7981950	Fundamentals of Production Management		Prüfung (PR)	Schultmann

Competence Certificate
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

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

V Fundamentals of Production Management

2581950, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
This lecture focuses on strategic production management with respect to various economic aspects. Interdisciplinary approaches of systems theory will be used to describe the challenges of industrial production. This course will emphasize the importance of R&D as the central step in strategic corporate planning to ensure future long-term success.
In the field of site selection and planning for firms and factories, attention will be drawn upon individual aspects of existing and greenfield sites as well as existing distribution and supply centres. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

Medien und Pflichtliteratur: können aus der alten Fassung übernommen werden.

Learning Content
This lecture focuses on strategic production management with respect to various economic aspects. Interdisciplinary approaches of systems theory will be used to describe the challenges of industrial production. This course will emphasize the importance of R&D as the central step in strategic corporate planning to ensure future long-term success.

In the field of site selection and planning for firms and factories, attention will be drawn upon individual aspects of existing and greenfield sites as well as existing distribution and supply centres. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

Workload
Total effort required will account for approximately 165h (5.5 credits).

Literature
will be announced in the course

T 7.65 Course: Geometric Basics for Geometry Processing [T-INFO-101293]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: M-INFO-100756 - Geometric Basics for Geometry Processing

Type	Credits	Recurrence	Version
Oral examination	5	Irregular	1

Events					
SS 2019	24175	Geometrische Grundlagen der Geometrieverarbeitung	2+1 SWS	Lecture / Practice (VÜ)	Prautzsch, Eifried
Exams					
SS 2019	7500245	Geometric Basics for Geometry Processing		Prüfung (PR)	Prautzsch

T 7.66 Course: Geometric Optimzation [T-INFO-101267]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: M-INFO-100730 - Geometric Optimization

Type	Credits	Recurrence	Version
Oral examination	3	Irregular	1

Exams				
SS 2019	7500230	Geometric Optimzation	Prüfung (PR)	Prautzsch

T 7.67 Course: Global Optimization I [T-WIWI-102726]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-101936 - Methodical Foundations of OR

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2550134	Globale Optimierung I	2 SWS	Lecture (V)	Stein
SS 2019	2550135	Übungen zu Globale Optimierung I+II	1 SWS	Practice (Ü)	Stein
Exams					
SS 2019	7900061_SS2019_HK	Global Optimization I		Prüfung (PR)	Stein

Competence Certificate
Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO) and possibly of a compulsory prerequisite.

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Prerequisites
None

Recommendation
None

Annotation
Part I and II of the lecture are held consecutively in the *same*semester.

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

V Globale Optimierung I

2550134, SS 2019, 2 SWS, Open in study portal — **Lecture (V)**

Learning Content
In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

Part I of the lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Numerical methods

Nonconvex optimization problems are treated in part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

T 7.68 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-101936 - Methodical Foundations of OR

Type	Credits	Recurrence	Version
Written examination	9	Each summer term	1

Events					
SS 2019	2550134	Globale Optimierung I	2 SWS	Lecture (V)	Stein
SS 2019	2550136	Globale Optimierung II	2 SWS	Lecture (V)	Stein
Exams					
SS 2019	7900063_SS2019_HK	Global Optimization I and II		Prüfung (PR)	Stein

Competence Certificate
The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The examination is held in the semester of the lecture and in the following semester.

Prerequisites
None

Recommendation
None

Annotation
Part I and II of the lecture are held consecutively in the *same* semester.

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

V Globale Optimierung I

2550134, SS 2019, 2 SWS, Open in study portal — **Lecture (V)**

Learning Content
In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

Part I of the lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Numerical methods

Nonconvex optimization problems are treated in part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

V

Globale Optimierung II

2550136, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The global solution of convex optimization problems is subject of part I of the lecture.

Part II of the lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via aBB method
- Branch and bound methods
- Lipschitz optimization

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

T 7.69 Course: Global Optimization II [T-WIWI-102727]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101936 - Methodical Foundations of OR

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2019	2550135	Übungen zu Globale Optimierung I+II	1 SWS	Practice (Ü)	Stein
SS 2019	2550136	Globale Optimierung II	2 SWS	Lecture (V)	Stein
Exams					
SS 2019	7900062_SS2019_HK	Global Optimization II		Prüfung (PR)	Stein

Competence Certificate
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Prerequisites
None

Annotation
Part I and II of the lecture are held consecutively in the *same*semester.

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

V Globale Optimierung II

2550136, SS 2019, 2 SWS, Open in study portal — **Lecture (V)**

Learning Content
In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The global solution of convex optimization problems is subject of part I of the lecture.

Part II of the lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via aBB method
- Branch and bound methods
- Lipschitz optimization

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

T 7.70 Course: Human Resource Management [T-WIWI-102909]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101513 - Human Resources and Organizations

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2573005	Human Resource Management	2 SWS	Lecture (V)	Nieken
WS 19/20	2573006	Übung zu Human Resource Management	1 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
SS 2019	7900134	Human Resource Management		Prüfung (PR)	Nieken

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites
None

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

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

V Human Resource Management

2573005, WS 19/20, 2 SWS, Language: German, Open in study portal — **Lecture (V)**

Notes
The students acquire basic knowledge in the fields of human resource planning, selection and talent management. Differentprocesses and instruments and their link to corporate strategy are evaluated based on microeconomic and behavioralapproaches. The results are tested and discussed based on empirical data.

Aim

The student

- understands the processes and instruments of human resource management.
- analyzes different methods of human resource planning and selection and evaluates their usefulness.
- analyzes different processes of talent management and evaluates the strengths and weaknesses.
- understands the challenges of human resource management and its link to corporate strategy.

Workload

The total workload for this course is approximately 135 hours.

Lecture 32h

Preparation of lecture 52h

Exam preparation 51h.

Literature

- Personnel Economics in Practice, Lazear & Gibbs, John Wiley & Sons, 2014
- Strategic Human Resources. Frameworks for General Managers, Baron & Kreps, John Wiley & Sons, 1999

T 7.71 Course: Human-Machine-Interaction [T-INFO-101266]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-INFO-100729 - Human Computer Interaction

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	2

Events					
SS 2019	24659	Human-Computer-Interaction	2 SWS	Lecture (V)	Beigl, Exler
Exams					
SS 2019	7500048	Human-Machine-Interaction		Prüfung (PR)	Beigl
WS 19/20	7500076	Human-Machine-Interaction		Prüfung (PR)	Beigl

T 7.72 Course: Human-Machine-Interaction Pass [T-INFO-106257]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-INFO-100729 - Human Computer Interaction

Type	Credits	Recurrence	Version
Completed coursework	0	Each summer term	1

Events					
SS 2019	2400095	Human-Computer-Interaction	1 SWS	Practice (Ü)	Beigl, Exler
SS 2019	24659	Human-Computer-Interaction	2 SWS	Lecture (V)	Beigl, Exler
Exams					
SS 2019	7500121	Human-Machine-Interaction		Prüfung (PR)	Beigl

T 7.73 Course: Industrial Organization [T-WIWI-102844]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Events					
SS 2019	2560238	Industrial Organization	2 SWS	Lecture (V)	Reiß, Hofmann
SS 2019	2560239	Übung zu Industrieökonomie	2 SWS	Practice (Ü)	Reiß, Hofmann
Exams					
SS 2019	79192IO	Industrial Organization		Prüfung (PR)	Reiß

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
Completion of the module Economics [WW1VWL] is assumed.

Annotation
This course is not given in summer 2017.

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

V Industrial Organization

2560238, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
This course introduces the theory of industrial organization using game theoretical models. The course is divided into two parts: The first part reviews standard market forms (monopoly, oligopoly, perfect competition). The second part discusses more advanced topics including price discrimination, strategic product differentiation, cartel formation, market entry, and research and development.

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

Literature
Compulsory Textbook:

H. Bester (2012): Theorie der Industrieökonomik, Springer-Verlag.

Additional Literature:

J. Tirole (1988): Theory of Industrial Organization, MIT Press.

D. Carlton / J. Perloff (2005): Modern Industrial Organization, Pearson.

P. Belleflamme / M. Peitz (2010): Industrial Organization

T 7.74 Course: Information Systems 1 [T-WIWI-109817]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104820 - Information Systems I
M-WIWI-104843 - Orientation Exam

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2540425	Wirtschaftsinformatik I	SWS	Lecture (V)	Mädche, Weinhardt, Abeck
Exams					
WS 19/20	7900174	Information Systems 1		Prüfung (PR)	Mädche

Competence Certificate
The assessment is monitored
- in the form of a written test (60 minutes) at the end of the lecture period, and by
- editing a Capstone project.
The scoring scheme for the evaluation of the assessment 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 Wirtschaftsinformatik I

2540425, WS 19/20, SWS, Language: German, Open in study portal

Lecture (V)

Notes
In the lecture Information Systems I of the module central basics of information systems are introduced as a scientific discipline. For this purpose, the objects of knowledge, basic terms, scientific character and goals as well as methods in science and practice of information systems are introduced. Concepts, methods and theories as well as systems and their technical design are discussed along the analysis units individual, group, organization and market. The lecture focuses on the analysis units individual and group. Within the framework of the lecture, a Capstone project is worked on in a team, which takes up a real social question and develops a concrete problem solution.

Learning obejectivs:

The student

- can describe the subject area of the discipline information systems in science and practice
  knows the central terms as well as goals, core tasks and objects of knowledge of information systems
- understands the interplay of subject area, method and theory in information systems
- can define the central analysis units individual, group, organisation and market and obtain a basic understanding of the targeted use of information systems and infrastructures
- develops an understanding of the importance of interdisciplinary, systemic thinking and develops in a team a solution to a real social problem

Workload:

Total effort for 4 credit points: approx. 120 hours. Presence time: 40 hours Preparation/postprocessing: 40 hours Examination and exam preparation: 40 hours

T 7.75 Course: Information Systems 2 [T-WIWI-109818]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104821 - Information Systems II

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None

Recommendation
None

Annotation
New course starting summer term 2020.

T 7.76 Course: Integrated Network and Systems Management [T-INFO-101284]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: M-WIWI-101440 - Information Services in Networks

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2019	2400004	Integrated Network and Systems Management	2 SWS	Lecture (V)	Neumair
Exams					
SS 2019	7500144	Integrated Network and Systems Management		Prüfung (PR)	Neumair

T 7.77 Course: Intellectual Property and Data Protection [T-INFO-109840]

Responsible: Dr. Yvonne Matz
Organisation: KIT Department of Informatics
Part of: M-INFO-101253 - Intellectual Property and Data Protection

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24018	Datenschutzrecht	2 SWS	Lecture (V)	Marsch, Barczak
WS 19/20	24070	Industrial Property and Copyright Law	2 SWS	Lecture (V)	Dreier

T 7.78 Course: International Finance [T-WIWI-102646]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101402 - eFinance
M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2019	2530570	International Finance	2 SWS	Lecture (V)	Walter, Uhrig-Homburg
Exams					
SS 2019	7900097	International Finance		Prüfung (PR)	Uhrig-Homburg

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

Annotation
See German version.

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

V International Finance

2530570, SS 2019, 2 SWS, Language: German, 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 outour analysis fromtwo distinctperspectives:First the point of view of an international investor second that, of an international corporation.Several alternativesto the management of foreignexchangerisks are shown. Due to the importance of foreign exchangerisks, the first part of the course deals withcurrency markets. Furthermore current exchange rate theories are discussed.

Learning Content
The main aspects of this course are the chances and the risks which are associated with international transactions. We carry out our analysis from two distinct perspectives: First the point of view of an international investor second that, of an international corporation. Several alternatives to the management of foreign exchange risks are shown. Due to the importance of foreign exchange risks, the first part of the course deals with currency markets. Furthermore current exchange rate theories are discussed.

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

Literature
Elective literature:

- Eiteman, D. et al., Multinational Business Finance, 13. edition, 2012.
- Solnik, B. and D. McLeavey, Global Investments, 6. edition, 2008.

T 7.79 Course: International Marketing [T-WIWI-102807]

Responsible: Dr. Sven Feurer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101424 - Foundations of Marketing

Type	Credits	Recurrence	Version
Written examination	1,5	Each winter term	1

Events					
WS 19/20	2572155	International Marketing	1 SWS	Lecture (V)	Feurer
Exams					
SS 2019	7900148	International Marketing		Prüfung (PR)	Klarmann
WS 19/20	7900123	International Marketing		Prüfung (PR)	Klarmann

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

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

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

V International Marketing

2572155, WS 19/20, 1 SWS, Language: English, Open in study portal

Lecture (V)

Learning Content
Doing marketing abroad creates a number of significant new challenges for firms. This class is intended to prepare you for meeting these challenges. In the first session, we will discuss the peculiarities of international marketing. The next five sessions will then be dedicated to methods that can be used to address them. For instance, we will look at the following issues:

- Internationalization strategies
- Market entry strategies
- Standardization vs. individualization (e.g. regarding products, prices, and communication)
- Measurement equivalence in international market research

In the final session, we will apply this knowledge to the case of Wal Mart. In particular, Wal Mart, despite being the largest retailing company worldwide, failed to successfully enter the German Market. We will discuss Wal Mart's failure using the methods taught in the weeks before.

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

Workload
The total workload for this course is approximately 45.0 hours. For further information see German version.

Literature
Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T 7.80 Course: Introduction in Computer Networks [T-INFO-102015]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: M-INFO-103455 - Introduction in Computer Networks

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2019	24519	Einführung in Rechnernetze	2 SWS	Lecture (V)	Friebe, Gerhard, Jung, Zitterbart
SS 2019	24521	Übung zu Einführung in Rechnernetze	1 SWS	Practice (Ü)	Friebe, Gerhard, Jung, Zitterbart
Exams					
SS 2019	7500116	Introduction to Computer Networking		Prüfung (PR)	Zitterbart

T 7.81 Course: Introduction to Energy Economics [T-WIWI-102746]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101464 - Energy Economics

Type	Credits	Recurrence	Version
Written examination	5,5	Each summer term	2

Events					
SS 2019	2581010	Introduction to Energy Economics	2 SWS	Lecture (V)	Fichtner, Sandmeier, Lehmann
SS 2019	2581011	Übungen zu Einführung in die Energiewirtschaft	2 SWS	Practice (Ü)	Lehmann, Kleinebrahm, Jochem, Sandmeier
Exams					
SS 2019	7981010	Introduction to Energy Economics		Prüfung (PR)	Fichtner

Competence Certificate
The assessment consists of a written exam (90 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None.

