Module Handbook
Information Engineering and Management M.Sc.

SPO 2015

Summer term 2019

Date: 01.04.2019

KIT – The Research University in the Helmholtz Association

www.kit.edu

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1 Welcome to the new module handbook of your study programme

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

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

For modules and courses with INFO-Id:

KIT Department of Informatics, Informatics Study Program Service
Personal counselling

📞 +49 721 608-44031

✉ bachelor@wirtschaftsinformatik.kit.edu

For modules and courses with WIWI-Id

KIT Department of Economics and Management, Examination Office
Personal counselling

📞 +49 721 608-43768

✉ master@wirtschaftsinformatik.kit.edu

Editorial responsibility

Dr. André Wiesner, KIT Department of Economics and Management
Editorial responsibility

📞 +49 721 608-44061

✉ modul@wiwi.kit.edu
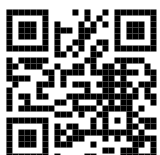
KIT Department of Economics and Management
Kollegiengebäude am Kronenplatz
Build. 05.20, Room 3B 05.2
Kaiserstraße 89
D-76133 Karlsruhe
https://www.wiwi.kit.edu/

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 Additional accomplishments

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

2.1.7 Further information

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

2.2 Contact persons

for Bachelor students

> **Personal consultation:** KIT Department of Informatics, Informatics Study Program Service
> Informatics Building 50.34, EG, Rooms 001.2/.3
> bachelor@wirtschaftsinformatik.kit.edu

for master students

> **Personal consultation:** KIT Department of Economics and Management, Examination Office
> Gebäude am Kronenplatz Building 05.20, 3rd floor, Room 3C-05
> master@wirtschaftsinformatik.kit.edu

editorial responsibility:

> Dr. André Wiesner, KIT Department of Economics and Management
> Phone: +49 721 608-44061
> modul@wiwi.kit.edu

3 The Master's degree program in Information Engineering and Management

3.1 Qualification objectives of the Master's program in Information Engineering and Management

Graduates of the interdisciplinary, four-semester Master's program in Information Engineering and Management have an advanced and in-depth research-based knowledge in the fields of informatics, economics and law as well as subject-independent competences that can be applied across multiple disciplines.

By combining their knowledge and competences, they are in a position to independently acknowledge economic and IT opportunities and development potentials for innovative change of structures and processes and implement them within the applicable legal framework. They are able to analyze, structure and describe complex, field-related problems and challenges.

They know how to identify advantages and disadvantages of existing procedures, models, technologies and approaches, compare alternatives, evaluate critically and apply the findings to new application areas.

If necessary, they are also in a position to combine different approaches, adapt them accordingly or even independently develop and apply new and innovative solutions.

They know how to critically interpret, validate and illustrate the achieved results.

Their decisions are made independently based on scientific facts under consideration of social and ethical aspects.

The graduates can communicate with expert representatives on a scientific level and even assume prominent responsibility in a team. Karlsruhe's Infonomics experts are characterized by their interdisciplinary methodological skills and innovative abilities.

Their qualifications are perfectly ideal particularly for interdisciplinary occupations in the fields of Information and Communication Technology (ICT), controlling, consulting, management and organization, for starting and management of firms as well as a downstream scientific career (PhD).

3.2 Structure of the Master's degree program in Information Engineering and Management SPO 2015

The Master's degree program in **Information Engineering and Management** has 4 terms. The terms 1 to 3 of the program are method-oriented and provide the students with state-of-the-art knowledge in informatics, business administration, operations research, economics, statistics and law. The interdisciplinary approach is especially emphasized in the interdisciplinary seminar.

It is recommended to study the courses in the following sequence:

- The (mandatory) modules in business administration and operations research should be studied in the first two terms of the program.
- The interdisciplinary seminar module should be taken until the end of the third term of the program.
- The (elective) modules from business administration, economics, operations research, and statistics, from informatics, and from law should be studied in the first three terms of the program.
- The 4-th term is reserved for the Master Thesis in which the student proves his ability for independent scientific research in informatics, the economic sciences, and law.

Figure 2 shows a summary of this recommendation with the structure of the disciplines and with credit points allocated to the modules of the program.

Term	Credits	Informatics				Economics and Management				Law		Research Course	Master Thesis
		Electives				Compulsory		Electives		Electives			
1	27	INFO 8 CP	INFO 8 CP			BUS 10 CP	OR 5 CP	BUS 9 CP		Law 9 CP			
2	30,5			INFO 8 CP							Law 9 CP		
3	32,5				INFO 9 CP				BUS/ECON/ OR/STAT 9 CP			2 Seminars 3 CP + 3 CP	
4	30												Master Thesis 30 CP
	120												

Figure 2: Structure of the Master's degree program in Information Engineering and Management SPO 2015 (Recommendation)

4 Field of study structure

Mandatory	
Master Thesis	30 CR
Informatics	33 CR
Economics and Management	33 CR
Law	18 CR
Research Course	6 CR

4.1 Master Thesis

Credits
30

Mandatory		
M-WIWI-101656	Module Master Thesis	30 CR

4.2 Informatics

Credits
33

Election block: Informatik (at least 33 credits)		
M-WIWI-101455	Web Data Management	9 CR
M-WIWI-101456	Intelligent Systems and Services	9 CR
M-WIWI-101457	Semantic Technologies	8 CR
M-WIWI-101458	Ubiquitous Computing	9 CR
M-WIWI-101477	Development of Business Information Systems	9 CR
M-INFO-100729	Human Computer Interaction	6 CR
M-INFO-100744	Formal Systems II: Application	5 CR
M-INFO-100799	Formal Systems	6 CR
M-INFO-100801	Telematics	6 CR
M-INFO-100806	Language Technology and Compiler	8 CR
M-INFO-100826	Automated Visual Inspection and Image Processing	6 CR
M-INFO-100841	Formal Systems II: Theory	5 CR
M-INFO-100893	Robotics I - Introduction to Robotics	6 CR
M-INFO-101173	Algorithms II	6 CR
M-INFO-101178	Communication and Database Systems	8 CR
M-INFO-101197	Computer Security	9 CR
M-INFO-101198	Advanced Topics in Cryptography	9 CR
M-INFO-101199	Advanced Algorithms: Design and Analysis	9 CR
M-INFO-101200	Advanced Algorithms: Engineering and Applications	9 CR
M-INFO-101201	Software Systems	9 CR
M-INFO-101202	Software Methods	9 CR
M-INFO-101203	Wireless Networking	8 CR
M-INFO-101204	Networking Labs	9 CR
M-INFO-101205	Future Networking	8 CR
M-INFO-101206	Networking	8 CR
M-INFO-101207	Networking Security - Theory and Praxis	9 CR
M-INFO-101208	Innovative Concepts of Data and Information Management	8 CR
M-INFO-101210	Dynamic IT-Infrastructures	9 CR
M-INFO-100728	Context Sensitive Systems	5 CR
M-INFO-101239	Machine Vision	9 CR
M-INFO-101251	Autonomous Robotics	9 CR
M-INFO-101250	Medical Simulation and Neural Medicine	9 CR
M-INFO-100031	Algorithms for Routing	5 CR
M-INFO-100768	Big Data Analytics	5 CR
M-INFO-100794	Randomized Algorithms	5 CR
M-INFO-100795	Algorithm Engineering	5 CR
M-INFO-100796	Parallel Algorithms	5 CR
M-INFO-100797	Algorithms in Cellular Automata	5 CR
M-INFO-101237	Algorithmic Methods for Hard Optimization Problems	5 CR
M-INFO-101256	Theory and Practice of Data Warehousing and Mining	9 CR
M-INFO-102072	Laboratory Course Algorithm Engineering	6 CR
M-INFO-102094	Algorithms for Visualization of Graphs	5 CR
M-WIWI-102827	Service Computing	9 CR
M-INFO-100819	Cognitive Systems	6 CR
M-INFO-102978	Digital Circuits Design	6 CR
M-INFO-103138	Lab Course: Natural Language Processing and Software Engineering	5 CR