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

V Introduction to Energy Economics

2581010, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
1. Introduction: terms, units, conversions
2. The energy carrier gas (reserves, resources, technologies)
3. The energy carrier oil (reserves, resources, technologies)
4. The energy carrier hard coal (reserves, resources, technologies)
5. The energy carrier lignite (reserves, resources, technologies)
6. The energy carrier uranium (reserves, resources, technologies)
7. The final carrier source electricity
8. The final carrier source heat
9. Other final energy carriers (cooling energy, hydrogen, compressed air)

Workload
The total workload for this course is approximately 165.0 hours. For further information see German version.

Literature
Complementary literature:

Pfaffenberger, Wolfgang. Energiewirtschaft. ISBN 3-486-24315-2

Feess, Eberhard. Umweltökonomie und Umweltpolitik. ISBN 3-8006-2187-8

Müller, Leonhard. Handbuch der Elektrizitätswirtschaft. ISBN 3-540-67637-6

Stoft, Steven. Power System Economics. ISBN 0-471-15040-1

Erdmann, Georg. Energieökonomik. ISBN 3-7281-2135-5

T 7.82 Course: Introduction to Game Theory [T-WIWI-102850]

Responsible: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2520525	Introduction to Game Theory	2 SWS	Lecture (V)	Reiß
SS 2019	2520526	Übungen zu Einführung in die Spieltheorie	1 SWS	Practice (Ü)	Reiß
Exams					
SS 2019	79192GT	Introduction to Game Theory		Prüfung (PR)	Reiß

Competence Certificate
The assessment consists of a written exam (60 minutes) according to Section 4(2),1 of the examination regulation.
The exam takes place in the recess period and can be resited at every ordinary examination date.

Prerequisites
None

Recommendation
Basic knowledge of mathematics and statistics is assumed.

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

V Introduction to Game Theory

2520525, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
The course focusses on non-cooperative game theory. It discusses models, solution concepts, and applications for simultaneous games as well as sequential games. Various solution concepts, e.g., Nash equilibrium and subgame-perfect equilibrium, are introduced along with more advanced concepts. A short introduction to cooperative game theory is given if there is sufficient time.

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

Literature
Compulsory textbook:

Gibbons (1992): A Primer in Game Theory, Harvester-Wheatsheaf.

Additional Literature:

Berninghaus/Ehrhart/Güth (2010): Strategische Spiele, Springer Verlag.

Binmore (1991): Fun and Games, DC Heath.

Fudenberg/Tirole (1991): Game Theory, MIT Press.

Heifetz (2012): Game Theory, Cambridge Univ. Press.

T 7.83 Course: Introduction to Operations Research I and II [T-WIWI-102758]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101418 - Introduction to Operations Research

Type	Credits	Recurrence	Version
Written examination	9	see Annotations	1

Events					
SS 2019	2550040	Introduction to Operations Research I	2+2 SWS	Lecture (V)	Stein
WS 19/20	2530043	Introduction to Operations Research II	2 SWS	Lecture (V)	Stein
WS 19/20	2530044		SWS	Tutorial (Tu)	Assistenten, Stein
Exams					
SS 2019	7900135	Introduction to Operations Research I and II		Prüfung (PR)	Nickel

Competence Certificate
The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.

In each term (usually in March and July), one examination is held for both courses.

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

Prerequisites
None

Recommendation
Mathematics I und II. Programming knowledge for computing exercises.

It is strongly recommended to attend the course *Introduction to Operations Research I* [2550040] before attending the course *Introduction to Operations Research II* [2530043].

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

V Introduction to Operations Research I

2550040, SS 2019, 2+2 SWS, Language: German, Open in study portal — **Lecture (V)**

Description
Examples for typical OR problems.

Linear Programming: Basic notions, simplex method, duality, special versions of the simplex method (dual simplex method, three phase method), sensitivity analysis, parametric optimization, game theory.

Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal and minimal cost flows in networks.

Learning Content
Examples for typical OR problems.

Linear Programming: Basic notions, simplex method, duality, special versions of the simplex method (dual simplex method, three phase method), sensitivity analysis, parametric optimization, multicriteria optimization.

Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal flows in networks.

Workload
Berechnung des Arbeitsaufwands eines durchschnittlichen Studenten um die Lernziele zu erreichen. (Intern)

Eine Vernetzung von learningoutcomes (Wissen (content), Kompetenzen (skills) und levels mit dem dafür geschätzten Arbeitsaufwand eines durchschnittlichen Studenten ist anzustreben.

Literature

- Nickel, Stein, Waldmann: Operations Research, 2nd edition, Springer, 2014
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

T 7.84 Course: Introduction to Public Finance [T-WIWI-102877]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101403 - Public Finance

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2560131	Introduction to Public Finance	3 SWS	Lecture (V)	Wigger
Exams					
SS 2019	790fiwi	Introduction to Public Finance		Prüfung (PR)	Wigger
WS 19/20	790fiwi	Introduction to Public Finance		Prüfung (PR)	Wigger

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 Introduction to Public Finance

2560131, WS 19/20, 3 SWS, Language: German, Open in study portal

Lecture (V)

Notes
The course *Introduction to Public Finance* provides an overview of the fundamental issues in public economics. The first part of the course deals with normative theories about the economic role of the state in a market economy. Welfare economics theory is offered as a base model, with which alternative normative theories are compared and contrasted. Within this theoretical framework, arguments concerning efficiency and equity are developed as justification for varying degrees of economic intervention by the state. The second part of the course deals with the positivist theory of public economics. Processes of public decision making are examined and the conditions that lead to market failures resulting from collective action problems are discussed. The third part of the course examines a variety of public spending programs, including social security systems, the public education system, and programs aimed at reducing poverty. The fifth part of the course addresses the key theoretical and political issues associated with fiscal federalism.

Learning goals:

Students are able to:

- critically assess the economic role of the state in a market economy
- explain and discuss key concepts in public finance, including: public goods; economic externalities; and market failure
- explain and critically discuss competing theoretical approaches to public finance, including welfare economics and public choice theory
- explain the theory of bureaucracy according to Weber and critically assess its strengths and weaknesses
- evaluate the incentives inherent in the bureaucratic model, as well as the more recent introduction of market-oriented incentives associated with public-sector reform

Workload:

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

Learning Content
The course *Introduction to Public Finance* provides an overview of the fundamental issues in public economics. The first part of the course deals with normative theories about the economic role of the state in a market economy. Welfare economics theory is offered as a base model, with which alternative normative theories are compared and contrasted. Within this theoretical framework, arguments concerning efficiency and equity are developed as justification for varying degrees of economic intervention by the state. The second part of the course deals with the positivist theory of public economics. Processes of public decision making are examined and the conditions that lead to market failures resulting from collective action problems are discussed. The third part of the course examines a variety of public spending programs, including social security systems, the public education system, and programs aimed at reducing poverty. The fifth part of the course addresses the key theoretical and political issues associated with fiscal federalism.

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

Literature
Wigger, B. U. 2006. ***Grundzüge der Finanzwissenschaft.*** Springer: Berlin.

T 7.85 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-103278 - Optimization under Uncertainty

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2550470	Einführung in die Stochastische Optimierung	2 SWS	Lecture (V)	Rebennack
SS 2019	2550471	Übung zur Einführung in die Stochastische Optimierung	1 SWS	Practice (Ü)	Rebennack, Assistenten
Exams					
SS 2019	7900198	Introduction to Stochastic Optimization		Prüfung (PR)	Rebennack

Competence Certificate
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites
None.

T 7.86 Course: Investments [T-WIWI-102604]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101435 - Essentials of Finance

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2530575	Investments	2 SWS	Lecture (V)	Uhrig-Homburg
SS 2019	2530576	Übung zu Investments	1 SWS	Practice (Ü)	Uhrig-Homburg, Grauer
Exams					
SS 2019	7900109	Investments		Prüfung (PR)	Uhrig-Homburg

Competence Certificate
The assessment consits of a written exam (75 min) according to Section 4(2), 1 of the examination regulation.
The examination takes place in every semester. Re-examinations are offered at eyery ordinary 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 up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites
None

Recommendation
Knowledge of Business Administration: Finance and Accounting [2610026] is recommended.

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

V Investments

2530575, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
The lecture deals with investment decisions under uncertainty, where the main emphasis is on investment decisions on stock markets. After a discussion of the basic questions of corporate valuation, the lecture focuses on portfolio theory. After that, risk and return in equilibrium are derived using the Capital Asset Pricing Model and the Arbitrage Pricing Theory, followed by an introduction into derivatives markets, especially forwards and futures. The lecture concludes with investments on bond markets.

Learning Content
The lecture deals with investment decisions under uncertainty, where the main emphasis is on investment decisions on stock markets. After a discussion of the basic questions of corporate valuation, the lecture focuses on portfolio theory. After that, risk and return in equilibrium are derived using the Capital Asset Pricing Model and the Arbitrage Pricing Theory. The lecture concludes with investments on bond markets.

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

Literature
Elective literature:

Bodie/Kane/Marcus (2010): Essentials of Investments, Eighth Edition, McGraw-Hill Irwin, Boston

T 7.87 Course: Lab Protocol Engineering [T-INFO-102066]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: M-INFO-101247 - Lab Protocol Engineering

Type	Credits	Recurrence	Version
Examination of another type	4	Each winter term	1

Events					
WS 19/20	2400107	Basispraktikum Protocol Engineering	4 SWS	Practical course (P)	Bauer, Zitterbart
Exams					
WS 19/20	7500023	Lab Protocol Engineering		Prüfung (PR)	Zitterbart

T 7.88 Course: Lab: Working with Database Systems [T-INFO-103552]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101235 - Introduction to Data and Information Management
M-INFO-101865 - Lab: Working with Database Systems

Type	Credits	Recurrence	Version
Completed coursework	4	Each winter term	2

Events					
WS 19/20	24317	Arbeiten mit Datenbanksystemen	2 SWS	Practical course (P)	Böhm
Exams					
WS 19/20	7500146	Lab: Working with Database Systems		Prüfung (PR)	Böhm

T 7.89 Course: Logistics - Organisation, Design and Control of Logistic Systems [T-MACH-102089]

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

Part of: M-WIWI-101421 - Supply Chain Management

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	2118078	Logistics - Organisation, Design, and Control of Logistic Systems	3 SWS	Lecture (V)	Furmans
Exams					
SS 2019	76-T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems		Prüfung (PR)	Furmans, Mittwollen

Competence Certificate
The assessment consists of a 90 minutes written examination (according to §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
Requied 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, Language: German, Open in study portal

Lecture (V)

Description
Media:
Blackboard, LCD projector, in excercises 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 Managament

- 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 (Neuauflage 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 7.90 Course: Logistics and Supply Chain Management [T-WIWI-102870]

Responsible: Dr. Marcus Wiens
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101437 - Industrial Production I

Type	Credits	Recurrence	Version
Written examination	3,5	Each summer term	1

Events					
SS 2019	2581996	Logistics and Supply Chain Management	2 SWS	Lecture (V)	Wiens
SS 2019	2581997	Übung zu Logistics and Supply Chain Management	1 SWS	Practice (Ü)	Diehlmann, Lüttenberg
Exams					
SS 2019	7981996	Logistics and Supply Chain Management		Prüfung (PR)	Schultmann
WS 19/20	7981996	Logistics and Supply Chain Management		Prüfung (PR)	Schultmann

Competence Certificate
The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

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

V Logistics and Supply Chain Management

2581996, SS 2019, 2 SWS, Language: English, Open in study portal

Lecture (V)

Learning Content

- Introduction: Basic Terms and Concepts
- Logistics Systems and Supply Chain Management
- Supply Chain Risk Management
- Extensions and Applications

Workload
Toatl effort required will account for approximately 105h (3.5 credits).

Literature
will be announced in the course

T 7.91 Course: Macroeconomic Theory [T-WIWI-109121]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101501 - Economic Theory
M-WIWI-101668 - Economic Policy I

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2560404	Macroeconomic Theory	2 SWS	Lecture (V)	Scheffel
WS 19/20	2560405	Übung zu Macroeconomic Theory	1 SWS	Practice (Ü)	Pegorari
Exams					
SS 2019	7900232	Macroeconomic Theory		Prüfung (PR)	Scheffel

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None.

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

V Macroeconomic Theory

2560404, WS 19/20, 2 SWS, Language: English, Open in study portal

Lecture (V)

Description
This course introduces a modern approach to macroeconomics by building on microeconomic principles. To be able to rigorously address key macroeconomic questions a general framework based on intertemporal decision making is introduced. Starting by the principles of consumer and firm behavior, this framework is successively expanded by introducing market imperfections, monetary factors as well as international trade. With this framework at hand students are able to analyze labor market policies, government deficits, monetary policy, financial crises, trade policy, and other important macroeconomic problems. Throughout the course, we not only point out the power of theory but also its limitations.

Workload
The total workload for this course is approximately 135 hours. For further information see the German version.

Literature
Literature and lecture notes are provided during the course.

T 7.92 Course: Management and Strategy [T-WIWI-102629]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101425 - Strategy and Organization

Type	Credits	Recurrence	Version
Written examination	3,5	Each summer term	1

Events					
SS 2019	2577900	Management and Strategy	2 SWS	Lecture (V)	Lindstädt
Exams					
SS 2019	7900067	Management and Strategy		Prüfung (PR)	Lindstädt

Competence Certificate
The assessment consists of a written exam (60 min) taking place at the beginn of the recess period (according to §4 (2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

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

V Management and Strategy

2577900, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description

- Corporate management principles
- Strategic management principles
- Strategic analysis
- Competitive strategy: modelling and selection on a divisional level
- Strategies for oligopolies and networks: anticipation of dependencies
- Corporate strategy: modelling and evaluation on a corporate level
- Strategy implementation

Learning Content
The participants learn about central concepts of strategic management along the ideal-typical strategy process: internal and external strategic analysis, concept and sources of competitive advantages, their importance when establishing competitive and corporate strategies as well as strategy assessment and implementation. This aims in particular to provide a summary of the basic concepts and models of strategic management, i.e. to provide in particular an action-oriented integration. Thereby a focus is on imparting knowledge about how price developments in oligopolistic markets can be understood, modeled and forecasted based on game theory.

Annotation
The credits for the course "Management and Strategy" have been changed from 4 to 3,5 from summer term 2015 on.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature

- Grant, R.M.: *Contemporary Strategy Analysis.* Blackwell, 5. Aufl. Massachusetts 2005.
- Lindstädt, H.; Hauser, R.: *Strategische Wirkungsbereiche von Unternehmen.* Gabler, Wiesbaden 2004.

The relevant excerpts and additional sources are made known during the course.

T 7.93 Course: Managing Organizations [T-WIWI-102630]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101425 - Strategy and Organization
M-WIWI-101513 - Human Resources and Organizations

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	3

Events					
WS 19/20	2577902	Managing Organizations	2 SWS	Lecture (V)	Lindstädt
Exams					
SS 2019	7900066	Managing Organizations		Prüfung (PR)	Lindstädt

Competence Certificate
The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

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

V Managing Organizations

2577902, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description

- Principles of organisational management
- Managing organisational structures and processes: the selection of design parameters
- Ideal-typical organisational structures: choice and effect of parameter combinations
- Managing organisational changes

Notes
The course should enable the participants to assess the strengths and weaknesses of existing organisational structures and rules using systematic criteria. Here concepts and models for designing organisation structures, regulating organizational processes and managing organisational changes are presented and discussed using case studies. The course is structured to relate to actions and aims to give students a realistic view of the opportunities and limits of rational design approaches.

Content in brief:

- Principles of organisational management
- Managing organisational structures and processes: the selection of design parameters
- Ideal-typical organisational structures: choice and effect of parameter combinations
- Managing organisational changes

Learning Objectives:

The course should enable the participants to assess the strengths and weaknesses of existing organisational structures and rules using systematic criteria. Here concepts and models for designing organisation structures, regulating organizational processes and managing organisational changes are presented and discussed using case studies. The course is structured to relate to actions and aims to give students a realistic view of the opportunities and limits of rational design approaches.

Recommendations:

None.

Workload:

The total workload for this course is approximately 105.0 hours. For further information see German version.

Assessment:

The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be acquired through successful participation in the exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade (0.3 or 0.4). The exact criteria for the award of a bonus will be announced at the beginning of the lecture.

Learning Content
The course should enable the participants to assess the strengths and weaknesses of existing organisational structures and rules using systematic criteria. Here concepts and models for designing organisation structures, regulating organizational processes and managing organisational changes are presented and discussed using case studies. The course is structured to relate to actions and aims to give students a realistic view of the opportunities and limits of rational design approaches.

Annotation
The credits for the course "Managing Organizations" have been changed from 4 to 3,5 from summer term 2015 on.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature

- Laux, H.; Liermann, F.: *Grundlagen der Organisation*, Springer. 6. Aufl. Berlin 2005.
- Lindstädt, H.: *Organisation*, in Scholz, C. (Hrsg.): Vahlens Großes Personallexikon, Verlag Franz Vahlen. 1. Aufl. München, 2009.
- Schreyögg, G.: *Organisation. Grundlagen moderner Organisationsgestaltung*, Gabler. 4. Aufl. Wiesbaden 2003.

The relevant excerpts and additional sources are made known during the course.

T 7.94 Course: Managing the Marketing Mix [T-WIWI-102805]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101424 - Foundations of Marketing

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	2

Events					
SS 2019	2571152	Managing the Marketing Mix	2 SWS	Lecture (V)	Klarmann
SS 2019	2571153	Übung zu Marketing Mix (Bachelor)	1 SWS	Practice (Ü)	Moosbrugger, Pade
Exams					
SS 2019	7900023	Managing the Marketing Mix		Prüfung (PR)	Klarmann
SS 2019	7900205	Managing the Marketing Mix		Prüfung (PR)	Klarmann

Competence Certificate
The assessment is carried out by the preparation and presentation of a case study (max 30 points) as well as a written exam (max 60 points). In total, a maximum of 90 points can be achieved in the event.

Prerequisites
None

Annotation
The course is compulsory in the module "Foundations of Marketing".
For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

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

V Managing the Marketing Mix

2571152, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
The content of this course concentrates on the elements of the marketing mix. Therefore the main chapters are:

- Brand management
- Pricing
- Promotion

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

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

T 7.95 Course: MARS Basis Lab [T-INFO-102053]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: M-INFO-101245 - MARS-Based Internship

Type	Credits	Version
Examination of another type	4	1

Events					
WS 19/20	2400025	Praktikum	2 SWS	Practical course (P)	Xu, Prautzsch
Exams					
SS 2019	7500170	MARS basis lab		Prüfung (PR)	Prautzsch

T 7.96 Course: Mathematics I for Information Systems - Exam [T-MATH-109942]

Responsible: Prof. Dr. Andreas Rieder
Dr. Daniel Weiß
Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: M-MATH-104914 - Mathematics I
M-WIWI-104843 - Orientation Exam

Type	Credits	Version
Written examination	7	1

Annotation
This exam is part of the orientation exam.

T 7.97 Course: Mathematics I for Information Systems - Exercise [T-MATH-109943]

Responsible: Prof. Dr. Andreas Rieder
Dr. Daniel Weiß
Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: M-MATH-104914 - Mathematics I
M-WIWI-104843 - Orientation Exam

Type	Credits	Version
Completed coursework	1	2

Annotation
This exam is part of the orientation exam.

T 7.98 Course: Mathematics II for Information Systems - Exam [T-MATH-109944]

Responsible: Prof. Dr. Andreas Rieder
Dr. Daniel Weiß
Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: M-MATH-104915 - Mathematics II

Type	Credits	Version
Written examination	7	1

T 7.99 Course: Mathematics II for Information Systems - Exercise [T-MATH-109945]

Responsible: Prof. Dr. Andreas Rieder
Dr. Daniel Weiß
Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: M-MATH-104915 - Mathematics II

Type	Credits	Version
Completed coursework	1	2

T 7.100 Course: Mechanisms and Applications of Workflow Systems [T-INFO-101257]

Responsible: Jutta Mülle
Organisation: KIT Department of Informatics
Part of: M-INFO-101235 - Introduction to Data and Information Management

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	1

Events					
WS 19/20	24111	Konzepte und Anwendungen von Workflowsystemen	3 SWS	Lecture (V)	Mülle
Exams					
SS 2019	7500094	Mechanisms and Applications of Workflow Systems		Prüfung (PR)	Mülle
WS 19/20	7500089	Mechanisms and Applications of Workflow Systems		Prüfung (PR)	Böhm, Mülle

T 7.101 Course: Mechano-Informatics and Robotics [T-INFO-101294]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: M-INFO-100757 - Mechano-Informatics and Robotics

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2400077	Mechano-Informatics and Robotics	2 SWS	Lecture (V)	Asfour
Exams					
SS 2019	7500217	Nachprüfung: Mechano-Informatics and Robotics		Prüfung (PR)	Asfour
WS 19/20	7500176	Mechano-Informatics and Robotics		Prüfung (PR)	Asfour

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

V Mechano-Informatics and Robotics

2400077, WS 19/20, 2 SWS, Language: German/English, Open in study portal

Lecture (V)

Learning Content
The lecture addresses various engineering and algorithmic aspects and topics in robotics which are illustrated and explained based on examples originating from current research conducted in the field of humanoid robotics. First, this lecture gives an introduction into the mathematical fundamentals which are needed to describe a robotic system as well as the basic algorithms commonly applied in motion planning.
Subsequently, models and methods are introduced with which dynamical systems can be formalized and which can be used to encode and represent robot actions. To do so, we will discuss linear time-invariant systems in state.

T 7.102 Course: Microprocessors I [T-INFO-101972]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: M-INFO-101183 - Microprocessors I

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2019	2424688	Microprocessors I	2 SWS	Lecture (V)	Karl
Exams					
SS 2019	7500147	Microprocessors I		Prüfung (PR)	Karl

T 7.103 Course: Mobile Computing and Internet of Things [T-INFO-102061]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-INFO-101249 - Mobile Computing and Internet of Things

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

Events					
WS 19/20	2400051	Mobile Computing and Internet of Things	2+1 SWS	Lecture / Practice (VÜ)	Beigl, Exler
Exams					
SS 2019	7500107	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
SS 2019	7500107_190926	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl

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

V Mobile Computing and Internet of Things

2400051, WS 19/20, 2+1 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)

Notes
Lecture: Tue: 9:45-11:15. Exercise will be Tue 8:00-9:30. FIRST EXERCISE WILL BE ANNOUNCED. NO LECUTRE AND NO EXERCISE on Tue Oct, 15.

Literature
Wird in der Vorlesung bekannt gegeben

T 7.104 Course: Mobile Robots – Practical Course [T-INFO-101992]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: M-INFO-101184 - Mobile Robots – Practical Course

Type	Credits	Recurrence	Version
Completed coursework	4	Each summer term	2

Events					
SS 2019	24624	Mobile Robots - Practical Course	4 SWS	Practical course (P)	Asfour, Kaul, Beil
Exams					
SS 2019	7500264	Mobile Robots – Practical Course		Prüfung (PR)	Asfour

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

V Mobile Robots - Practical Course

24624, SS 2019, 4 SWS, Language: German, Open in study portal

Practical course (P)

Learning Content
In this practical course, students assemble an ASURO robot in groups of two. Each student will be provided with his own robot, which he has to put into operation. While using the robots, a new set of problems will be solved each week. The students will need to prepare for each weak given the provided material. Sets of problem be solved using the C language and focus on controlling the robot's sensors and actuators as well as on the generation of reflex-based behavior. The course ends with a race, where the robots have to tackle an obstacle course.

Workload
120 h

T 7.105 Course: Modeling and OR-Software: Introduction [T-WIWI-106199]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101413 - Applications of Operations Research

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	2

Events					
SS 2019	2550490	Modellieren und OR-Software: Einführung	3 SWS	Practical course (P)	Nickel, Bakker
Exams					
SS 2019	7900234	Modeling and OR-Software: Introduction		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
Firm knowledge of the contents from the lecture *Introduction to Operations Research I* [2550040] of the module *Operations Research*.

Annotation
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is offered in every term. The planned lectures and courses for the next three years are announced online.

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

V Modellieren und OR-Software: Einführung

2550490, SS 2019, 3 SWS, Language: German, Open in study portal

Practical course (P)

Learning Content
The task of solving combinatorial and nonlinear optimization problems imposes much higher requirements on suggested solution approaches as in linear programming.

During the course of this software laboratory, students get to know important methods from combinatorial optimization, e.g. Branch & Cut- or Column Generation methods and are enabled to solve problems with the software system IBM ILOG CPLEX Optimization Studio and the corresponding modeling language OPL. In addition, issues of nonlinear optimization, e.g. quadratic optimization, are addressed. As an important part of the software laboratory, students get the possibility to model combinatorial and nonlinear problems and implement solution approaches in the software system.

The software laboratory also introduces some of the most frequently used modelling and programming languages that are used in practice to solve optimization problems.

Annotation
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is held irregularly. The planned lectures and courses for the next three years are announced online.

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

T 7.106 Course: Nonlinear Optimization I [T-WIWI-102724]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101936 - Methodical Foundations of OR
M-WIWI-103278 - Optimization under Uncertainty

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	4

Events					
WS 19/20	2550111	Nonlinear Optimization I	2 SWS	Lecture (V)	Stein
WS 19/20	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü)	Stein
Exams					
SS 2019	7900064_SS2019_NK	Nonlinear Optimization I		Prüfung (PR)	Stein

Competence Certificate
The assessment consits 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 OptimizationII*[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.

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 Nonlinear Optimization I

2550111, WS 19/20, 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 condtions for unconstrained problems
- Optimality conditions for unconstrained convex problems
- Numerical methods for unconstrained problems (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

Constrained problems are the contents of part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation
Part I and II of the lecture are held consecutively in the*same*semester.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 7.107 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-101936 - Methodical Foundations of OR

Type	Credits	Recurrence	Version
Written examination	9	Each winter term	6

Events					
WS 19/20	2550111	Nonlinear Optimization I	2 SWS	Lecture (V)	Stein
WS 19/20	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü)	Stein
WS 19/20	2550113	Nonlinear Optimization II	2 SWS	Lecture (V)	Stein
Exams					
SS 2019	7900066_SS2019_NK	Nonlinear Optimization I and II		Prüfung (PR)	Stein

Competence Certificate
The assessment consits 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.

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 Nonlinear Optimization I

2550111, WS 19/20, 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 condtions 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

V

Nonlinear Optimization II

2550113, WS 19/20, 2 SWS, Open in study portal

Lecture (V)

Learning Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. Part I of the lecture treats unconstrained optimization problems. Part II of the lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions for constrained problems
- Optimality conditions for constrained convex problems
- Numerical methods for constrained problems (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation
Part I and II of the lecture are held consecutively in the*same*semester.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 7.108 Course: Nonlinear Optimization II [T-WIWI-102725]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101936 - Methodical Foundations of OR

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 19/20	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü)	Stein
WS 19/20	2550113	Nonlinear Optimization II	2 SWS	Lecture (V)	Stein
Exams					
SS 2019	7900065_SS2019_NK	Nonlinear Optimization II		Prüfung (PR)	Stein

Competence Certificate
The assessment consits 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 OptimizationI* [2550111]. In this case, the duration of the written exam takes 120 minutes.

Prerequisites
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 Nonlinear Optimization II

2550113, WS 19/20, 2 SWS, Open in study portal — **Lecture (V)**

Learning Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. Part I of the lecture treats unconstrained optimization problems. Part II of the lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions for constrained problems
- Optimality conditions for constrained convex problems
- Numerical methods for constrained problems (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation
Part I and II of the lecture are held consecutively in the*same*semester.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 7.109 Course: Operative CRM [T-WIWI-102597]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101422 - Specialization in Customer Relationship Management
M-WIWI-101460 - CRM and Service Management

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2540522	Operative CRM	2 SWS	Lecture (V)	Geyer-Schulz
WS 19/20	2540523	Übung Operatives CRM	1 SWS	Practice (Ü)	Schweigert
Exams					
SS 2019	7900281	Operative CRM		Prüfung (PR)	Geyer-Schulz

Competence Certificate
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites
None

Recommendation
The attendance of courses Customer Relationship Management and Analytical CRM is advised.

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

V Operative CRM

2540522, WS 19/20, 2 SWS, Language: German, Open in study portal **Lecture (V)**

Learning Content
The Student should be able to understand and implement methods and applications within the operative CRM. This includes, but is not limited to the analysis of business processes, as a basis for improvements in CRM, and applications like call centers.

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

Time of attendance

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

Self-study

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

Sum: 135h 00m

Literature

Jill Dyché. The CRM Handbook: A Business Guide to Customer Relationship Management. Addison-Wesley, Boston, 2 edition, 2002.

Ronald S. Swift. Accelerating Customer Relationships: Using CRM and RelationshipTechnologies. Prentice Hall, Upper Saddle River, 2001.

Elective literature:

Alex Berson, Kurt Thearling, and Stephen J. Smith. Building Data Mining Applications for CRM. Mc Graw-Hill, New York, 2000.