M-INFO-103235	Practical Course: Smart Data Analytics	6 CR
M-INFO-103302	Lab: Graph Visualization in Practice	5 CR
M-WIWI-103356	Machine Learning	9 CR
M-INFO-102400	Algorithmic Methods for Network Analysis	5 CR
M-INFO-100789	Ubiquitous Computing	5 CR
M-INFO-104061	Microservice-Based Web Applications	8 CR
M-WIWI-104403	Critical Digital Infrastructures	9 CR
M-WIWI-104520	Human Factors in Security and Privacy	9 CR
M-INFO-104460	Deep Learning and Neural Networks	6 CR
M-INFO-100730	Geometric Optimzation neu	3 CR
M-INFO-100736	Introduction to Video Analysis neu	3 CR
M-INFO-100755	Image Data Compression neu	3 CR
M-INFO-100769	Datamanagement in the Cloud neu	5 CR
M-INFO-100780	Deployment of Database Systems neu	5 CR
M-INFO-100782	Network Security: Architectures and Protocols neu	4 CR
M-INFO-100785	Mobile Communication neu	4 CR
M-INFO-100812	Meshes and Point Clouds neu	3 CR
M-INFO-100825	Pattern Recognition neu	3 CR
M-INFO-100828	Models of Parallel Processing neu	5 CR
M-INFO-101575	Computational Complexity Theory, with a View Towards Cryptography neu	6 CR
M-INFO-101662	Practical Course: Database Systems neu	4 CR
M-INFO-101663	Practical Course: Analyzing Big Data neu	4 CR
M-INFO-101666	Practical Course: Geometric Modeling neu	3 CR
M-INFO-101864	Subdivision Algorithms neu	5 CR
M-INFO-102110	Computational Geometry neu	5 CR
M-INFO-102773	Big Data Analytics 2 neu	3 CR
M-INFO-102807	Practical Course: Analysis of Complex Data Sets neu	4 CR
M-INFO-103128	Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data neu	4 CR
M-INFO-103294	Wearable Robotic Technologies neu	4 CR
M-INFO-104045	Data Privacy: From Anonymization to Access Control neu	3 CR
M-INFO-104119	Secure Multiparty Computation neu	3 CR
M-INFO-104447	Automated Planning and Scheduling neu	5 CR

4.3 Economics and Management	Credits
	33

Mandatory		
M-WIWI-101443	Information Engineering and Management	10 CR
M-WIWI-103243	Optimization under Uncertainty in Information Engineering and Management	5 CR
Election block: Wahlmodule WIWI (9 credits)		
M-WIWI-101470	Data Science: Advanced CRM	9 CR
M-WIWI-101409	Electronic Markets	9 CR
M-WIWI-101446	Market Engineering	9 CR
M-WIWI-101410	Business & Service Engineering	9 CR
M-WIWI-101448	Service Management	9 CR
M-WIWI-101506	Service Analytics	9 CR
M-WIWI-101503	Service Design Thinking	9 CR
M-WIWI-101482	Finance 1	9 CR
M-WIWI-101483	Finance 2	9 CR
M-WIWI-101471	Industrial Production II	9 CR
M-WIWI-101412	Industrial Production III	9 CR
M-WIWI-101451	Energy Economics and Energy Markets	9 CR
M-WIWI-101452	Energy Economics and Technology	9 CR
M-WIWI-101488	Entrepreneurship (EnTechnon)	9 CR
M-WIWI-101507	Innovation Management	9 CR
M-WIWI-101490	Marketing Management	9 CR
M-WIWI-101487	Sales Management	9 CR
M-WIWI-101647	Data Science: Evidence-based Marketing	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-101453	Applied Strategic Decisions	9 CR
M-WIWI-101502	Economic Theory and its Application in Finance	9 CR
M-WIWI-101500	Microeconomic Theory	9 CR
M-WIWI-101504	Collective Decision Making	9 CR
M-WIWI-101505	Experimental Economics	9 CR
M-WIWI-101473	Mathematical Programming	9 CR
M-WIWI-101637	Analytics and Statistics	9 CR
M-WIWI-101638	Econometrics and Statistics I	9 CR
M-WIWI-101639	Econometrics and Statistics II	9 CR
M-WIWI-102754	Service Economics and Management	9 CR
M-WIWI-102805	Service Operations	9 CR
M-WIWI-102806	Service Innovation, Design & Engineering	9 CR
M-WIWI-102808	Digital Service Systems in Industry	9 CR
M-WIWI-102832	Operations Research in Supply Chain Management	9 CR
M-WIWI-103117	Data Science: Data-Driven Information Systems	9 CR
M-WIWI-103118	Data Science: Data-Driven User Modeling	9 CR
M-WIWI-103247	Intelligent Risk and Investment Advisory	9 CR
M-WIWI-103261	Disruptive FinTech Innovations	9 CR
M-WIWI-103289	Stochastic Optimization	9 CR
M-WIWI-103119	Advanced Topics in Strategy and Management	9 CR
M-WIWI-103720	eEnergy: Markets, Services and Systems	9 CR
M-WIWI-104068	Information Systems in Organizations	9 CR
M-WIWI-104080	Designing Interactive Information Systems	9 CR
M-WIWI-101406	Network Economics	9 CR

M-WIWI-101468	Environmental Economics	9 CR
M-WIWI-101478	Innovation and Growth	9 CR
M-WIWI-101480	Finance 3	9 CR
M-WIWI-101485	Transport Infrastructure Policy and Regional Development	9 CR
M-WIWI-101496	Growth and Agglomeration	9 CR
M-WIWI-101510	Cross-Functional Management Accounting	9 CR
M-WIWI-101511	Advanced Topics in Public Finance	9 CR
M-WIWI-101514	Innovation Economics	9 CR
Election block: Wahlmodule BWL (9 credits)		
M-WIWI-101470	Data Science: Advanced CRM	9 CR
M-WIWI-101409	Electronic Markets	9 CR
M-WIWI-101446	Market Engineering	9 CR
M-WIWI-101410	Business & Service Engineering	9 CR
M-WIWI-101448	Service Management	9 CR
M-WIWI-101506	Service Analytics	9 CR
M-WIWI-101503	Service Design Thinking	9 CR
M-WIWI-101482	Finance 1	9 CR
M-WIWI-101483	Finance 2	9 CR
M-WIWI-101449	Insurance Management II	9 CR
M-WIWI-101471	Industrial Production II	9 CR
M-WIWI-101412	Industrial Production III	9 CR
M-WIWI-101451	Energy Economics and Energy Markets	9 CR
M-WIWI-101452	Energy Economics and Technology	9 CR
M-WIWI-101488	Entrepreneurship (EnTechnon)	9 CR
M-WIWI-101507	Innovation Management	9 CR
M-WIWI-101490	Marketing Management	9 CR
M-WIWI-101487	Sales Management	9 CR
M-WIWI-101647	Data Science: Evidence-based Marketing	9 CR
M-WIWI-101498	Management Accounting	9 CR
M-WIWI-102754	Service Economics and Management	9 CR
M-WIWI-102806	Service Innovation, Design & Engineering	9 CR
M-WIWI-102808	Digital Service Systems in Industry	9 CR
M-WIWI-103117	Data Science: Data-Driven Information Systems	9 CR
M-WIWI-103118	Data Science: Data-Driven User Modeling	9 CR
M-WIWI-103247	Intelligent Risk and Investment Advisory	9 CR
M-WIWI-103261	Disruptive FinTech Innovations	9 CR
M-WIWI-103119	Advanced Topics in Strategy and Management	9 CR
M-WIWI-103720	eEnergy: Markets, Services and Systems	9 CR
M-WIWI-104068	Information Systems in Organizations	9 CR
M-WIWI-104080	Designing Interactive Information Systems	9 CR
M-WIWI-101510	Cross-Functional Management Accounting	9 CR
M-WIWI-101480	Finance 3	9 CR

4.4 Law

Credits
18

Election block: Recht (18 credits)		
M-INFO-101215	Intellectual Property Law	9 CR
M-INFO-101216	Private Business Law	9 CR
M-INFO-101217	Public Business Law	9 CR
M-INFO-101242	Governance, Risk & Compliance	9 CR

4.5 Research Course

Credits
6

Election block: Forschungsfach Wahl (2 aus 3 Modulen) (2 items)		
M-INFO-101218	Seminar Module Law	3 CR
M-INFO-102822	Seminar Module Informatics	3 CR
M-WIWI-102736	Seminar Module Economic Sciences	3 CR

5 Modules

M 5.1 Module: Advanced Algorithms: Design and Analysis [M-INFO-101199]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

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

Election block: Design and Analysis / Engineering and Applications (at least 1 item as well as at least 9 credits)			
T-INFO-101334	Algorithms in Cellular Automata	5 CR	Worsch
T-INFO-101331	Randomized Algorithms	5 CR	Worsch
T-INFO-101333	Parallel Algorithms	5 CR	Sanders
T-INFO-103334	Algorithmic Methods for Hard Optimization Problems	5 CR	Wagner
T-INFO-104390	Algorithms for Visualization of Graphs	5 CR	Wagner
T-INFO-104374	Laboratory Course Algorithm Engineering	6 CR	Sanders, Wagner
T-INFO-101332	Algorithm Engineering	5 CR	Sanders, Wagner
T-INFO-100002	Algorithms for Routing	5 CR	Wagner

Competence Goal
The student

- knows advanced methodical approaches with respect to the design and analysis of algorithms,
- can comment on theoretical aspects of algorithmics in a qualified and well-structured manner,
- identifies algorithmic problems from different areas and can formulate these formally,
- can analyze and judge the computational complexity of algorithmic problems from different areas,
- can recognize and design suitable algorithmic techniques to solve algorithmic problems.

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-INFO-102020 - Algorithms II must have been passed.

Content
This module conveys profound knowledge concerning theoretical aspects of algorithmics. Its focus is on the design and analysis of advanced algorithms, particularly, on algorithms for graphs, randomized algorithms, parallel algorithms and algorithms for NP-hard problems.

Workload
approx. 270h

M   5.2 Module: Advanced Algorithms: Engineering and Applications [M-INFO-101200]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: **Informatics**

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

Election block: Engineering and Applications / Design and Analysis (at least 1 item as well as at least 9 credits)			
T-INFO-100002	**Algorithms for Routing**	5 CR	Wagner
T-INFO-101332	**Algorithm Engineering**	5 CR	Sanders, Wagner
T-INFO-101333	**Parallel Algorithms**	5 CR	Sanders
T-INFO-103334	**Algorithmic Methods for Hard Optimization Problems**	5 CR	Wagner
T-INFO-104374	**Laboratory Course Algorithm Engineering**	6 CR	Sanders, Wagner
T-INFO-104390	**Algorithms for Visualization of Graphs**	5 CR	Wagner
T-INFO-101331	**Randomized Algorithms**	5 CR	Worsch

Competence Goal

The Student

- knows advanced methodical approaches concerning the design of algorithms and their applications,
- can comment on the practical aspects of algorithmics in a qualified and well-structured manner,
- identifies algorithmic problems from different areas of application and can formulate these formally,
- can judge the computational complexity of algorithmic problems,
- recognizes suitable algorithmic techniques for solving these problems and can transfer and apply knowledge of these techniques to new problems,
- can implement solutions based on algorithmic techniques for practical problems and can evaluate these

Prerequisites

None

Content

This module conveys profound knowledge concerning practical aspects of algorithmics and covers applications of algorithms for practical problems. Its focus is on the design, the practical implementation and the evaluation of algorithms, particularly, algorithms for graphs, parallel algorithms, algorithms for NP-hard problems, optimization algorithms inspired by nature, as well as algorithms from various areas of application.

Workload

270h

M 5.3 Module: Advanced Topics in Cryptography [M-INFO-101198]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: Informatics

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

Election block: Fortgeschrittene Themen der Kryptographie (at least 1 item as well as at least 9 credits)			
T-INFO-101373	Selected Topics in Cryptography	3 CR	Müller-Quade
T-INFO-101360	Signals and Codes	3 CR	Müller-Quade
T-INFO-101260	Asymmetric Encryption Schemes	3 CR	Müller-Quade
T-INFO-101390	Symmetric Encryption	3 CR	Müller-Quade
T-INFO-101259	Provable Security in Cryptography	3 CR	Hofheinz
T-INFO-101279	Cryptographic Voting Schemes	3 CR	Müller-Quade
T-INFO-101280	Digital Signatures	3 CR	Hofheinz

Competence Goal
The student

- will be familiar with the theoretical foundations and the basic mechanisms of computer security and cryptography.
- can understand and explain the methods of computer security and cryptography,
- will be able to read and understand the latest scientific papers,
- will be able to critically assess appropriate security solutions, and identify weaknesses / threats,
- can design an own security solution to a given problem, (eg. later in the a master's thesis).

Prerequisites
None

Content
The module is intended to provide depth theoretical and practical aspects of IT security and cryptography.

- Development of safety goals and classification of threats.
- Formal description of authentication systems.
- Analysis of typical vulnerabilities in programs and web applications and development of appropriate protective methods / avoidance strategies
- Overview of opportunities for side channel attacks
- Introduction to key management and Public Key Infrastructure
- Presentation and comparison of current safety certifications.
- The current research issues from some of the following areas are covered:
  - Block ciphers, hash functions,
  - Public-key encryption, digital signature, key exchange.
  - Basic security protocols such as fair coin toss over the phone, Byzantine Agreement, Dutch Flower Auctions, Zero Knowledge.
  - Threat models and security definitions.
  - Modular design and protocol composition.
  - Security definitions of simulatability.
  - Universal Composability.
  - Deniability as an additional safety feature.
  - Electronic Voting.

M 5.4 Module: Advanced Topics in Public Finance [M-WIWI-101511]

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

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

Mandatory			
T-WIWI-102740	Public Management	4,5 CR	Wigger
Election block: Ergänzungsangebot (between 4,5 and 5 credits)			
T-WIWI-108880	Blockchains & Cryptofinance	4,5 CR	Schuster, Uhrig-Homburg
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102739	Public Revenues	4,5 CR	Wigger

Competence Certificate

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

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

Competence Goal

The student

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

Prerequisites

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

Content

As a branch of Economics, Public Finance is concerned with the theory and policy of the public sector and its interrelations with the private sector. It analyzes the economic role of the state from a normative as well as from a positive point of view. The normative view examines efficiency- and equity-oriented motives for government intervention and develops fiscal policy guidelines. The positive view explains the actual behavior of economic agents in public sector affairs.

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

Recommendation

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

Annotation

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

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

Workload

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

M 5.5 Module: Advanced Topics in Strategy and Management [M-WIWI-103119]

Responsible:	Prof. Dr. Hagen Lindstädt
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**
	Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Deutsch	4	1

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

Competence Certificate
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal
Students

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

Prerequisites
None

Content
The module is divided into three main topics:
The students

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

Recommendation
None

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

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

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

M 5.6 Module: Algorithm Engineering [M-INFO-100795]

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

Organisation: KIT Department of Informatics

Part of: Informatics

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

Mandatory			
T-INFO-101332	Algorithm Engineering	5 CR	Sanders, Wagner

M 5.7 Module: Algorithmic Methods for Hard Optimization Problems [M-INFO-101237]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Duration	Language	Level	Version
5	Irregular	1 semester	Deutsch	4	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 5.8 Module: Algorithmic Methods for Network Analysis [M-INFO-102400]

Responsible: Prof. Dr. Henning Meyerhenke
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Language	Level	Version
5	Irregular	Deutsch	4	1

Mandatory			
T-INFO-104759	Algorithmic Methods for Network Analysis	5 CR	Meyerhenke

Workload
150 h

M 5.9 Module: Algorithms for Routing [M-INFO-100031]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-100002	Algorithms for Routing	5 CR	Wagner

| M | 5.10 Module: Algorithms for Visualization of Graphs [M-INFO-102094] |

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Language	Level	Version
5	Irregular	Deutsch	4	1

Mandatory			
T-INFO-104390	Algorithms for Visualization of Graphs	5 CR	Wagner

| M | **5.11 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

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

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

M 5.12 Module: Algorithms in Cellular Automata [M-INFO-100797]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101334	Algorithms in Cellular Automata	5 CR	Worsch

M 5.13 Module: Analytics and Statistics [M-WIWI-101637]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)

Credits	Language	Level	Version
9	Deutsch	4	2

Mandatory		
T-WIWI-103123	Advanced Statistics	4,5 CR	Grothe
Election block: Ergänzungsangebot (between 4,5 and 5 credits)		
T-WIWI-106341	Machine Learning 2 – Advanced Methods	5 CR	Zöllner
T-WIWI-103124	Multivariate Statistical Methods	4,5 CR	Grothe

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

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

Prerequisites
The course "*Advanced Statistics*" is compulsory.

Content

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

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

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

M 5.14 Module: Applied Strategic Decisions [M-WIWI-101453]

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

	Credits	Language	Level	Version
	9	Deutsch	4	3

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

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

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

Competence Goal
Students

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

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

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

Recommendation
Basic knowledge in game theory is assumed.

Annotation
The course *Predictive Mechanism and Market Design* is not offered each year.
The course "Decision Theory" [2520365] will not be offered any more from summer term 2015 on. The examination will be offered latest until winter term 2015/2016 (repeaters only).