Stanley A. Brown. Customer Relationship Management: A Strategic Imperative in theWorld of E-Business. John Wiley, Toronto, 2000.

Dimitris N. Chorafas. Integrating ERP, CRM, Supply Chain Management, and SmartMaterials. Auerbach Publications, Boca Raton, Florida, 2001.

Keith Dawson. Call Center Handbook: The Complete Guide to Starting, Running, and Improving Your Call Center. CMP Books, Gilroy, CA, 4 edition, 2001.

Andreas Eggert and Georg Fassot. eCRM – Electronic Customer Relationship Management: Anbieter von CRM-Software im Vergleich. Schäffer-Poeschel, Stuttgart, 2001.

Seth Godin. Permission Marketing. Kunden wollen wählen können. FinanzBuch Verlag, München, 1999.

Paul Greenberg. CRM at the Speed of Light: Capturing and Keeping Customers in Internet Real Time. Osborne/McGraw-Hill, 3rd ed. edition, Aug 2004.

Philip Kotler. Marketing Management: Millennium Edition. Prentice Hall, Upper Saddle River, 10 edition, 2000.

Don Peppers and Martha Rogers. The One To One Future. Currency Doubleday, New York, 1997.

Duane E. Sharp. Customer Relationship Management Systems Handbook. Auerbach, 2002.

Len Silverston. The Data Model Resource Book: A Library of Universal Data Models for All Entreprises, volume 1. John Wiley & Sons, 2001.

Toby J. Teorey. Database Modeling and Design. Morgan Kaufmann, San Francisco, 3 edition, 1999.

Chris Todman. Designing a Data Warehouse : Supporting Customer Relationship Management. Prentice Hall, Upper Saddle River, 1 edition, 2001.

T 7.110 Course: Optimization under Uncertainty [T-WIWI-106545]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-103278 - Optimization under Uncertainty

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2550464	Optimierungsansätze unter Unsicherheit	SWS	Lecture (V)	Rebennack
WS 19/20	2550465	Übungen zu Optimierungsansätze unter Unsicherheit	SWS	Practice (Ü)	Rebennack, Füllner
WS 19/20	2550466		2 SWS	Practice (Ü)	Rebennack, Füllner
Exams					
SS 2019	7900202	Optimization under Uncertainty		Prüfung (PR)	Rebennack

Competence Certificate
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites
None.

T 7.111 Course: Personnel Policies and Labor Market Institutions [T-WIWI-102908]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101513 - Human Resources and Organizations
M-WIWI-101668 - Economic Policy I

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2573001	Personnel Policies and Labor Market Institutions	2 SWS	Lecture (V)	Nieken
SS 2019	2573002	Übungen zu Personalpolitik und Arbeitsmarktinstitutionen	1 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
SS 2019	7900133	Personnel Policies and Labor Market Institutions		Prüfung (PR)	Nieken

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites
None

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

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

V Personnel Policies and Labor Market Institutions

2573001, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Notes
The students acquire knowledge about the process and the strategic aspects of collective bargaining about wages. They analyze selected aspects of corporate governance and co-determination in Germany. The lecture also addresses questions of personnel politics and issue of labor market discrimination. Microeconomic and behavioral approaches as well as empirical data is used and evaluated critically.

Aim

The student

- understands the process and role of agents in collective wage bargaining.
- analyzes strategic decisions in the context of corporate governance.
- understands the concept of co-determination in Germany.
- challenges statements that evaluate certain personnel politics.

Recommendations

Completion of module Business Administration is recommended.

Basic knowledge of microeconomics, game theory, and statistics is recommended.

Workload

The total workload for this course is approximately 135 hours.

Lecture 32h

Preparation of lecture 52h

Exam preparation 51h

Literature

Arbeitsmarktökonomik, W. Franz, Springer, 2013

T 7.112 Course: Platform Economy [T-WIWI-109936]

Responsible: Dr. Verena Dorner
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101421 - Supply Chain Management
M-WIWI-101434 - eBusiness and Service Management
M-WIWI-104911 - Information Systems & Digital Business: Interaction
M-WIWI-104912 - Information Systems & Digital Business: Platforms

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 19/20	2540468	Platform Economy	2 SWS	Lecture (V)	Weinhardt, Dann
WS 19/20	2540469	Übung zu Platform Economy	SWS	Practice (Ü)	Dann, Richter

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. Details of the grades will be announced at the beginning of the course.

Prerequisites
see below

Recommendation
None

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

V Platform Economy

2540468, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
Apple, Alphabet, Microsoft, Amazon und Facebook; five of the most valuable companies are digital platforms. This lecture provides an overview on how such platforms work, which market mechanisms are effective for achieving certain goals and how users behave on such platforms. The content is exemplified and discussed in several real-world examples and case studies in the field of sharing economy (e.g., airbnb), finance (e.g., social trading) and crowdsourcing (e.g., kickstarter).

T 7.113 Course: Practical Course Computer Engineering: Hardware Design [T-INFO-102011]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: M-INFO-101219 - Practical Course Computer Engineering: Hardware Design

Type	Credits	Recurrence	Version
Examination of another type	4	Each winter term	1

Events					
SS 2019	2424309	Basispraktikum TI: Hardwarenaher Systementwurf - findet nur noch im WS statt	4 SWS	Practical course (P)	Karl, Bromberger

T 7.114 Course: Practical Course Computer Engineering: Hardware Design Pass [T-INFO-105983]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: M-INFO-101219 - Practical Course Computer Engineering: Hardware Design

Type	Credits	Recurrence	Version
Completed coursework	0	Each winter term	1

T 7.115 Course: Practical Course Web Applications and Service-Oriented Architectures (I) [T-INFO-103119]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: M-INFO-101633 - Practical Course Web Applications and Service-Oriented Architectures (I)

Type	Credits	Recurrence	Version
Examination of another type	5	Each winter term	2

Events					
WS 19/20	24312	Basispraktikum Web-Anwendungen und Serviceorientierte Architekturen (I)	2 SWS	Practical course (P)	Abeck, Schneider

T 7.116 Course: Practical Course: Lego Mindstorms [T-INFO-107502]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: M-INFO-102557 - Lego Mindstorms - Practical Course

Type	Credits	Recurrence	Version
Completed coursework	4	Each winter term	1

Events					
WS 19/20	24306	Lego Mindstorms - Laboratory	3 SWS	Practical course (P)	Asfour, Weiner, Starke, Pohl, Klas
Exams					
WS 19/20	7500179	Lego Mindstorms - Practical Course		Prüfung (PR)	Asfour

Recommendation
Basic knowledge in JAVA is necessary for successful completion of this course.

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

V Lego Mindstorms - Laboratory

24306, WS 19/20, 3 SWS, Language: German, Open in study portal

Practical course (P)

Learning Content
In this practical course, teams of three students build and program a mobile robot using Lego Mindstorms and the Java programming language. The robots are challenged to complete a versatile parkour including sections like the traversal of a maze, following a line, crossing a bridge or avoiding obstacle. After initial building of the robots, a section of the parkour will be set up each week and tackled by the robots, for which the students have to prepare their code beforehand. A final race of the robots on the entire parkour will be held at the end of the semester.

Workload
120 h

T 7.117 Course: Practical Seminar Digital Services [T-WIWI-105711]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-102752 - Fundamentals of Digital Service Systems

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	1

Competence Certificate
The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

Prerequisites
None

Recommendation
None

Annotation
The current range of seminar topics is announced on the KSRI website www.ksri.kit.edu.

T 7.118 Course: Practical Seminar Interaction [T-WIWI-109935]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104911 - Information Systems & Digital Business: Interaction

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	2

Events					
WS 19/20	2540555	Practical Seminar: Digital Services (Ba)	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.

T 7.119 Course: Practical Seminar Platforms [T-WIWI-109937]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104912 - Information Systems & Digital Business: Platforms

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	2

Competence Certificate
The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites
None.

T 7.120 Course: Practical Seminar Servitization [T-WIWI-109939]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-104913 - Information Systems & Digital Business: Servitization

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	1

Competence Certificate
The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites
None.

T 7.121 Course: Problem Solving, Communication and Leadership [T-WIWI-102871]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101425 - Strategy and Organization
M-WIWI-101513 - Human Resources and Organizations

Type	Credits	Recurrence	Version
Written examination	2	Each summer term	1

Events					
SS 2019	2577910	Problem solving, communication and leadership	1 SWS	Lecture (V)	Lindstädt
WS 19/20	2577910	Problem solving, communication and leadership	1 SWS	Lecture (V)	Lindstädt
Exams					
SS 2019	7900068	Problem Solving, Communication and Leadership		Prüfung (PR)	Lindstädt

Competence Certificate
The assessment consists of a written exam (30 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

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

V Problem solving, communication and leadership

2577910, SS 2019, 1 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
The course deals with various aspects of problem solving and communication processes and is divided into two parts. The first part of the course addresses the fundamental steps in the problem-solving process; namely, problem identification, problem structuring, problem analysis and communication of solution. Ideas for structuring problem solving processes will be discussed and the perquisites for and principles of structured communication based on charts and presentations will be explained. The second part of the course addresses important concepts in leadership, including the context-specificity of influence, the choice of leader and the characteristics of employees. The course content reflects current issues in management and communication practice and is oriented toward the practical application of theoretical insights to these issues. In this respect, the course aims to develop interdisciplinary skills.

Workload
The total workload for this course is approximately 60 hours. For further information see German version.

Literature
The relevant excerpts and additional sources are made known during the course.

V Problem solving, communication and leadership

2577910, WS 19/20, 1 SWS, Language: German, Open in study portal

Lecture (V)

Notes
The course deals with various aspects of problem solving and communication processes and is divided into two parts. The first part of the course addresses the fundamental steps in the problem-solving process; namely, problem identification, problem structuring, problem analysis and communication of solution. Ideas for structuring problem solving processes will be discussed and the perquisites for and principles of structured communication based on charts and presentations will be explained. The second part of the course addresses important concepts in leadership, including the context-specificity of influence, the choice of leader and the characteristics of employees. The course content reflects current issues in management and communication practice and is oriented toward the practical application of theoretical insights to these issues. In this respect, the course aims to develop interdisciplinary skills.

Learning Objectives:

After passing this course students are able to

- structure problem solving processes.
- apply the principles of focused communication based on charts and presentations.
- understand leadership in the context of situation and personality.

Recommendations:

None.

Workload:

The total workload for this course is approximately 60 hours. For further information see German version.

Assessment:

The assessment consists of a written exam (30 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Learning Content
The course deals with various aspects of problem solving and communication processes and is divided into two parts. The first part of the course addresses the fundamental steps in the problem-solving process; namely, problem identification, problem structuring, problem analysis and communication of solution. Ideas for structuring problem solving processes will be discussed and the perquisites for and principles of structured communication based on charts and presentations will be explained. The second part of the course addresses important concepts in leadership, including the context-specificity of influence, the choice of leader and the characteristics of employees. The course content reflects current issues in management and communication practice and is oriented toward the practical application of theoretical insights to these issues. In this respect, the course aims to develop interdisciplinary skills.

Workload
The total workload for this course is approximately 60 hours. For further information see German version.

Literature
The relevant excerpts and additional sources are made known during the course.

T 7.122 Course: Process Mining [T-WIWI-109799]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101476 - Business Processes and Information Systems

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2019	2511204	Process Mining	2 SWS	Lecture (V)	Oberweis
SS 2019	2511205	Exercise Process Mining	1 SWS	Practice (Ü)	Oberweis, Ullrich
Exams					
SS 2019	7900048	Process Mining		Prüfung (PR)	Oberweis
WS 19/20	7900033	Process Mining		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, Language: German, Open in study portal

Lecture (V)

Learning Content
The area of process mining covers approaches which aim at deducting 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 7.123 Course: Production Economics and Sustainability [T-WIWI-102820]

Responsible: Dr. Jérémy Rimbon
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101437 - Industrial Production I

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	1

Events					
WS 19/20	2581960	Production Economics and Sustainability	2 SWS	Lecture (V)	Volk
Exams					
SS 2019	7981960	Production Economics and Sustainability		Prüfung (PR)	Schultmann
WS 19/20	7981960	Production Economics and Sustainability		Prüfung (PR)	Schultmann

Competence Certificate
The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

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

V Production Economics and Sustainability

2581960, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
The analysis and management of material flows on the company level and above will be the focus of this lecture. Herein, the discussion will be about cost-effective and environmentally acceptable steps to avoid, abate and recycle emissions and waste as well as ways of efficient resources handling. As methods material flow analysis (MFA), life cycle assessment (LCA) and OR methods, e.g. for decision support, are introduced.

Topics:
- regulations related to materials and substances
- raw materials, reserves and their availabilities/lifetimes
- material and substance flow analysis (MFA/SFA)
- material related ecoprofiles, e.g. Carbon Footprint
- LCA
- resource efficiency
- emission abatement
- waste management and closed-loop recycling
- raw material oriented production systems
- environmental management (EMAS, ISO 14001, Ecoprofit), eco-controlling

Workload
Total effort required will account for approximately 105h (3.5 credits).