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

M   5.15 Module: Automated Planning and Scheduling [M-INFO-104447]

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

Credits	Language	Level	Version
5	Englisch	4	1

Mandatory			
T-INFO-109085	Automated Planning and Scheduling	5 CR	Sanders

M	**5.16 Module: Automated Visual Inspection and Image Processing [M-INFO-100826]**

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101363	Automated Visual Inspection and Image Processing	6 CR	Beyerer

M 5.17 Module: Autonomous Robotics [M-INFO-101251]

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Duration	Level	Version
9	Once	2 semester	4	3

Election block: Autonome Robotik (at least 1 item as well as at least 9 credits)			
T-INFO-101351	Biologically Inspired Robot neu	3 CR	Dillmann
T-INFO-109931	Robotics III – Sensors and Perception in Robotics neu	3 CR	Asfour
T-INFO-105723	Robotics II: Humanoid Robotics neu	3 CR	Asfour

Prerequisites
None

Modeled Conditions
The following conditions have to be fulfilled:

1. The module M-INFO-100893 – Robotics I – Introduction to Robotics must have been passed.

M 5.18 Module: Big Data Analytics [M-INFO-100768]

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

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

Mandatory			
T-INFO-101305	Big Data Analytics	5 CR	Böhm

M 5.19 Module: Big Data Analytics 2 [M-INFO-102773]

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

Credits	Recurrence	Language	Level	Version
3	Irregular	Deutsch	4	1

Mandatory			
T-INFO-105742	Big Data Analytics 2	3 CR	Böhm

M 5.20 Module: Business & Service Engineering [M-WIWI-101410]

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

Credits	Level	Version
9	4	3

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

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

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

Competence Goal
The student should

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

Prerequisites
None

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

Recommendation
None

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

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

M 5.21 Module: Cognitive Systems [M-INFO-100819]

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

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

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

M   5.22 Module: Collective Decision Making [M-WIWI-101504]

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

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

Election block: Wahlpflichtangebot ()			
T-WIWI-102740	**Public Management**	4,5 CR	Wigger
T-WIWI-102859	**Social Choice Theory**	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 the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal
Students

- are able to model practical problems of the public sector and to analyze them with respect to positive and normative questions,
- understand individual incentives and social outcomes of different institutional designs,
- are familiar with the functioning and design of democratic elections and can analyze them with respect to their individual incentives.

Prerequisites
None

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

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

M 5.23 Module: Communication and Database Systems [M-INFO-101178]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory		
T-INFO-101497 Database Systems	4 CR	Böhm
T-INFO-102015 Introduction in Computer Networks	4 CR	Zitterbart

Competence Goal

The students will

- have learned fundamentals of data communication as well as the design of communication systems,
- be familiar with the composition of the different protocols and their mechanisms and be able to design simple protocols on their own,
- have understood the relationships between the different communication layers,
- be able to explain the benefits of database technology at the end of the course,
- have understood the development of database applications and be able to set up and access simple databases,
- be familiar with the terminology and the underlying database theory.

Content

Distributed information systems are worldwide information repositories which are accessible by everybody at any place of the world at any time. The physical distance is bridged by telecommunication systems, while database management technology manages and coordinates data for arbitrary periods of time. In order to understand globally running processes, one has to understand both data transmission techniques and database technology. Besides the telecommunication and database technologies on their own, an understanding of their cooperation is required, too.

Workload

approx. 240 h

M 5.24 Module: Computational Complexity Theory, with a View Towards Cryptography [M-INFO-101575]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Language	Level	Version
6	Each term	Deutsch	4	1

Mandatory			
T-INFO-103014	Computational Complexity Theory, with a View Towards Cryptography	6 CR	Hofheinz, Müller-Quade

M 5.25 Module: Computational Geometry [M-INFO-102110]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Language	Level	Version
5	Irregular	Deutsch	4	1

Mandatory			
T-INFO-104429	Computational Geometry	5 CR	Wagner

M   5.26 Module: Computer Security [M-INFO-101197]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: **Informatics**

Credits	Recurrence	Duration	Level	Version
9	Once	1 semester	4	2

Election block: Computersicherheit (at least 1 item as well as at least 9 credits)			
T-INFO-101371	**Security**	6 CR	Hofheinz, Müller-Quade
T-INFO-101360	**Signals and Codes**	3 CR	Müller-Quade
T-INFO-101390	**Symmetric Encryption**	3 CR	Müller-Quade
T-INFO-101279	**Cryptographic Voting Schemes**	3 CR	Müller-Quade
T-INFO-101260	**Asymmetric Encryption Schemes**	3 CR	Müller-Quade

Competence Goal
The student

- knows and understands the basic commonly used algorithms, their design, correctness and efficiency analysis, implementation, documentation and application,
- an handle new algorithmic problems, using this understanding,
- can apply the mathematical approaches learned in the basic computer science and mathematics courses to solve problems. Main topics are here formal correctness arguments and a mathematical analysis of efficiency.
- deals with a restricted problem in the field of computer security within the seminar,
- analyzes and discusses the problems associated to a distinct discipline in the lectures and in the final seminar paper,
- discusses, presents and defends subject-specific arguments within a given task,
- organizes the preparation of the final papers largely independent.

Prerequisites
None

Content
Theoretical and practical aspects of computer security

- Development of safety goals and classification of threats
- Presentation and comparison of different formal access control models
- Formal description of authentication systems, presentation and comparison of different authentication methods (passwords, biometrics, challenge-response protocols)
- Analysis of typical vulnerabilities in programs and web applications and development of appropriate protective methods / avoidance strategies
- Overview of opportunities for side channel attacks
- Introduction to key management and Public Key Infrastructure
- Presentation and comparison of current safety certifications
- Block ciphers, hash functions, digital signature, public key encryption and digital signatures (RSA, ElGamal), and various methods of key exchange (eg, Diffie-Hellman)
- Presentation of combinations of cryptographic modules using currently used protocols such as Secure Shell (SSH) and Transport Layer Security (TLS)

Workload
approx. 270h

M 5.27 Module: Context Sensitive Systems [M-INFO-100728]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Language	Level	Version
5	Deutsch	4	2

Mandatory			
T-INFO-107499	Context Sensitive Systems	5 CR	Beigl

M 5.28 Module: Critical Digital Infrastructures [M-WIWI-104403]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	Informatics

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

Mandatory			
T-WIWI-109248	Critical Information Infrastructures	5 CR	Sunyaev
Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-109246	Digital Health	4 CR	Sunyaev
T-WIWI-109250	Emerging Trends in Critical Information Infrastructures	4 CR	Sunyaev
T-WIWI-109249	Sociotechnical Information Systems Development	4 CR	Sunyaev
T-WIWI-109251	Selected Issues in Critical Information Infrastructures	4 CR	Sunyaev

Competence Certificate
The assessment is carried out as partial exams according to § 4 paragraph 2 Nr. 1 – Nr. 3 SPO of the examination regulation of the core course and further single courses of this module, whose sum of credits must meet 9 credits.
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 students …

- have foundational knowledge about the design and operation of critical digital infrastructures
- have in-depth methodological knowledge in design science research and related scientific domains
- can distinguish between the challenges and opportunities of critical digital infrastructures in different domains
- can evaluate and improve sociotechnical systems
- combine theoretical and practical contents of the courses in the module to solve existing problems in the domain of critical digital infrastructures

Prerequisites
None

Content
Critical digital infrastructures are sociotechnical systems comprising essential software components and information systems with pivotal impact on individuals, organizations, governments, economies, and society. Critical information infrastructures require careful design, development, and evaluation to ensure reliable, secure, and purposeful operation. This module features a strong focus on different subject areas, including, but not limited to, internet technologies, health care, and information privacy. The lectures in the module introduce students to a domain relevant to critical digital infrastructures and the labs allow to gain hands-on experience in this interesting domain.

Recommendation
The courses in the module may be held in English. Participants should be well versed in written and spoken English.
The courses can be visited independently. Participants can start the module in the winter as well as in the summer term.
Programming skills may be required in some courses.
Experience in writing scientific papers is helpful but not required.

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

Workload
30 hours per ECTS
Total workload for 9 ECTS: approx. 270 hours
The exact allocation is made according to the credit points of the courses.

M 5.29 Module: Cross-Functional Management Accounting [M-WIWI-101510]

Responsible:	Prof. Dr. Marcus Wouters
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**
	Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Deutsch/Englisch	4	7

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

Competence Certificate

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

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

Competence Goal

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

Prerequisites

The course "Advanced Management Accounting" is compulsory.

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

Content

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

Recommendation

None

Annotation

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

Workload

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

| M | 5.30 Module: Data Privacy: From Anonymization to Access Control [M-INFO-104045] |

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

Credits	Language	Level	Version
3	Deutsch	4	1

Mandatory			
T-INFO-108377	Data Privacy: From Anonymization to Access Control	3 CR	Böhm

M 5.31 Module: Data Science: Advanced CRM [M-WIWI-101470]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)
Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Deutsch	4	4

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

Competence Certificate

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

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

Prerequisites

None

Content

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

Recommendation

None

Annotation

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

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

M 5.32 Module: Data Science: Data-Driven Information Systems [M-WIWI-103117]

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

Credits	Level	Version
9	4	5

Election block: Wahlpflichtangebot ()			
T-WIWI-109863	Business Data Analytics: Application and Tools ^{neu}	4,5 CR	Weinhardt
T-WIWI-106187	Business Data Strategy ^{neu}	4,5 CR	Weinhardt
T-WIWI-105777	Business Intelligence Systems ^{neu}	4,5 CR	Mädche, Nadj, Toreini
T-WIWI-106207	Practical Seminar: Data-Driven Information Systems ^{neu}	4,5 CR	Mädche, Setzer, Weinhardt
T-WIWI-105778	Service Analytics A ^{neu}	4,5 CR	Fromm, Setzer

Competence Certificate

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

Competence Goal

The student

- understands the strategic role of integrating, transforming, and analyzing large and complex enterprise data in modern business information systems and is capable of comparing and assessing strategic alternatives
- has the core skills to design, model, and control complex, inter-organisational analytical, processes, including various business functions as well as customers and markets
- understands the usage of performance indicators for a variety of controlling and management issues and is able to define models for generating the relevant performance indicators under considerations of data availability
- distinguishes different analytics methods and concepts and learn when to apply to better understand and anticipate business relationships and developments of industrial and in particular service companies to derive fact- and data-founded managerial actions and strategies.
- knows how to capture uncertainty in the data and how to appropriately consider and visualize uncertainty in decision support or business intelligence systems and analytical processes as a whole.

Prerequisites

None.

Content

The amount of business-related data availabe in modern enterprise information systems grows exponentially, and the various data sources are more and more integrated, transformed, and analyzed jointly to gain valuable business insights, pro-actively control and manage business processes, to leverage planning and decision making, and to provide appropriate, potentially novel services to customers based on relationships and developments observed in the data.

Also, data sources are more and more connected and single business unit that used to operate on separate data pools are now becoming highly integrated, providing tremendeous business opportunities but also challenges regarding how the data should be represented, integrated, preprocessed, transformed, and finally used in analytics planning and decision processes.

The courses of this module equip the students with core skills to understands the strategic role of integrating, transforming, and analyzing large and complex enterprise data in modern business information systems. Students will be capable to designing, comparing, and evaluating strategic alternatives. Also, students will learn how to design, model, and control complex analytical processes, including various business functions of industrial and service companies including customers and markets. Students learn core skills to understand fundamental strategies for integrating analytic models and operative controlling mechanisms while ensuring the technical feasibility of the resulting information systems..

Furthermore, the student can distinguish different methods and concepts in the realm of data science and learns when to apply. She/he will know the means of characterizing and analyzing hetergeneous, high-dimensional data available data in data warehouses and external data sources to gain additional insights valuable for enterprise planning and decision making. Also, the students know how to capture uncertainty in the data and how to appropriately consider and visualize uncertainty in business information and business intelligence systems.

The module offers the opportunity to apply and deepen this knowledge in a seminar and hands-on tutorials that are offered with all lectures.

Texteintrag

Recommendation

Basic knowledge of Information Management, Operations Research, Descriptive Statistics, and Inferential Statistics is assumed.

Annotation

The course „Business Data Strategy" can be chosen from winter term 2016 on.

M 5.33 Module: Data Science: Data-Driven User Modeling [M-WIWI-103118]

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

Credits	Level	Version
9	4	4

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-102614	Experimental Economics neu	4,5 CR	Weinhardt
T-WIWI-102899	Modeling and Analyzing Consumer Behavior with R neu	4,5 CR	Dorner, Weinhardt
T-WIWI-108765	Practical Seminar: Advanced Analytics neu	4,5 CR	Weinhardt
T-WIWI-109863	Business Data Analytics: Application and Tools neu	4,5 CR	Weinhardt

Competence Certificate
The assessment is carried out as partial exams of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

Competence Goal
Students of this module

- learn methods for planning empirical studies, in particular laboratory experiments,
- acquire theoretical knowledge and practical skills in analysing empirical data,
- familiarize with different ways of modelling user behaviour, are able to critically discuss, and to evaluate them

Prerequisites
None

Content
Understanding and supporting user interactions with applications better plays an increasingly large role in the design of business applications. This applies both to interfaces for customers and to internal information systems. The data that is generated during user interactions can be channelled straight into business processes, for instance by analysing and decomposing purchase decisions, and by feeding this data into product design processes.

The Crowd Analytics section considers the analysis of data from online platforms, particularly of those following crowd- or peer-to-peer based business models. This includes platforms like Airbnb, Kickstarter and Amazon Mechanical Turk.

Theoretical models of user (decision) behaviour help analyzing the empirically observed user behaviour in a systematic fashion. Testing these models and their predictions in controlled experiments (primarily in the lab) in turn helps refine theory and to generate practically relevant design recommendations. Analyses are carried out using advanced analytic methods.

Students learn fundamental theoretical models for user behaviour in systems and apply them to cases. Students are also taught methods and skills for conceptualizing and planning empirical studies and for analyzing the resulting data.

Recommendation
Basic knowledge of Information Management, Operations Research, Descriptive Statistics, and Inferential Statistics is assumed.

M   5.34 Module: Data Science: Evidence-based Marketing [M-WIWI-101647]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**
	Economics and Management (Wahlmodule BWL)

Credits	Recurrence	Language	Level	Version
9	Once	Deutsch	4	5

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

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

Keine.

Content

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

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

Recommendation

None

Workload

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

| M | **5.35 Module: Datamanagement in the Cloud [M-INFO-100769]** |

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

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

Mandatory			
T-INFO-101306	Datamanagement in the Cloud	5 CR	Böhm

M 5.36 Module: Deep Learning and Neural Networks [M-INFO-104460]

Responsible: Prof. Dr. Alexander Waibel
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Language	Level	Version
6	Deutsch	4	1

Mandatory			
T-INFO-109124	Deep Learning and Neural Networks	6 CR	Waibel

M 5.37 Module: Deployment of Database Systems [M-INFO-100780]

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

Credits	Duration	Language	Level	Version
5	1 term	Deutsch	4	1

Mandatory			
T-INFO-101317	Deployment of Database Systems	5 CR	Böhm

M 5.38 Module: Designing Interactive Information Systems [M-WIWI-104080]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)
Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Deutsch/Englisch	4	1

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

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

Competence Goal
The student

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

Prerequisites
The course "Interactive Information Systems" is compulsory and must be examined.

Modeled Conditions
The following conditions have to be fulfilled:

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

Content
Advanced information and communication technologies make interactive systems ever-present in the users' private and business life. They are an integral part of smartphones, devices in the smart home, mobility vehicles as well as at the working place in production and administration (e.g. in the form of dashboards).

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

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

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

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

M 5.39 Module: Development of Business Information Systems [M-WIWI-101477]

Responsible:	Prof. Dr. Andreas Oberweis
Organisation:	KIT Department of Economics and Management
Part of:	**Informatics**

Credits	Recurrence	Level	Version
9	Each term	4	4

Election block: Wahlplfichtangebot (between 1 and 2 items)			
T-WIWI-102661	**Database Systems and XML**	5 CR	Oberweis
T-WIWI-102895	**Software Quality Management**	5 CR	Oberweis
Election block: Ergänzungsangebot (at most 1 item)			
T-WIWI-102667	**Management of IT-Projects**	5 CR	Schätzle
T-WIWI-102676	**Special Topics of Enterprise Information Systems**	5 CR	Oberweis
T-WIWI-102669	**Strategic Management of Information Technology**	5 CR	Wolf
T-WIWI-103523	**Advanced Lab Informatics**	4 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

- describe the structure and the components of enterprise information systems,
- explain functionality and architecture of the enterprise information system components ,
- choose and apply relevant components to solve given problems in a methodic approach,
- describe roles, activities and products in the field of software engineering management,
- compare process and quality models and choose an appropriate model in a concrete situation,
- write scientific theses in the areas of enterprise information system components and software engineering management and find own solutions for given problems and research questions.