Literature
will be announced in the course

T 7.124 Course: Programming [T-INFO-101531]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: M-INFO-101174 - Programming
M-WIWI-104843 - Orientation Exam

Type	Credits	Recurrence	Version
Examination of another type	5	Each winter term	1

Events					
WS 19/20	24004	Programming	4 SWS	Lecture / Practice (VÜ)	Koziolek
Exams					
SS 2019	7500195	Programming		Prüfung (PR)	Reussner
WS 19/20	7500075	Programming		Prüfung (PR)	Reussner

T 7.125 Course: Programming Pass [T-INFO-101967]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: M-INFO-101174 - Programming
M-WIWI-104843 - Orientation Exam

Type	Credits	Recurrence	Version
Completed coursework	0	Each term	1

Events					
WS 19/20	24004	Programming	4 SWS	Lecture / Practice (VÜ)	Koziolek
Exams					
SS 2019	7500022	Programming Pass		Prüfung (PR)	Reussner
WS 19/20	7500074	Programming Pass		Prüfung (PR)	Reussner

T 7.126 Course: Project Management in Practice [T-INFO-101976]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101235 - Introduction to Data and Information Management

Type	Credits	Recurrence	Version
Completed coursework	1,5	Irregular	1

Events					
SS 2019	2400019	Project Management in Practice	2 SWS	Lecture (V)	Böhm, Schnober
Exams					
SS 2019	7500291	Project Management in Practice		Prüfung (PR)	Böhm

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

V Project Management in Practice

2400019, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content

- General project conditions
- Project goals / creative methods for identifying project goals and priorities
- Project planning
- Activity planning
- Cost/time/resource planning
- Phase models
- Risk management
- Project control / success control / monitoring
- Crisis management
- Project termination / lessons learned

T 7.127 Course: Public Law I & II [T-INFO-110300]

Responsible: Prof. Dr. Nikolaus Marsch
Organisation: KIT Department of Informatics
Part of: M-INFO-105247 - Constitutional and Administrative Law

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	24520	Öffentliches Recht II - Öffentliches Wirtschaftsrecht	2 SWS	Lecture (V)	Marsch
WS 19/20	24016	Öffentliches Recht I - Grundlagen	2 SWS	Lecture (V)	Marsch, Barczak
Exams					
SS 2019	7500298	Public Law I & II		Prüfung (PR)	Marsch

T 7.128 Course: Public Revenues [T-WIWI-102739]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101403 - Public Finance
M-WIWI-101499 - Applied Microeconomics
M-WIWI-101668 - Economic Policy I

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2560120	Public Revenues	2 SWS	Lecture (V)	Wigger
SS 2019	2560121	Übung zu Öffentliche Einnahmen	1 SWS	Practice (Ü)	Wigger
Exams					
SS 2019	790oeff	Public Revenues		Prüfung (PR)	Wigger
WS 19/20	790oeff	Public Revenues		Prüfung (PR)	Wigger

Competence Certificate
The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Prerequisites
None

Recommendation
Basic knowledge of Public Finance is required.

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

V Public Revenues

2560120, SS 2019, 2 SWS, Language: German, 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.

Notes
The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Learning goals:

See German version.

Workload:

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

Learning Content
The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

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

Literature
Elective literature:

- Homburg, S.(2000): *Allgemeine Steuerlehre*, Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4th ed., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* and *Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2nd ed., Springer

T 7.129 Course: Public Sector Finance [T-WIWI-109590]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101403 - Public Finance

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2560136		3 SWS	Lecture (V)	Wigger, Groh
Exams					
SS 2019	790oefi	Public Sector Finance		Prüfung (PR)	Wigger
WS 19/20	790oefi	Public Sector Finance		Prüfung (PR)	Wigger

Competence Certificate
The assessment consists of a written exam (60 min.).

Prerequisites
None

Annotation
Previous title until winter semester 2018/19 "Municipal Finance".

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

V 2560136, WS 19/20, 3 SWS, Language: German, Open in study portal **Lecture (V)**

Notes
The course *Municipal Finance* addresses the theory and policy of municipal revenues and spending including grants, municipal revenue equalisation, taxation as well as municipal and public enterprises.

At the beginning of the course, fundamental concepts of taxation theory as well as key elements of the German taxation system are introduced. The allocative and distributive effects of different taxation methods are examined thereafter and are combined within the theory of optimal taxation. The following chapter is concerned with municipal borrowing and illustrates ways to acquire additional funding. After addressing the extent, structure and variety of municipal borrowing, macroeconomic theories are introduced and applied to the municipal sector. In the course of this final chapter, special attention will be paid to the long term consequences and the sustainability of municipal borrowing as a means of budgeting.

Learning goals:

The students:

- are familiar with the theory and policy of municipal revenues and spending.
- are able to evaluate the allocative and distributive effects of different kinds of municipal revenues and spending.
- understand the extent, structure and variety of municipal budgeting and are able to assess long term consequences of municipal revenues and spending.

Workload:

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

Learning Content
The course *Municipal Finance* addresses the theory and policy of municipal revenues and spending including grants, municipal revenue equalisation, taxation as well as municipal and public enterprises.

At the beginning of the course, fundamental concepts of taxation theory as well as key elements of the German taxation system are introduced. The allocative and distributive effects of different taxation methods are examined thereafter and are combined within the theory of optimal taxation. The following chapter is concerned with municipal borrowing and illustrates ways to acquire additional funding. After addressing the extent, structure and variety of municipal borrowing, macroeconomic theories are introduced and applied to the municipal sector. In the course of this final chapter, special attention will be paid to the long term consequences and the sustainability of municipal borrowing as a means of budgeting.

Literature

- Ade, K., Notheis, K. & Schmid, H. (2011). *Kommunales Wirtschaftsrecht in Baden Württemberg*. Boorberg-Verlag.
- Aker, B., Hafner, W. & Notheis, K. (2012).*Gemeindeordnung Baden-Württemberg*(Kommentar). Boorberg-Verlag.
- Groh, M. (1994).Kommunalleasing und Investorenfinanzierung als Private Public Partnership.*Stadt und Gemeinde*, 49. Jahrgang, 09/94.
- Wigger, B. U. (2006).*Grundzüge der Finanzwissenschaft*. Springer-Verlag.
- Several publications of the Ministry of Interior and the Ministry of Finance Baden-Württemberg.

T 7.130 Course: Python for Empirical Finance [T-WIWI-110217]

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-105035 - Empirical Finance

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events					
WS 19/20	2500014	Python for Empirical Finance	2 SWS	Practical course (P)	Ulrich

Competence Certificate
The assessment is carried out in form of six biweekly Python programming tasks and offered each winter term. The grade of this course is determined by the points achieved in the programming tasks.

Prerequisites
None.

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

V Python for Empirical Finance

2500014, WS 19/20, 2 SWS, Language: English, Open in study portal

Practical course (P)

Description
The aim of this course is to provide students with strong knowledge in Python to independently solve real-world data problems related to computational risk and asset management.

Learning Content
The course covers several topics from a programming perspective, among them:

Mean-Variance Portfolio Optimization

Modeling Distribution of Asset Returns with Factor Models and ARMA-GARCH

Monte-Carlo Simulation

Parameter Estimation with Maximum Likelihood and Regressions

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

T 7.131 Course: Real Estate Management I [T-WIWI-102744]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101466 - Real Estate Management

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2586400	Real Estate Management I	2 SWS	Lecture (V)	Lützkendorf, Worschech
WS 19/20	2586401	Übungen zu Real Estate Management I	2 SWS	Practice (Ü)	Worschech

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Annotation
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

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

V Real Estate Management I

2586400, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
The course Real Estate Management I deals with questions concerning the economy of a single building througout its lifecycle. Among other topics this includes project development, location and market studies, german federal building codes as well as finance and assessment of economic efficiency.
The tutorial recesses the contents of the course by means of practical examples and, in addition to that, goes into the possible use of software tools.

Learning Content
The course Real Estate Management I deals with questions concerning the economy of a single building througout its lifecycle. Among other topics this includes project development, location and market studies, german federal building codes as well as finance and assessment of economic efficiency.
The tutorial recesses the contents of the course by means of practical examples and, in addition to that, goes into the possible use of software tools.

Annotation
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

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

Literature
Elective literature:

- Gondring (Hrsg.): "Immobilienwirtschaft: Handbuch für Studium und Praxis". ISBN 3-8006-2989-5. Vahlen 2004
- Kühne-Büning (Hrsg.): "Grundlagen der Wohnungs- und Immobilienwirtschaft". ISBN 3-8314-0706-1. Knapp & Hammonia-Verlag 2005
- Schulte (Hrsg.): "Immobilienökonomie Bd. I". ISBN 3-486-25430-8. Oldenbourg 2000

T 7.132 Course: Real Estate Management II [T-WIWI-102745]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101466 - Real Estate Management

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2019	2585400	Real Estate Management II	2 SWS	Lecture (V)	Lützkendorf, Worschech
SS 2019	2585401	Übung zu Real Estate Management II	2 SWS	Practice (Ü)	Worschech
Exams					
SS 2019	7900172	Real Estate Management II		Prüfung (PR)	Lützkendorf
SS 2019	7900173	Real Estate Management II		Prüfung (PR)	Lützkendorf

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Reexaminations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
A combination with the module*Design Construction and Assessment of Green Buildings I*is recommended.
Furthermore it is recommeded to choose courses of the following fields

- Finance and Banking
- Insurance
- Civil Engineering and Architecture (building physics, structural design, facility management)

Annotation
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

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

V Real Estate Management II

2585400, SS 2019, 2 SWS, Language: German, Open in study portal

Lecture (V)

Description
The course Real Estate Management II gives special attention to topics in connection to the management of large real estate portfolios. This especially includes property valuation, market and object rating, maintenance and modernization, as well as real estate portfolio and risk management. The tutorial provides examples in order to practice the application of theoretical knowledge to practical problems.

Notes
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

Learning Content
The course Real Estate Management II gives special attention to topics in connection to the management of large real estate portfolios. This especially includes property valuation, market and object rating, maintenance and modernization, as well as real estate portfolio and risk management. The tutorial provides examples in order to practice the application of theoretical knowledge to practical problems.

Annotation
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

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

Literature
Elective literature:

See german version.

T 7.133 Course: Real-Time Systems [T-INFO-101340]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Prof. Dr.-Ing. Thomas Längle

Organisation: KIT Department of Informatics

Part of: M-INFO-100803 - Real-Time Systems

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	24576	Real-Time Systems	4 SWS	Lecture / Practice (VÜ)	Längle, Ledermann
Exams					
SS 2019	750002	Real-Time Systems		Prüfung (PR)	Längle

T 7.134 Course: Renewable Energy-Resources, Technologies and Economics [T-WIWI-100806]

Responsible: PD Dr. Patrick Jochem
Prof. Dr. Russell McKenna
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101464 - Energy Economics

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	3

Events					
WS 19/20	2581012	Renewable Energy – Resources, Technologies and Economics	2 SWS	Lecture (V)	McKenna, Jochem
Exams					
SS 2019	7981012	Renewable Energy-Resources, Technologies and Economics		Prüfung (PR)	Fichtner

Competence Certificate
The assessment consists of a written exam (60 min., in English, answers in English or German).

Prerequisites
None.

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

V Renewable Energy – Resources, Technologies and Economics

2581012, WS 19/20, 2 SWS, Language: English, Open in study portal — **Lecture (V)**

Learning Content
1. General introduction: Motivation, Global situation
2. Basics of renewable energies: Energy balance of the earth, potential definition
3. Hydro
4. Wind
5. Solar
6. Biomass
7. Geothermal
8. Other renewable energies
9. Promotion of renewable energies
10. Interactions in systemic context
11. Excursion to the "Energieberg" in Mühlburg

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature
Elective literature:

- Kaltschmitt, M., 2006, Erneuerbare Energien : Systemtechnik, Wirtschaftlichkeit, Umweltaspekte, aktualisierte, korrigierte und ergänzte Auflage Berlin, Heidelberg : Springer-Verlag Berlin Heidelberg.
- Kaltschmitt, M., Streicher, W., Wiese, A. (eds.), 2007, Renewable Energy: Technology, Economics and Environment, Springer, Heidelberg.
- Quaschning, V., 2010, Erneuerbare Energien und Klimaschutz : Hintergründe - Techniken - Anlagenplanung – Wirtschaftlichkeit München : Hanser, III.2., aktualis. Aufl.
- Harvey, D., 2010, Energy and the New Reality 2: Carbon-Free Energy Supply, Eathscan, London/Washington.
- Boyle, G. (ed.), 2004, Renewable Energy: Power for a Sustainable Future, 2nd Edition, Open University Press, Oxford.

T 7.135 Course: Robotics I - Introduction to Robotics [T-INFO-108014]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: M-INFO-100893 - Robotics I - Introduction to Robotics

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	2424152	Robotics I - Introduction to Robotics	3/1 SWS	Lecture (V)	Asfour, Paus
Exams					
SS 2019	7500218	Robotik I - Einführung in die Robotik		Prüfung (PR)	Asfour
WS 19/20	7500106	Robotics I - Introduction to Robotics		Prüfung (PR)	Asfour

T 7.136 Course: Security [T-INFO-101371]

Responsible: Prof. Dr. Dennis Hofheinz
Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: M-INFO-100834 - Security

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	24941	Security	3 SWS	Lecture (V)	Müller-Quade
Exams					
SS 2019	7500263	Security		Prüfung (PR)	Müller-Quade
SS 2019	7500292	Security		Prüfung (PR)	Müller-Quade

T 7.137 Course: Selling IT-Solutions Professionally [T-INFO-101977]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101235 - Introduction to Data and Information Management

Type	Credits	Recurrence	Version
Completed coursework	1,5	Irregular	1

T 7.138 Course: Semantic Web Technologies [T-WIWI-102874]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101438 - Semantic Knowledge Management
M-WIWI-101440 - Information Services in Networks

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2019	2511310	Semantic Web Technologies	2 SWS	Lecture (V)	Sure-Vetter, Acosta Deibe, Käfer
SS 2019	2511311	Exercises to Semantic Web Technologies	1 SWS	Practice (Ü)	Sure-Vetter, Acosta Deibe, Käfer
Exams					
SS 2019	7900028	Semantic Web Technologies		Prüfung (PR)	Sure-Vetter
WS 19/20	7900022	Semantic Web Technologies		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, Language: English, 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 preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 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.