Prerequisites
The course *Datenbanksysteme und XML* or the course *Software Quality Management* must be examined.

Content
An enterprise information system contains the complete application software to store and process data and information in an organisation including design and management of databases, workflow management and strategic information planning.

Due to global networking and geographical distribution of enterprises as well as the increasing acceptation of eCommerce the application of distributed information systems becomes particular important.

This module teaches concepts and methods for design and application of information systems.

Annotation
The course T-WIWI-102759 "Requirements Analysis and Requirements Management" will no longer be offered in the module as of winter semester 2018/2019.

Workload
See German version

M 5.40 Module: Digital Circuits Design [M-INFO-102978]

Responsible: Prof. Dr.-Ing. Uwe Hanebeck
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M 5.41 Module: Digital Service Systems in Industry [M-WIWI-102808]

Responsible:	Prof. Dr. Wolf Fichtner
	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**
	Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Deutsch	4	5

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102872	**Challenges in Supply Chain Management**	4,5 CR	Mohr
T-WIWI-102822	**Industrial Services**	4,5 CR	Fromm
T-WIWI-107043	**Liberalised Power Markets**	3 CR	Fichtner
T-WIWI-106200	**Modeling and OR-Software: Advanced Topics**	4,5 CR	Nickel
T-WIWI-106201	**Digital Transformation of Organizations**	4,5 CR	Mädche
T-WIWI-106563	**Practical Seminar Digital Service Systems**	4,5 CR	Fichtner, Mädche, Nickel, Satzger, Sure-Vetter, Weinhardt

Competence Certificate

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

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

Competence Goal

Students

- understand the basics of the management of digital services applied on an industrial context
- gain an industry-specific insight into the importance and most relevant characteristics of information systems as key components of the digitalization of business processes, products and services
- are able to transfer and apply the models and methods introduced on practical scenarios and simulations.
- understand the control and optimization methods in the sector of service management and are able to apply them properly.

Prerequisites

This module can only be assigned as an elective module.

Content

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

Recommendation

None

Annotation

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

Workload

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

M 5.42 Module: Disruptive FinTech Innovations [M-WIWI-103261]

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: **Economics and Management (Wahlmodule WIWI)**
                    Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Englisch	4	1

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-106193	**Engineering FinTech Solutions**	4,5 CR	Ulrich
T-WIWI-106496	**Computational FinTech with Python and C++**	1,5 CR	Ulrich
T-WIWI-106495	**Automated Financial Advisory**	3 CR	Ulrich

Competence Certificate
The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

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

Prerequisites
None.

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

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

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

Recommendation
None

Annotation
See respective lecture

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

M   5.43 Module: Dynamic IT-Infrastructures [M-INFO-101210]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: Informatics

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

Election block: Dynamische IT-Infrastrukturen (at least 1 item as well as at least 9 credits)			
T-INFO-101323	IT-Security Management for Networked Systems	5 CR	Hartenstein
T-INFO-101326	Ubiquitous Computing	5 CR	Beigl
T-INFO-101276	Data and Storage Management	4 CR	Neumair
T-INFO-101284	Integrated Network and Systems Management	4 CR	Neumair
T-INFO-101298	Distributed Computing	4 CR	Streit
T-INFO-101345	Parallel Computer Systems and Parallel Programming	4 CR	Streit
T-INFO-106061	Access Control Systems: Foundations and Practice	4 CR	Hartenstein

Competence Goal

The students will get to know established as well as novel concepts for the design, implementation, operation and management of dynamic IT infrastructures (Web, Grid, Cloud, Internet):

- Getting to know established and novel concepts for IT infrastructures
- Application of methods for the evaluation and analysis of dynamic IT infrastructures
- Assessment of tools, protocols and procedures for the operation and management of dynamic IT infrastructures
- Assessment of the strengths and weaknesses of IT infrastructures
- Insight into the practical operation of dynamic IT infrastructures using the example of the operation within the Steinbuch Centre for Computing (SCC)

Prerequisites

None

Content

This module covers various aspects of dynamic IT infrastructures such as layout, design, concept, development, operation and performance evaluation as well as optimization. These topics are considered from a theoretical-analytical approach as well as from the perspective of the practical experiences of day-to-day use. Being a modern IT service provider, the *Steinbuch Centre for Computing (SCC)* serves as object of study, since it combines both aspects in real life.

M	**5.44 Module: Econometrics and Statistics I [M-WIWI-101638]**

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)

Credits	Recurrence	Language	Level	Version
9	Each term	Deutsch	4	3

Mandatory		
T-WIWI-103125	Applied Econometrics	4,5 CR	Schienle
Election block: Ergänzungsangebot (between 4,5 and 5 credits)		
T-WIWI-103066	Data Mining and Applications	4,5 CR	Nakhaeizadeh
T-WIWI-103064	Financial Econometrics	4,5 CR	Schienle
T-WIWI-103126	Non- and Semiparametrics	4,5 CR	Schienle
T-WIWI-103127	Panel Data	4,5 CR	Heller
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 in depth understanding of advanced Econometric techniques suitable for different types of data.He/ She is able to apply his/her theoretical knowledge to real world problems with the help of statistical software and to evaluate performance of different approaches based on statistical criteria.

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

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

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

M   5.45 Module: Econometrics and Statistics II [M-WIWI-101639]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)

Credits	Recurrence	Language	Level	Version
9	Each term	Deutsch	4	2

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

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module 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 in depth understanding of advanced Econometric techniques suitable for different types of data. He/She is able to apply his/her theoretical knowledge to real world problems with the help of statistical software and to evaluate performance of different approaches based on statistical criteria.

Prerequisites

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

Modeled Conditions

The following conditions have to be fulfilled:

1. The module M-WIWI-101638 – Econometrics and Statistics I must have been started.

Content

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

Workload

The total workload for this module is approximately 270 hours.

M   5.46 Module: Economic Theory and its Application in Finance [M-WIWI-101502]

Responsible:	Prof. Dr. Kay Mitusch
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**

Credits	Language	Level	Version
9	Deutsch	4	4

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

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The exams are offered at the beginning of the recess period about the subject matter of the latest held lecture. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately. The overall grade for the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The students

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

Prerequisites

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

Content

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

Workload

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

M   5.47 Module: eEnergy: Markets, Services and Systems [M-WIWI-103720]

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

Credits	Language	Level	Version
9	Deutsch	4	1

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-107501	Energy Market Engineering	4,5 CR	Weinhardt
T-WIWI-107503	Energy Networks and Regulation	4,5 CR	Weinhardt
T-WIWI-107504	Smart Grid Applications	4,5 CR	Weinhardt

Competence Certificate
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal
The student

- is aware of design options for energy and especially electricity markets and can derive implications for the market results from the market design,
- knows about current trends regarding the Smart Grid and understands affiliated modelling aproaches,
- can evaluate business models of electricity grids according to the regulation regime
- is prepared for scientific contributions in the field of energy system analysis.

Prerequisites
None.

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

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

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

M   5.48 Module: Electronic Markets [M-WIWI-101409]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)
Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Deutsch	4	4

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

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2) 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 coordination and motivation methods and analyzes them regarding their efficiency,
- classifies markets and describes the roles of the participants in a formal way,
- knows the conditions for market failure and knows and develops countermeasures,
- knows institutions and market mechanisms, their fundamental theories and empirical research results,
- knows the design criteria of market mechanisms and a systematical approach for creating new markets,
- models, analyzes and optimizes the structure and dynamics of complex business applications.

Prerequisites

None

Content
What are the conditions that make electronic markets develop and how can one analyse and optimize such markets?
In this module, the selection of the type of organization as an optimization of transaction costs is treated. Afterwards, the efficiency of electronic markets (price, information and allocation efficiency) as well as reasons for market failure are described. Finally, motivational issues llike bounded rationality and information assymetries (private information and moral hazard), as well as the development of incentive schemes, are presented. Regarding the market design, especially the interdependencies of market organization, market mechanisms, institutions and products are described and theoretical foundations are lectured.

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

Topics include:

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

Recommendation
None

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

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

M   5.49 Module: Energy Economics and Energy Markets [M-WIWI-101451]

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

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

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

Competence Certificate

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

Competence Goal

The student

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

Prerequisites

The lecture Liberalised Power Markets has to be examined.

Content

Liberalised Power Markets: The European liberalisation process, energy markets, pricing, market failure, investment incentives, market power
Energy Trade and Risk Management: trade centres, trade products, market mechanisms, position and risk management
Simulation Game in Energy Economics: Simulation of the German electricity system

Recommendation

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

Annotation

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

Workload

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

M   5.50 Module: Energy Economics and Technology [M-WIWI-101452]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: **Economics and Management (Wahlmodule WIWI)**
                      Economics and Management (Wahlmodule BWL)

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

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

Competence Certificate

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

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

Prerequisites

None

Content

Heat Economy: district heating, heating technologies, reduction of heat demand, statutory provisions
Energy Systems Analysis: Interdependencies in energy economics, energy systems modelling approaches in energy economics
Energy and Environment: emission factors, emission reduction measures, environmental impact
Efficient Energy Systems and Electric Mobility: concepts and current trends in energy efficiency, Overview of and economical, ecological and social impacts through electric mobility

Workload

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

M 5.51 Module: Entrepreneurship (EnTechnon) [M-WIWI-101488]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)
Economics and Management (Wahlmodule BWL)

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

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

Competence Certificate
See German version.

Competence Goal
See German version.

Prerequisites
None

Recommendation
None

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

M 5.52 Module: Environmental Economics [M-WIWI-101468]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)

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

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

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

Competence Goal
The students

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

Prerequisites
None

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

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

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

M   5.53 Module: Experimental Economics [M-WIWI-101505]

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

Credits	Language	Level	Version
9	Deutsch	4	5

Election block: Wahlpflichtangebot (2 items)			
T-WIWI-102862	**Predictive Mechanism and Market Design**	4,5 CR	Reiß
T-WIWI-102863	**Topics in Experimental Economics**	4,5 CR	Reiß
T-WIWI-105781	**Incentives in Organizations**	4,5 CR	Nieken
T-WIWI-102614	**Experimental Economics**	4,5 CR	Weinhardt

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

Competence Goal
Students

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

Prerequisites
None.

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

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

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

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

M 5.54 Module: Finance 1 [M-WIWI-101482]

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

Organisation: KIT Department of Economics and Management

Part of: **Economics and Management (Wahlmodule WIWI)**
Economics and Management (Wahlmodule BWL)

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

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102643	**Derivatives**	4,5 CR	Uhrig-Homburg
T-WIWI-102621	**Valuation**	4,5 CR	Ruckes
T-WIWI-102647	**Asset Pricing**	4,5 CR	Ruckes, Uhrig-Homburg

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module 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 core skills in economics and methodology in the field of finance
- assesses corporate investment projects from a financial perspective
- is able to make appropriate investment decisions on financial markets

Prerequisites

None

Content

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

Workload

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

M 5.55 Module: Finance 2 [M-WIWI-101483]

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

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Wahlmodule WIWI)
Economics and Management (Wahlmodule BWL)

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

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

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module 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 in a position to discuss, analyze and provide answers to advanced economic and methodological issues in the field of modern finance.

Prerequisites

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

Modeled Conditions

The following conditions have to be fulfilled:

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

Content

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

Annotation

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

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

M 5.56 Module: Finance 3 [M-WIWI-101480]

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

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

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

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module 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 in a position to discuss, analyze and provide answers to advanced economic and methodological issues in the field of modern finance.

Prerequisites

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

Modeled Conditions

The following conditions have to be fulfilled:

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

Content

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

Workload

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

M 5.57 Module: Formal Systems [M-INFO-100799]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101336	Formal Systems	6 CR	Beckert

M 5.58 Module: Formal Systems II: Application [M-INFO-100744]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101281	Formal Systems II: Application	5 CR	Beckert

M 5.59 Module: Formal Systems II: Theory [M-INFO-100841]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101378	Formal Systems II: Theory	5 CR	Beckert

M   5.60 Module: Future Networking [M-INFO-101205]

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

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

Election block: Future networking (at least 1 item as well as at least 8 credits)			
T-INFO-101321	Next Generation Internet	4 CR	Bless, Zitterbart
T-INFO-101322	Mobile Communication	4 CR	Waldhorst, Zitterbart
T-INFO-101337	Internet of Everything	4 CR	Zitterbart
T-INFO-101338	Telematics	6 CR	Zitterbart

Competence Goal
Each student should be able

- to learn and use the concepts and principals of future network design
- to identify the flaws and benefits of future communication systems
- to judge the performance of protocols, future networks and architectures
- master advanced protocols, architectures and algorithms of future communication systems

Content
This module details selected aspects of future communication systems. This includes beside the requirements of secure and multimedia-based communication also the realization and controllability of large communication systems and networks. An important aspect is benchmarking and mastering the used algorithms, protocols and architectures. Also actual developments and applications are in the focus of this module.

M 5.61 Module: Geometric Optimzation [M-INFO-100730]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Duration	Language	Level	Version
3	Irregular	1 term	Deutsch	4	1

Mandatory			
T-INFO-101267	Geometric Optimzation	3 CR	Prautzsch

M 5.62 Module: Governance, Risk & Compliance [M-INFO-101242]

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

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

Election block: Governance, Risk & Compliance (at least 1 item as well as at least 9 credits)			
T-INFO-101316	Law of Contracts neu	3 CR	Dreier
T-INFO-101288	Corporate Compliance neu	3 CR	Dreier
T-INFO-108405	Data Protection by Design neu	3 CR	Raabe
T-INFO-102047	Seminar: Governance, Risk & Compliance neu	3 CR	Dreier
T-INFO-109910	IT- Security Law neu	3 CR	Raabe

M   5.63 Module: Growth and Agglomeration [M-WIWI-101496]

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

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

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-109194	**Dynamic Macroeconomics**	4,5 CR	Brumm
T-WIWI-102785	**Theory of Endogenous Growth**	4,5 CR	Ott
T-WIWI-103107	**Spatial Economics**	4,5 CR	Ott

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

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

Competence Goal
The student

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

Prerequisites
None

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

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

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

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

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

M 5.64 Module: Human Computer Interaction [M-INFO-100729]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics

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

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

M 5.65 Module: Human Factors in Security and Privacy [M-WIWI-104520]

Responsible:	Prof. Dr. Melanie Volkamer
Organisation:	KIT Department of Economics and Management
Part of:	**Informatics**

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

Mandatory			
T-WIWI-109270	**Human Factors in Security and Privacy**	5 CR	Volkamer
T-WIWI-109271	**Advanced Lab User Studies in Security**	4 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

Students …

- know why many existing security and privacy mechanisms are not usable and why many awareness/education/training approaches are not effective
- can explain for concrete examples why these are not usable / not effective including why people are likely to face problems with these
- can explain what mental models are, why they are important and how they can be identified
- know how to conduct a cognitive walkthrough to identify problems with existing mechanisms and approaches
- know how to conduct semi-structured interviews
- know how user studies in the security context differ from those conducted in other contexts
- can explain the process of human centered security / privacy by design
- know the advantages and disadvantages of various graphical password schemes
- know concepts such as just in time and place security interventions

Prerequisites

None

Content

The history of information security and privacy has taught us that it takes more than technological innovation to develop effective security and privacy mechanisms: Many aspects of information security and privacy actually depend on both technical and human factors. As a result of focusing on the technical factors, we are seeing a persistent gap between theoretical security and actual security in real world which becomes an increasing problem in the age of digitalization. The gap is mainly caused by strong and actually unrealistic assumptions regarding the users' knowledge and behavior.

Human factors in security and privacy research addresses several types of security and privacy mechanisms, e.g., authentication mechanisms including text and graphical passwords, security and privacy indicators (such as the icons in the address bar of nowadays web browsers) and security and privacy interventions like warning messages, permission dialogs and security and privacy policies as well as corresponding configuration interfaces. Besides security and privacy mechanisms, human factors in security and privacy researchers deal with security and privacy awareness, education, and training approaches.

 'Human factors in security & privacy' research areas are:

- identifying users' mental models using techniques such as (semi-)structured interviews or focus groups,
- evaluating existing approaches regarding their effectiveness in supporting their users in making secure decisions / informed decisions in the context of privacy using techniques such as cognitive walkthroughs, lab user studies or even field studies,
- proposing improved / new approaches and evaluating their effectiveness using the so called human-centered security / privacy by design approach.