V Exercises to Semantic Web Technologies

2511311, SS 2019, 1 SWS, Language: English, 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 Technologiesis 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 7.139 Course: Seminar in Business Administration (Bachelor) [T-WIWI-103486]

Responsible: Professorenschaft des Fachbereichs Betriebswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101826 - Seminar Module Economic Sciences

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2019	2530293	Seminar in Finance (Bachelor, Prof. Ruckes)	2 SWS	Seminar (S)	Ruckes, Hoang, Benz, Strych, Luedecke, Silbereis, Stengel, Schubert
SS 2019	2530580	Seminar in Finance (Master, Prof. Uhrig-Homburg)	2 SWS	Seminar (S)	Uhrig-Homburg, Hofmann, Reichenbacher, Eska
SS 2019	2540524	Bachelor Seminar aus CRM (nur Bachelor)	2 SWS	Seminar (S)	Geyer-Schulz, Schweigert, Schweizer
SS 2019	2571180	Seminar in Marketing und Vertrieb (Bachelor)	2 SWS	Seminar (S)	Klarmann, Assistenten
SS 2019	2573010	Seminar Human Resources and Organizations (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2573011	Seminar Human Resource Management (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2579904	Seminar Management Accounting	2 SWS	Seminar (S)	Hammann, Disch
SS 2019	2579905	Special Topics in Management Accounting	2 SWS	Seminar (S)	Mickovic, Riar
SS 2019	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar (S)	Schultmann
WS 19/20	2500028	Seminar in Empirical Finance	2 SWS	Seminar (S)	Ulrich
WS 19/20	2530580	Seminar in Finance	2 SWS	Seminar (S)	Uhrig-Homburg, Mitarbeiter
WS 19/20	2540473	Data Science in Service Management	2 SWS	Seminar (S)	Haubner, Frankenhauser, Gröschel
WS 19/20	2540475	Electronic Markets & User behavior	2 SWS	Seminar (S)	Dorner, Knierim, Dann, Jaquart
WS 19/20	2540477	Digital Experience and Participation	2 SWS	Seminar (S)	Straub, Peukert, Hoffmann, Kloker, Pusmaz, Willrich, Kloepper, Fegert, Greif-Winzrieth
WS 19/20	2540478	Smart Grids and Energy Markets	2 SWS	Seminar (S)	Dinther, Staudt, Richter, Huber, vom Scheidt, Golla
WS 19/20	2540524	Bachelor Seminar aus Data Science	2 SWS	Seminar (S)	Geyer-Schulz, Schweigert, Schweizer, Nazemi
WS 19/20	2540557	Literature Review Seminar: Information Systems and Service Design	3 SWS	Seminar (S)	Mädche
WS 19/20	2545010	Entrepreneurship Basics (Track 1)	2 SWS	Seminar (S)	Terzidis, Ziegler, González
WS 19/20	2545011	Entrepreneurship Basics (Track 2)	2 SWS	Seminar (S)	Böhrer, Terzidis

WS 19/20	2573010	Seminar: Human Resources and Organizations (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 19/20	2573011	Seminar: Human Resource Management (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 19/20	2579919	Seminar Management Accounting - Special Topics	2 SWS	Seminar (S)	Riar
WS 19/20	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar (S)	Glöser-Chahoud, Schultmann
WS 19/20	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar (S)	Volk, Schultmann
WS 19/20	2581978	Seminar in Production and Operations Management III	2 SWS	Seminar (S)	Wiens, Schultmann
WS 19/20	2581980		2 SWS	Seminar (S)	Keles, Fett, Yilmaz
WS 19/20	2581981		2 SWS	Seminar (S)	Ardone, Ruppert, Sandmeier, Slednev
WS 19/20	2581990		2 SWS	Seminar (S)	Schultmann, Schumacher
Exams					
SS 2019	00019	Seminar Digital Service Innovation		Prüfung (PR)	Satzger
SS 2019	7900003	Seminar in Finance (Bachelor, Prof. Ruckes)		Prüfung (PR)	Ruckes
SS 2019	7900013	Bachelor Seminar in CRM		Prüfung (PR)	Geyer-Schulz
SS 2019	7900021	Seminar in Marketing and Sales (Bachelor)		Prüfung (PR)	Klarmann
SS 2019	7900056	Entrepreneurship Basics (Track 1)		Prüfung (PR)	Terzidis
SS 2019	7900057	Entrepreneurship Basics (Track 2)		Prüfung (PR)	Terzidis
SS 2019	7900093	Seminar in Business Administration A		Prüfung (PR)	Weinhardt
SS 2019	7900180	Seminar in Business Administration		Prüfung (PR)	Weinhardt
SS 2019	7900256	Seminar Electronic Markets & User Behavior		Prüfung (PR)	Weinhardt
SS 2019	7900261	Information Systems and Design (ISSD) Seminar		Prüfung (PR)	Mädche
SS 2019	7900262	Practical Seminar: Information Systems and Service Design / Seminarpraktikum: Information Systems und Service Design		Prüfung (PR)	Mädche
SS 2019	7900265	Interactive Analytics Seminar		Prüfung (PR)	Mädche
SS 2019	7900286	Seminar in Business Administration (Bachelor)		Prüfung (PR)	Lützkendorf
SS 2019	7900288	Seminar in Business Administration (Bachelor)		Prüfung (PR)	Lützkendorf
SS 2019	7900294	Seminar in Business Administration (Bachelor)		Prüfung (PR)	Lützkendorf
SS 2019	7900298	Seminar in Business Administration (Bachelor) Data Science for the Industrial Internet of Things		Prüfung (PR)	Satzger
SS 2019	79-2579904-01	Seminar Management Accounting (Bachelor)		Prüfung (PR)	Wouters
SS 2019	79-2579905-01	Seminar Special Topics in Management Accounting (Bachelor)		Prüfung (PR)	Wouters
SS 2019	7981976	Seminar in Production and Operations Management I		Prüfung (PR)	Schultmann
SS 2019	7981978	Seminar in Production and Operations Management III		Prüfung (PR)	Schultmann
SS 2019	7981979	Seminar Energy Economics I		Prüfung (PR)	Fichtner
SS 2019	7981981	Seminar Energy Economics III		Prüfung (PR)	Fichtner
WS 19/20	7900017	Seminar Smart Grid and Energy Markets		Prüfung (PR)	Weinhardt
WS 19/20	7900085	Entrepreneurship Basics (Track 1)		Prüfung (PR)	Terzidis
WS 19/20	7900087	Entrepreneurship Basics (Track 2)		Prüfung (PR)	Terzidis
WS 19/20	7900157	Seminar Human Resources and Organizations (Bachelor)		Prüfung (PR)	Nieken
WS 19/20	7900161	Seminar Human Resource Management (Bachelor)		Prüfung (PR)	Nieken

WS 19/20	7900165	Seminar Digital Experience and Participation	Prüfung (PR)	Weinhardt
WS 19/20	7900175	Seminar in Finance (Bachelor)	Prüfung (PR)	Uhrig-Homburg
WS 19/20	7900203	Seminar in Finance	Prüfung (PR)	Uhrig-Homburg
WS 19/20	79-2579919-B	Seminar Management Accounting - Special Topics (Bachelor)	Prüfung (PR)	Wouters
WS 19/20	7981976	Seminar in Production and Operations Management I	Prüfung (PR)	Schultmann
WS 19/20	7981977	Seminar in Production and Operations Management II	Prüfung (PR)	Schultmann
WS 19/20	7981978	Seminar in Production and Operations Management III	Prüfung (PR)	Schultmann

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

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 in Finance (Master, Prof. Uhrig-Homburg)** **Seminar (S)**
2530580, SS 2019, 2 SWS, Language: German, Open in study portal

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.

V **Seminar Human Resources and Organizations (Bachelor)** **Seminar (S)**
2573010, SS 2019, 2 SWS, Open in study portal

Notes
See Module Handbook

V Seminar Human Resource Management (Bachelor)
2573011, SS 2019, 2 SWS, Open in study portal **Seminar (S)**

Notes
See Module Handbook

V Seminar Management Accounting
2579904, SS 2019, 2 SWS, Language: English, Open in study portal **Seminar (S)**

Notes
see Module Handbook

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.

V Special Topics in Management Accounting
2579905, SS 2019, 2 SWS, Language: English, Open in study portal **Seminar (S)**

Notes
see Module Handbook

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 prediscibed. The seminar course is concentrated in four meetings that are spread throughout the semester.

Meeting 1: Introductory lecture. You need to conduct a first literature search and at the end of the first week you should identify (provisionally) the topic for your paper.

Meeting 2 and 3: The purpose of the second week is to define the topics and research questions in much more detail. Different types of papers may be selected: literature review, research paper, descriptive case study, or teaching case. Students will present their ideas and all participants should ask questions, help each other focus, offer ideas, etc.

Meeting 4: In the third week we are going to present and discuss the final papers.

Annotation
Maximum of 24 students.

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

Literature
Will be announced in the course.

Seminar in Empirical Finance
2500028, WS 19/20, 2 SWS, Language: English, Open in study portal

Seminar (S)

Description
The aim of this seminar is to introduce the student to empirical data work in financial economics and investments.

Data Science in Service Management
2540473, WS 19/20, 2 SWS, Language: German/English, Open in study portal

Seminar (S)

Notes
wird auf deutsch und englisch gehalten

Bachelor Seminar aus Data Science
2540524, WS 19/20, 2 SWS, Language: German, Open in study portal

Seminar (S)

Workload
The total workload for this course is approximately 90 hours (3 credits):

Time of attendance

- Introductory lessons: 4 x 90min = 6h 00m
- Presentations: 4 x 90min = 6h 00m

Selbststudium

- Preparing the presentation: 8h
- Literature research: 40h
- Writing the seminar paper: 30h

Summe: 90h 00m

Literature
Elective literature:

- W. Thomson. A Guide for the Young Economist. The MIT Press, 2001
- D.J. Brauner, H.-U. Vollmer. Erfolgreiches wissenschaftliches Arbeiten. Verlag Wissenschaft & Praxis, 2004
- University of Chicago Press. The Chicago Manual of Style. University of Chicago Press, 13th ed., 1982
- American Psychological Association. Concise of Rules of APA Style. American Psychological Association, 2005
- American Psychological Association. Publication Manual of the American Psychological Association. American Psychological Association, 2001

Entrepreneurship Basics (Track 2)
2545011, WS 19/20, 2 SWS, Language: German, Open in study portal

Seminar (S)

Annotation
Please register on the seminar website.

Seminar: Human Resources and Organizations (Bachelor)
2573010, WS 19/20, 2 SWS, Language: German, Open in study portal

Seminar (S)

Notes
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is approximately 90 hours.

Lecture 30h
Preparation of lecture 45h
Exam preparation 15h

Literature

Selected journal articles and books.

V **Seminar: Human Resource Management (Bachelor)** **Seminar (S)**
2573011, WS 19/20, 2 SWS, Language: German, Open in study portal

Notes
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is approximately 90 hours.

Lecture 30h
Preparation of lecture 45h
Exam preparation 15h

Literature

Selected journal articles and books.

V **Seminar Management Accounting - Special Topics** **Seminar (S)**
2579919, WS 19/20, 2 SWS, Language: English, Open in study portal

Notes
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 prediscibed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Examination:

- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Workload:

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

Note:

- Maximum of 16 students.

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 prediscibed. The seminar course is concentrated in four to five meetings that are spread throughout the semester.

Annotation
Maximum of 24 students.

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

Literature
Will be announced in the course.

T 7.140 Course: Seminar in Economics (Bachelor) [T-WIWI-103487]

Responsible: Professorenschaft des Fachbereichs Volkswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101826 - Seminar Module Economic Sciences

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2019	2560241	Digital IT Solutions and Services transforming the Field of Public Transportation	2 SWS	Prüfung (PR)	Janoshalmi
SS 2019	2560553	Topics in Political Economics (Bachelor)	2 SWS	Seminar (S)	Szech, Maus
SS 2019	2560555	Morals and Social Behavior (Bachelor)	2 SWS	Seminar (S)	Szech, Huber
WS 19/20	2521310	Topics in Econometrics	2 SWS	Seminar (S)	Schienle, Chen, Görgen
WS 19/20	2560140	Topics in Political Economy (Bachelor)	2 SWS	Seminar (S)	Ehrlich, Huber
WS 19/20	2560141	Morals & Social Behavior (Bachelor & Master)	2 SWS	Seminar (S)	Huber, Ehrlich
WS 19/20	2560142	Topics in Political Economy (Master)	2 SWS	Seminar (S)	Ehrlich, Huber
WS 19/20	2561208	Ausgewählte Aspekte der europäischen Verkehrsplanung und -modellierung	1 SWS	Seminar (S)	Szimba
Exams					
SS 2019	7900130	Seminar in Economics (Bachelor)		Prüfung (PR)	Szech
SS 2019	7900131	Seminar in Economics (Bachelor)		Prüfung (PR)	Szech
SS 2019	7900147	Seminar in Economics (Bachelor)		Prüfung (PR)	Fuchs-Seliger
SS 2019	7900200	Seminar: Behavioral Game Theory		Prüfung (PR)	Puppe
SS 2019	7900222	Seminar in Economics B (Master)		Prüfung (PR)	Melik-Tangian
SS 2019	7900237	Seminar Strategic Decisions		Prüfung (PR)	Ehrhart
SS 2019	7900267	Seminar in Macroeconomics I		Prüfung (PR)	Scheffel
SS 2019	7900271	Seminar in Macroeconomics II		Prüfung (PR)	Scheffel
SS 2019	791192ee	Topics in Experimental Economics		Prüfung (PR)	Reiß
SS 2019	79sefi1	Seminar Infrastructure and Science Networks (Bachelor)		Prüfung (PR)	Wigger
WS 19/20	7900124	Seminar in Economics (Bachelor)		Prüfung (PR)	Szech, Puppe
WS 19/20	7900132	Seminar in Economics A (Master)		Prüfung (PR)	Fuchs-Seliger
WS 19/20	7900205	Seminar in Macroeconomics I		Prüfung (PR)	Scheffel
WS 19/20	7900278	Seminar on Morals and Social Behavior		Prüfung (PR)	Szech, Puppe
WS 19/20	79sefi1	Seminar in Economics (Bachelor)		Prüfung (PR)	Wigger

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

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

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

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

V **Topics in Political Economics (Bachelor)** **Seminar (S)**
2560553, SS 2019, 2 SWS, Language: English, Open in study portal

Description
In many companies relative reward schemes are used whereby employees earn a bonus if they perform better than their colleagues. Moreover, hierarchical structures mean that in many organizations, employees find themselves in constant competition for promotions. This is meant to provide incentives for higher performance. However, competitive remuneration schemes could also have detrimental effects such that individual workers may view their colleagues as direct competitors generating more selfish and/or less helpful behavior in the workplace. Furthermore, age, gender and culture seem to have impacts on willingness to compete. For example, in western cultures, adult men sometimes enter competition even though their performance level is way too low for success, i.e., they harm themselves by over-competitiveness. In contrast, adult females sometimes compete less than they could do successfully.

Another challenge in contest design, e.g. in sports, is that when competition takes place among workers with mixed abilities it may lead to a discouragement effect, which establishes that lower ability individuals often reduce effort competing against an individual they do not feel up to (e.g. it has been found that average golf players performed significantly worse when competing against a superstar like Tiger Woods). One solution suggested by the economic literature is to level the playing field between advantaged and disadvantaged individuals by favoring weaker individuals through bid-caps, asymmetric tie-breaking rules, or advances. In sports, asymmetric tie-breaking is already common, for instance, in the
Champions League soccer playoffs “away goals” become the decisive factor in determining the winning team in case of a tie.

Contests are not only a well-established mechanism for incentivizing workers but also for encouraging innovation and advancing R&D. Elements of research and innovation contests can be found in the procurement of various goods and services. For instance, the construction of new buildings, proposals in a venture capital firm or TV shows for entertainment companies all flow through a similar innovation process that involves the solicitation of bids from multiple potential suppliers and the preparation of a pilot or a proposal. In other cases, e.g., in lobbying contests, it is often discussed whether investments are beneficial or not. Some authors have argued that investments into lobbying should be capped in order to soften competition among asymmetrically strong interest groups (e.g. the lobbying industry versus consumers’ interest groups). Of course, then the question arises whether such caps achieve the respective design goal or not.

In this seminar, we discuss questions like: How can we design workplaces and labor contracts to increase motivation and productivity? How can contests be used to foster innovation? Which role should social preferences play and how could they inspire specific contest designs? How should sport contests be engineered depending on the respective goals? How should we design lobbying contests?

Also related topics are very welcome!

Notes
Participation will be limited to 12 students.

Annotation
For further questions, please contact Patrick Maus (Patrick.Maus@kit.edu).

Workload
About 90 hours

Literature
Charness, G., Kuhn, P. (2011) Lab labor: What can labor economists learn from the lab? Handbook of labor economics, 4, 229-330.

Cassar, A., Friedman, D. (2004) Economics lab: an intensive course in experimental economics. Routledge.

Croson, R., Gneezy, U. (2009). Gender differences in preferences. Journal of Economic literature, 47(2), 448-474.

Dechenaux, Emmanuel, Dan Kovenock, and Roman M. Sheremeta. "A survey of experimental research on contests, all-pay auctions and tournaments." Experimental Economics 18.4 (2015): 609-669.

V Morals and Social Behavior (Bachelor)

2560555, SS 2019, 2 SWS, Language: English, Open in study portal

Seminar (S)

Description
For a long time, economists studied given markets and mechanisms to predict outcomes, future developments or generally the participants' behavior. In contrast, Market Design uses theory, empirical and experimental work to design markets which incentivize their participants in a way that leads to a "desirable" outcome. In this, the designer can have different objectives, for example: Maximizing efficiency, welfare or minimizing negative externalities.

Prominent applications of Market Design include, quite topical, Germany's auction of 5G mobile licenses and matching markets, where there are two large populations that need to be matched to one another (think of hospitals and interns, students and dorm rooms or kidney donors and receivers). In this seminar, we think about ways to either design new markets or how we could alter existing ones in a socially beneficial way. Alternatively, research ideas could focus on finding failures or shortcomings of ineffectively designed markets.

Notes
Participation will be limited to 12 students.

Annotation
For further questions, please contact David Huber (david.huber@kit.edu).

Workload
About 90 hours.

V Topics in Econometrics

2521310, WS 19/20, 2 SWS, Language: German, Open in study portal

Seminar (S)

Annotation
In the winter semester 2018/19 the course will be held in English.

V Topics in Political Economy (Bachelor)

2560140, WS 19/20, 2 SWS, Language: English, Open in study portal

Seminar (S)

Notes
For Bachelor and Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups of three.

Seminar Papers of 8–10 pages are to be handed in before Feb 20, 2020.

For bachelor students grades will be based on the quality of presentations in the seminar (50%) and the seminar paper (50%). Students can improve their grades by 0.3 for good and constructive discussion contributions or by 0.7 for excellent and constructive discussion contributions.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

V Morals & Social Behavior (Bachelor & Master)

2560141, WS 19/20, 2 SWS, Language: English, Open in study portal

Seminar (S)

Notes
Chaning topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

V Topics in Political Economy (Master)

2560142, WS 19/20, 2 SWS, Language: English, Open in study portal

Seminar (S)

Notes
For Bachelor and Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction.

Students work in groups of three.

Seminar Papers of 8–10 pages are to be handed in before Feb 20, 2020.

Grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with their paper – one with a maximum length of 100 words and one with a maximum length of 150 words. The quality of abstracts will reflect with 20% in the final grade. Students can improve their grades by 0.3 for good and constructive discussion contributions or by 0.7 for excellent and constructive discussion contributions.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Workload
About 90 hours.

T 7.141 Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]

Responsible: Professorenschaft des Fachbereichs Informatik
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102058 - Seminar Module Informatics

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2019	2512300	Knowledge Discovery and Data Mining	3 SWS		Sure-Vetter, Färber, Nguyen, Weller
SS 2019	2513200	Seminar Betriebliche Informationssysteme: Datenschutz und IT-Sicherheit (Bachelor)	2 SWS	Seminar (S)	Oberweis, Raabe, Volkamer, Aldag, Alpers, Fritsch, Mucha, Wagner, Schiefer, Landesberger von Antburg
SS 2019	2513306	Data Science & Real-time Big Data Analytics	2 SWS		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
WS 19/20	2512301	Linked Data and the Semantic Web	3 SWS		Sure-Vetter, Acosta Deibe, Käfer, Heling
WS 19/20	2512311	Real-World Challenges in Data Science and Analytics	3 SWS		Sure-Vetter, Nickel, Weinhardt, Zehnder, Brandt
WS 19/20	2513200	Seminar Business Information Systems: Programming 3 (Bachelor)	2 SWS	Seminar (S)	Oberweis, Zöllner, Fritsch, Hartmann , Struppek
WS 19/20	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar (S)	Zöllner
WS 19/20	2595470	Seminar Service Science, Management & Engineering	3 SWS	Seminar (S)	Weinhardt, Satzger, Nickel, Fromm, Fichtner, Sure-Vetter
Exams					
SS 2019	7900087	Seminar Business Information Systems: Privacy and IT Security (Bachelor)		Prüfung (PR)	Oberweis
SS 2019	7900090	Data Science & Real-time Big Data Analytics		Prüfung (PR)	Sure-Vetter
SS 2019	7900092	Seminar Service Science, Management & Engineering		Prüfung (PR)	Sure-Vetter
SS 2019	7900094	Knowledge Discovery and Data Mining		Prüfung (PR)	Sure-Vetter
SS 2019	7900187	Emerging Trends in Critical Information Infrastructures		Prüfung (PR)	Sunyaev
WS 19/20	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
WS 19/20	7900042	Seminar Betriebliche Informationssysteme: Programmieren 3		Prüfung (PR)	Oberweis
WS 19/20	7900044	Seminar Service Science, Management & Engineering		Prüfung (PR)	Sure-Vetter
WS 19/20	7900129	Security and Privacy Awareness		Prüfung (PR)	Volkamer
WS 19/20	7900187	Real-World Challenges in Data Science und Analytics		Prüfung (PR)	Sure-Vetter

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation
Placeholder for seminars offered by the Institute AIFB. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

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

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

V

Knowledge Discovery and Data Mining

2512300, SS 2019, 3 SWS, Language: English, Open in study portal

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.

V

Data Science & Real-time Big Data Analytics

2513306, SS 2019, 2 SWS, Language: German/English, Open in study portal

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, Language: German, Open in study portal

Seminar (S)

Learning Content
Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.

See the KSRI website for more information about this seminar: www.ksri.kit.edu

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

Literature
The student will receive the necessary literature for his research topic.

Linked Data and the Semantic Web

2512301, WS 19/20, 3 SWS, Language: German/English, Open in study portal

Notes
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

Real-World Challenges in Data Science and Analytics

2512311, WS 19/20, 3 SWS, Language: German/English, Open in study portal

Notes
In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

Seminar Business Information Systems: Programming 3 (Bachelor)

2513200, WS 19/20, 2 SWS, Open in study portal

Seminar (S)

Notes
Registration information and the content of the seminar will be announced on the course page. Only bachelor students are allowed to attend this seminar.

V

Seminar Service Science, Management & Engineering

2595470, WS 19/20, 3 SWS, Language: German, Open in study portal

Seminar (S)

Notes
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

The assessment of this course is according to §4(2), 3 SPO in form of an examination of the written seminar thesis (15-20 pages), a presentation and active participation in class.

The final mark is based on the examination of the written seminar thesis but can be upgraded or downgraded according to the quality of the presentation.

Learning objectives:

The student

- illustrates and evaluates classic and current research questions in service science, management and engineering,
- applies models and techniques in service science, also with regard to their applicability in practical cases,
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Recommendations:

Lecture *eServices* [2595466] is recommended.

Workload:

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

T 7.142 Course: Seminar in Operations Research (Bachelor) [T-WIWI-103488]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101826 - Seminar Module Economic Sciences

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2019	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar (S)	Stein, Mohr, Neumann
SS 2019	2550472	Seminar on Power Systems Optimization (Bachelor)	2 SWS	Seminar (S)	Rebennack, Assistenten
SS 2019	2550491	Seminar zur diskreten Optimierung	SWS	Block (B)	Nickel, Mitarbeiter
WS 19/20	2550131	Seminar zu Methodischen Grundlagen des Operations Research	SWS	Seminar (S)	Stein
WS 19/20	2550472	Seminar on Power Systems Optimization (Bachelor)	2 SWS	Seminar (S)	Rebennack, Sinske
WS 19/20	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar (S)	Nickel, Mitarbeiter
Exams					
SS 2019	00024	Digitization in the Steel Industry		Prüfung (PR)	Nickel
SS 2019	7900017_SS2019	Seminar in Operations Research (Bachelor)		Prüfung (PR)	Stein
SS 2019	7900249	Seminar in Operations Research (Bachelor)		Prüfung (PR)	Nickel
WS 19/20	7900216	Real-World Challenges in Data Science und Analytics		Prüfung (PR)	Nickel

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

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 zur diskreten Optimierung

2550491, SS 2019, SWS, Language: German, Open in study portal

Block (B)

Learning Content
The topics of the seminar will be announced at the beginning of the term in a preliminaty 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 zu Methodischen Grundlagen des Operations Research

2550131, WS 19/20, SWS, Language: German, Open in study portal

Seminar (S)

Learning Content
The current seminar topics are announced under http://kop.ior.kit.edu at the end of the preceding semester.

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

Literature
References and relevant sources are announced at the beginning of the seminar.

V Seminar: Modern OR and Innovative Logistics

2550491, WS 19/20, 2 SWS, Language: German, Open in study portal

Seminar (S)

Notes
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Learning Content
The topics of the seminar will be announced at the beginning of the term in a preliminaty meeting. Dates will be announced on the internet.

Annotation
The seminar is offered in each term.

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

Literature
Literature and relevant sources will be announced at the beginning of the seminar.

T 7.143 Course: Seminar in Statistics (Bachelor) [T-WIWI-103489]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101826 - Seminar Module Economic Sciences

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
WS 19/20	2521310	Topics in Econometrics	2 SWS	Seminar (S)	Schienle, Chen, Görgen
Exams					
SS 2019	7900250	Data Mining and Applications (Projectseminar)		Prüfung (PR)	Nakhaeizadeh

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

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

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

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

V Topics in Econometrics

2521310, WS 19/20, 2 SWS, Language: German, Open in study portal — **Seminar (S)**

Annotation
In the winter semester 2018/19 the course will be held in English.

T 7.144 Course: Seminar Informatics A [T-INFO-104336]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: M-INFO-102058 - Seminar Module Informatics

Type	Credits	Version
Examination of another type	3	1

Events					
SS 2019	2400011	Hot Topics in Bioinformatics	2 SWS	Seminar (S)	Stamatakis
SS 2019	24344	Advanced Methods of Information Fusion	2 SWS	Seminar (S)	Hanebeck, Radtke
WS 19/20	24844	Seminar: Ubiquitous Systems	2 SWS	Seminar (S)	Beigl, Pescara
Exams					
SS 2019	7500013	Advanced Methods of Information Fusion		Prüfung (PR)	Hanebeck, Noack
SS 2019	7500014	Seminar: Hot Topics in Bioinformatics		Prüfung (PR)	Stamatakis
SS 2019	7500040	Seminar Information Systems		Prüfung (PR)	Böhm
SS 2019	7500106	Title not available		Prüfung (PR)	Bless, Hartenstein, Mädche, Zitterbart, Boehm, Sunyaev
SS 2019	7500148	Proseminar: Practical Seminar: Interactive Analytics		Prüfung (PR)	Beigl, Mädche
SS 2019	7500149	Seminar: Designing and Conducting Experimental Studies		Prüfung (PR)	Beigl
SS 2019	7500162	Seminar: Ubiquitous Systems		Prüfung (PR)	Beigl, Riedel
SS 2019	7500198	Seminar in Security		Prüfung (PR)	Geiselmann, Müller-Quade, Hofheinz
SS 2019	7500199	Seminar in Cryptography		Prüfung (PR)	Geiselmann, Müller-Quade, Hofheinz
WS 19/20	7500021	Advanced Methods of Information Fusion		Prüfung (PR)	Hanebeck
WS 19/20	7500220	Seminar Ubiquitous Computing		Prüfung (PR)	Beigl

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

V Advanced Methods of Information Fusion

24344, SS 2019, 2 SWS, Language: German/English, Open in study portal

Seminar (S)

Learning Content

- The students will research selected theoretical works of the field of information fusion and data analysis, and present the results to their colleagues.
- The Seminar will prepare the students to write their Master thesis.
- Moreover, the students will learn to work with LaTeX and Powerpoint.

T 7.145 Course: Seminar: Legal Studies I [T-INFO-101997]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101218 - Seminar Module Law

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
SS 2019	2400041	Governance, Risk & Compliance	2 SWS	Seminar (S)	Herzig
SS 2019	2400061	Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung	2 SWS	Seminar (S)	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart
SS 2019	24820	Current Issues in Patent Law	2 SWS	Seminar (S)	Melullis
WS 19/20	24389	IT-Sicherheit und Recht	2 SWS	Seminar (S)	Schallbruch
Exams					
SS 2019	7500106	Title not available		Prüfung (PR)	Bless, Hartenstein, Mädche, Zitterbart, Boehm, Sunyaev
SS 2019	7500140	Seminar: Legal Studies I		Prüfung (PR)	Dreier, Matz, Boehm
SS 2019	7500159	Seminar: Legal Studies I		Prüfung (PR)	Marsch
WS 19/20	7500035	Seminar: Legal Studies II		Prüfung (PR)	Barczak
WS 19/20	7500182	Seminar: Legal Studies II		Prüfung (PR)	Dreier, Boehm, Raabe

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

V Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung

Seminar (S)

2400061, SS 2019, 2 SWS, Open in study portal

Notes
Registration via https://portal.wiwi.kit.edu/ys/2708

T 7.146 Course: Services Marketing and B2B Marketing [T-WIWI-102806]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101424 - Foundations of Marketing

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 19/20	2572158	Services Marketing and B2B Marketing	2 SWS	Lecture (V)	Klarmann
Exams					
WS 19/20	7900081	Services Marketing and B2B Marketing		Prüfung (PR)	Klarmann

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

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

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

V Services Marketing and B2B Marketing

2572158, WS 19/20, 2 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
The aim of this course is to prepare students for two certain marketing perspectives. The service marketing is concentrated on the particularities coming up when a company sells services instead of products. Subjects in this section are for example:

- Measuring service quality
- Pricing services
- Management of service staff

The second part of the course contains a business-to-business marketing perspective. Topics are below others:

- Management of buying centers
- Competitive Bidding
- B2B-Branding

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

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

Literature
Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T 7.147 Course: Software Engineering I [T-INFO-101968]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner
Prof. Dr. Walter Tichy

Organisation: KIT Department of Informatics

Part of: M-INFO-101175 - Software Engineering I

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2019	24518	Softwaretechnik I	4 SWS	Lecture / Practice (VÜ)	Tichy, Weigelt, Hey
Exams					
SS 2019	7500152	Software Engineering I		Prüfung (PR)	Tichy
SS 2019	7500153	Software Engineering I		Prüfung (PR)	Tichy

T 7.148 Course: Software Engineering I Pass [T-INFO-101995]

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: M-INFO-101175 - Software Engineering I

Type	Credits	Recurrence	Version
Completed coursework	0	Each summer term	1

Events					
SS 2019	24518	Softwaretechnik I	4 SWS	Lecture / Practice (VÜ)	Tichy, Weigelt, Hey
Exams					
SS 2019	7500250	Software Engineering I Pass		Prüfung (PR)	Tichy

T 7.149 Course: Software Engineering II [T-INFO-101370]

Responsible: Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner
Prof. Dr. Walter Tichy

Organisation: KIT Department of Informatics

Part of: M-INFO-100833 - Software Engineering II

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24076	Software Engineering II	4 SWS	Lecture (V)	Reussner

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

V Software Engineering II

24076, WS 19/20, 4 SWS, Language: German, Open in study portal

Lecture (V)

Description
Students learn methods and techniques for systematic software development. Advanced topics of software engineering are covered.

Literature
Craig Larman, Applying UML and Patterns, 3rd edition, Prentice Hall, 2004. More references will be provided in the lectures.

T 7.150 Course: Special Topics in Information Systems [T-WIWI-109940]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101434 - eBusiness and Service Management

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	2

Exams				
SS 2019	7900224	Special Topics in Information Systems	Prüfung (PR)	Weinhardt

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 pracitical 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

Recommendation
None

Annotation
All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: www.iism.kit.edu/im/lehre

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in “Information Management and Engineering” so far. With this course students majoring in “Industrial Engineering and Management“ and “Economics Engineering” also have the chance of getting practical experience and enhance their scientific capabilities.

The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.

T 7.151 Course: Special Topics of Applied Informatics [T-WIWI-102910]

Responsible: Prof. Dr. Andreas Oberweis
Prof. Dr. Harald Sack
Prof. Dr. Ali Sunyaev
Prof. Dr. York Sure-Vetter
Prof. Dr. Melanie Volkamer
Prof. Dr.-Ing. Johann Marius Zöllner

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101476 - Business Processes and Information Systems

Type	Credits	Recurrence	Version
Written examination	4,5	Each term	6

Competence Certificate
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Depending on the particular course associated with this placeholder a bonus on the examination grade is possible.

Prerequisites
None

Annotation
This course can be used in particular for the acceptance of external courses whose content is in the broader area of applied informatics, but is not equivalent to another course of this topic.

T 7.152 Course: Statistical Modeling of Generalized Regression Models [T-WIWI-103065]

Responsible: apl. Prof. Dr. Wolf-Dieter Heller
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101599 - Statistics and Econometrics

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2521350	Statistische Modellierung von Allgemeinen Regressionsmodellen	2 SWS	Lecture (V)	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 19/20, 2 SWS, Open in study portal — **Lecture (V)**

Annotation
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

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

regular attendance: 30 hours

self-study: 65 hours

exam preparation: 40 hours

T 7.153 Course: Statistics I [T-WIWI-102737]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101432 - Introduction to Statistics

Type	Credits	Recurrence	Version
Written examination	5	Each summer term	1

Events					
SS 2019	2600008	Statistics I	4 SWS	Lecture (V)	Schienle
SS 2019	2600009	Tutorien zu Statistik I	2 SWS	Practice (Ü)	Schienle, Rüter, Bitzer
Exams					
SS 2019	7900230	Statistics I		Prüfung (PR)	Schienle
WS 19/20	7900009	Statistics I		Prüfung (PR)	Schienle

Competence Certificate
The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.

The exam takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

Prerequisites
None

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

V Statistics I

2600008, SS 2019, 4 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
A. Descriptive Statistics: univariate und bivariate analysis

B. Probability Theory: probability space, conditional and product probabilities

C. Random variables: location and shape parameters, dependency measures, concrete distribution models

Workload
150 hours (5.0 Credits).

Literature
Skriptum: Kurzfassung Statistik I

Elective literature:

Bamberg, G., Baur, F. und Krapp, M.: Statistik, 15. überarb. Auflage. Oldenbourg, München 2009, ISBN 978-3486590883.

Fahrmeir, L., Heumann, C., Künstler, R., Pigeot, I. und Tutz, G.: Statistik - Der Weg zur Datenanalyse, 8. Auflage. Springer Spektrum. Berlin 2016, ISBN 978-3-662-50371-3.

Mosler, K. und Schmid, F.: Beschreibende Statistik und Wirtschaftsstatistik, 4. akt. und verb. Auflage, Springer, Berlin 2009, ISBN 978-3642015564.

Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2011, ISBN 978-3642150098.

Stock, J.H. und Watson M.W.: Introduction to Econometrics, 3. Auflage, Prentice Hall 2014, ISBN 978-1292071312

Stocker, T.C. und Steinke I.: Statistik: Grundlagen und Methodik. De Gruyter Oldenbourg, Berlin 2016 ISBN-13: 978-3110353884.

T 7.154 Course: Statistics II [T-WIWI-102738]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101432 - Introduction to Statistics

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	1

Events					
WS 19/20	2610020	Statistics II	4 SWS	Lecture (V)	Schienle
WS 19/20	2610021		2 SWS	Tutorial (Tu)	Schienle, Rüter, Zerwas
WS 19/20	2610022	PC-Praktikum zu Statistik II	2 SWS		Schienle, Görgen
Exams					
SS 2019	7900029	Statistics II		Prüfung (PR)	Grothe

Competence Certificate
The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.

The exam takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

Prerequisites
None

Recommendation
It ist recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2610020].

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

V Statistics II

2610020, WS 19/20, 4 SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
D. Sampling and Estimation Theory: Sampling distributions, estimators, point and interval estimation
E. Test Theory: General Principles of Hypothesis Testing, Concrete 1- and 2-Sampling Tests
F. Regression analysis: Simple and multiple linear regression, statistical inference

Workload
150 hours (5.0 Credits).

Literature
Script: Kurzfassung Statistik II

Elective literature:

Bamberg, G., Baur, F. und Krapp, M.: Statistik, 15. überarb. Auflage. Oldenbourg, München 2009, ISBN 978-3486590883.

Fahrmeir, L., Heumann, C., Künstler, R., Pigeot, I. und Tutz, G.: Statistik - Der Weg zur Datenanalyse, 8. Auflage. Springer Spektrum. Berlin 2016, ISBN 978-3-662-50371-3.

Mosler, K. und Schmid, F.: Beschreibende Statistik und Wirtschaftsstatistik, 4. akt. und verb. Auflage, Springer, Berlin 2009, ISBN 978-3642015564.

Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2011, ISBN 978-3642150098.

Stock, J.H. und Watson M.W.: Introduction to Econometrics, 3. Auflage, Prentice Hall 2014, ISBN 978-1292071312

Stocker, T.C. und Steinke I.: Statistik: Grundlagen und Methodik. De Gruyter Oldenbourg, Berlin 2016 ISBN-13: 978-3110353884.

T 7.155 Course: Strategic Finance and Technoloy Change [T-WIWI-110511]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101423 - Topics in Finance II
M-WIWI-101465 - Topics in Finance I

Type	Credits	Recurrence	Version
Written examination	1,5	Each winter term	1

Events					
WS 19/20	2530214	Strategic Finance and Technology Change	1 SWS	Lecture (V)	N.N.

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
Attending the lecture "Financial Management" is strongly recommended.

T 7.156 Course: Surfaces for Computer aided Design [T-INFO-102073]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: M-INFO-101254 - Surfaces for Computer Aided Design

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

T 7.157 Course: Tactical and Operational Supply Chain Management [T-WIWI-102714]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-101421 - Supply Chain Management
M-WIWI-103278 - Optimization under Uncertainty

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	3

Events					
SS 2019	2550486	Taktisches und operatives SCM	2 SWS	Lecture (V)	Nickel
SS 2019	2550487	Übungen zu Taktisches und operatives SCM	1 SWS	Practice (Ü)	Pomes
Exams					
SS 2019	00026	Tactical and Operational Supply Chain Management		Prüfung (PR)	Nickel

Competence Certificate
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation.

The exam takes place in every the semester.

Prerequisite for admission to examination is the succesful completion of the online assessments.

Prerequisites
Prerequisite for admission to examination is the succesful completion of the online assessments.

Recommendation
None

Annotation
The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online.

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

V Taktisches und operatives SCM

2550486, SS 2019, 2 SWS, Language: German, 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 connectedto strategical logistics planning. Strategic decisions concerning the location of facilities as production plants, distribution centers or warehouses are of high importance for the rentability of supply chains. Thoroughly carried out, location planning allows an efficient flow of materials and leads to lower costs and increased customer service.
Subject of the course is an introduction to the most important terms and definitions in location planning as well as the presentation of basic quantitative location planning models. Furthermore, specialized location planning models for Supply Chain Management will be addressed as they are part in many commercial SCM tools for strategic planning tasks.

Learning Content
The lecture covers basic quantitative methods in location planning in the context of strategic Supply Chain Planning. Besides the discussion of several criteria for the evaluation of the locations of facilities, the students are acquainted with classical location planning models (planar models, network models and discrete models) and advanced location planning models designed for Supply Chain Management (single-period and multi-period models).The exercisesaccompanying the lecture offer the possibility to apply the considered models to practical problems.

Annotation
The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online.

Literature
Elective Literature

- Daskin: Network and Discrete Location: Models, Algorithms, and Applications, Wiley, 1995
- Domschke, Drexl: Logistik: Standorte, 4. Auflage, Oldenbourg, 1996
- Francis, McGinnis, White: Facility Layout and Location: An Analytical Approach, 2nd Edition, Prentice Hall, 1992
- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
- Thonemann: Operations Management - Konzepte, Methoden und Anwendungen, Pearson Studium, 2005

T 7.158 Course: Team Project Software Development [T-INFO-109823]

Responsible: Prof. Dr. Sebastian Abeck
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: M-INFO-104809 - Team Project Software Development

Type	Credits	Recurrence	Version
Examination of another type	8	Each term	1

T 7.159 Course: Technical Conditions Met [T-WIWI-106623]

Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101599 - Statistics and Econometrics

Type	Credits	Recurrence	Version
Completed coursework	0	Each term	1

Competence Certificate
This module element is intended to record the Bachelor-examination "Introduction to Game Theory". In the master module M-WIWI-101453 "Applied Strategic Decisions", this means that the obligatory course "Advanced Game Theory" is not required.

Prerequisites
None

T 7.160 Course: Telematics [T-INFO-101338]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: M-INFO-100801 - Telematics

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24128	Telematics	3 SWS	Lecture (V)	Bauer, Friebe, Heseding, Hock, Zitterbart
Exams					
SS 2019	7500115	Telematics		Prüfung (PR)	Zitterbart

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

V Telematics

24128, WS 19/20, 3 SWS, Language: German, Open in study portal

Lecture (V)

Description
The lecture covers (i.a.) protocols, architectures, as well as methods and algorithms, for routing and establishing reliable end-to-end connections in the Internet. In addition to various methods for media access control in local area networks, the lecture also covers other communication systems, e.g. circuit-switched systems such as ISDN. Participants should also have understood the possibilities for managing and administering networks

T 7.161 Course: Theoretical Foundations of Computer Science [T-INFO-103235]

Responsible: Prof. Dr. Jörn Müller-Quade
Prof. Dr. Peter Sanders
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: M-INFO-101189 - Theoretical Informatics

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24005	Theoretical Foundations of Computer Science	3/1 SWS	Lecture (V)	Wagner, Brückner, Sauer
Exams					
SS 2019	7500303	Theoretical Foundations of Computer Science		Prüfung (PR)	Wagner

T 7.162 Course: Web Applications and Service-Oriented Architectures (I) [T-INFO-103122]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: M-INFO-101636 - Web Applications and Service-Oriented Architectures (I)

Type	Credits	Recurrence	Version
Oral examination	4	Each winter term	1

Events					
WS 19/20	24153	Web Applications and Service-oriented Architectures (I)	2 SWS	Lecture (V)	Abeck, Hippchen, Schneider

T 7.163 Course: Welfare Economics [T-WIWI-102610]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101501 - Economic Theory

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2019	2520517	Welfare Economics	SWS	Lecture (V)	Puppe, Rollmann
SS 2019	2520518	Übung zur Wohlfahrtstheorie	SWS	Practice (Ü)	Puppe, Rollmann
Exams					
SS 2019	7900226	Welfare Economics		Prüfung (PR)	Puppe
SS 2019	7900285	Welfare Economics		Prüfung (PR)	Puppe

Competence Certificate
The assessment consists of a written exam at the end of the semester (according to Section 4 (2), 1 or 2 of the examination regulation).

Prerequisites
The course *Economics I: Microeconomics* [2610012] has to be completed beforehand.

Recommendation
None

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

V Welfare Economics

2520517, SS 2019, SWS, Language: German, Open in study portal

Lecture (V)

Learning Content
The lecture "Welfare economics" deals with the question of efficiency and distributional properties of economic allocations, in particular allocations of market equilibria. The lecture is based on the two welfare theorems: The first welfare theorem (under weak preconditions) says that every competitive equilibrium is efficient.

According to the second welfare theorem (under stronger preconditions), every efficient allocation can be preserved as a competitive equilibrium through adequate choices of initial endowments. Afterwards, the terms and definitions of envy-freeness and the related concept of egalitarian equivalence in the context of the general theory of equilibrium will be discussed.

The second part of the lecture deals with the principle of "social justice" (i.e. distributational justice).The fundamental principles of utilitarism, Rawl's theory of justice as well as John Roemer's theory of equality of opportunity are explained and critically analyzed.

Annotation
The course will be held every two years in the summer.

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature
Elective literature:

- J. Rawls: *A Theory of Justice*. Harvard University Press (1971)
- J. Roemer: *Theories of Distributive Justice*. Harvard University Press (1996)