This module discusses the various problems of existing security and privacy mechanisms and security and privacy awareness/education/training approaches. The lecture addresses relevant psychological and sociological aspects which are important to know and to consider when developing more usable security/privacy mechanisms and more effective awareness/education/training approaches. The human centered security and privacy by design approach is introduced. Furthermore, some of the methodologies used in this area are explained and a subset of them is applied. Finally, positive examples, such as graphical passwords, are introduced and discussed. Note,the main part of the exercise is replicating an interview based study. The main focus of the lab will be to replicate a quantitative based user study.

Annotation

This new module can be chosen from winter term 2018/2019.

Workload

The total workload for this module is approximately 270 hours.

| M | **5.66 Module: Image Data Compression [M-INFO-100755]** |

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101292	Image Data Compression	3 CR	Beyerer, Pak

M 5.67 Module: Industrial Production II [M-WIWI-101471]

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

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

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

Competence Certificate

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course *Planning and Managing of Industrial Plants* [2581952] and one further single course of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

- Students shall be able to describe the tasks of tactical production management with special attention drawn upon industrial plants.
- Students shall understand the relevant tasks in plant management (projection, realisation and supervising tools for industrial plants).
- Students shall be able to describe the special need of a techno-economic approach to solve problems in the field of tactical production management.
- Students shall be proficient in using selected techno-economic methods like investment and cost estimates, plant layout, capacity planning, evaluation principles of production techniques, production systems as well as methods to design and optimize production systems.
- Students shall be able to evaluate techno-economical approaches in planning tactical production management with respect to their efficiency, accuracy and relevance for industrial use.

Prerequisites

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

Content

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

Annotation

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

Workload
Total effort will account to 270 hours (9 credit points) and can be allocated according to the credit point rating. Therefore, a course with 3.5 credits requires an effort of approximately 105h and a course with 5.5 credits 165h.
The total effort for each course consists of attending lectures and tutorials, examination times and the time an average student needs to prepare himself in order to pass the exam with an average grade.

M 5.68 Module: Industrial Production III [M-WIWI-101412]

Responsible:	Prof. Dr. Frank Schultmann
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**
	Economics and Management (Wahlmodule BWL)

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

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

Competence Certificate

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course *Production and Logistics Management* [2581954] and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

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

Competence Goal

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

Prerequisites

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

Content

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

Annotation

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

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

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

M   5.69 Module: Information Engineering and Management [M-WIWI-101443]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: **Economics and Management (mandatory)**

Credits	Recurrence	Duration	Level	Version
10	Once	2 semester	4	2

Mandatory			
T-WIWI-102886	**Business Administration in Information Engineering and Management** neu	5 CR	Geyer-Schulz
T-WIWI-109918	**Foundations of Information Systems** neu	5 CR	Mädche, Weinhardt

Competence Certificate

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

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

Competence Goal

The student

- understands and analyzes the central role of information as an economic good, a production factor, and a competitive factor,
- identifies, evaluates, prices, and markets information goods,
- evaluates informations flows and the value of information in an interdisciplinary context,
- works out solutions in teams,
- transfers models from Business Administration to situations in business whose basic conditions are changed due to the implementation of information and communication technology,
- applies methods from Business Administration (Decision theory, game theory, operations research, etc.) to questions of Information Engineering and Management,
- analyzes the potential to autolimize the decision making process in businesses by data bases,
- describes the process to extract relevant data for decision making from operational accounting systems.

Prerequisites

None

Content

The module Information Engineering and Management comprises the lectures Principles of Information Engineering and Management and Business Administration in Information Engineering and Management.

In the lecture Principles of Information Engineering and Management, a clear distinction of information as a production, competitive, and economic good is introduced. The central role of information is explained through the concept of the information lifecycle. The single phases from extraction/generation through storage transformation and evaluation until the marketing and usage of information are analyzed from the business administration perspective and the microeconomic perspective. The state of the art of economic theory is presented throughout the different phases of the information lifecycle. The lecture is complemented by accompanying exercise courses.

In the lecture Business Administration in Information Engineering and Management, classical Business Administration is applied to businesses in an information- and communicationtechnological environment. The process to extract relevant data for decision making from operational accounting systems receives special attention. In order to do so, topics such as activity-based costing and transaction costs models are addressed. The automization of the decision making process in businesses by data bases is another focus of the module. To solve such issues within a company, relevant methods such as decision theory and game theory are lectured. Finally, complex business relevant questions in a dynamically changing environment are adressed by presenting models and methods from system dynamics.

M　5.70 Module: Information Systems in Organizations [M-WIWI-104068]

Responsible:	Prof. Dr. Alexander Mädche
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**
	Economics and Management (Wahlmodule BWL)

Credits	**Language**	**Level**	**Version**
9	Deutsch	4	2

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

Competence Certificate

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

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

Competence Goal

The student

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

Prerequisites

None

Content

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

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

Annotation

New module starting summer term 2018.

Workload

The total workload for this module is approximately 270 hours.

M   5.71 Module: Innovation and Growth [M-WIWI-101478]

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

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

Election block: Wahlpflichtangebot (between 9 and 10 credits)			
T-WIWI-109194	**Dynamic Macroeconomics**	4,5 CR	Brumm
T-WIWI-102785	**Theory of Endogenous Growth**	4,5 CR	Ott
T-WIWI-102840	**Innovationtheory and -Policy**	4,5 CR	Ott

Competence Certificate

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

Students shall be given the ability to

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

Prerequisites

None

Content

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

Recommendation

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

Workload

Total expenditure of time for 9 credits: 270 hours

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

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

M 5.72 Module: Innovation Economics [M-WIWI-101514]

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

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

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

Competence Certificate

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

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

Competence Goal

Students shall be given the ability to

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

Prerequisites

None

Content

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

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

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

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

Recommendation

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

Workload

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

M 5.73 Module: Innovation Management [M-WIWI-101507]

Responsible: Prof. Dr. Marion Weissenberger-Eibl
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)
Economics and Management (Wahlmodule BWL)

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

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

Competence Certificate
See German version.

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

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

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

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

Recommendation

None

Workload

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

M   5.74 Module: Innovative Concepts of Data and Information Management [M-INFO-101208]

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

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

Election block: Innovative Konzepte des Daten- und Informationsmanagements (at least 1 item as well as at least 8 credits)			
T-INFO-101305	Big Data Analytics	5 CR	Böhm
T-INFO-101306	Datamanagement in the Cloud	5 CR	Böhm
T-INFO-101317	Deployment of Database Systems	5 CR	Böhm
T-INFO-101975	Consulting in Practice	1,5 CR	Böhm
T-INFO-101976	Project Management in Practice	1,5 CR	Böhm
T-INFO-101977	Selling IT-Solutions Professionally	1,5 CR	Böhm
T-INFO-101257	Mechanisms and Applications of Workflow Systems	5 CR	Mülle
T-INFO-105742	Big Data Analytics 2	3 CR	Böhm
T-INFO-108377	Data Privacy: From Anonymization to Access Control	3 CR	Böhm

Competence Certificate
Siehe Teilleistung.

Competence Goal
The students

- know the research area of information systems in its various facets and are able to do scientific work in this area,
- are able to develop complex information systems on their own,
- are able to structure and manage complex projects in the field of information systems with unpredictable difficulties,
- are able to explain and to discuss complex aspects of the topics covered by this module with both experts and informed outsiders.

Prerequisites
None

Content
This module aims at exposing students to modern information management, both, in 'breadth´ and 'depth´. We achieve 'breadth´ by means of a close inspection and comparison of different systems and their respective aims. We achieve 'depth´ by means of an extensive examination of the underlying concepts and design alternatives, their assessment as well as by discussing applications.

Annotation
The courses of this module are offered irregularly. Nonetheless, it is guaranteed that the module can be passed anytime.

M 5.75 Module: Insurance Management II [M-WIWI-101449]

Responsible: Prof. Dr. Ute Werner
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule BWL)

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

Election block: Wahlpflichtangebot (9 credits)			
T-WIWI-102601	Insurance Marketing	4,5 CR	Schwake
T-WIWI-102648	Insurance Production	4,5 CR	Werner
T-WIWI-102637	Current Issues in the Insurance Industry	2 CR	Heilmann
T-WIWI-102636	Insurance Risk Management	2,5 CR	Maser
T-WIWI-102649	Risk Communication	4,5 CR	Werner
T-WIWI-102797	P&C Insurance Simulation Game	3 CR	Werner
T-WIWI-102603	Principles of Insurance Management	4,5 CR	Werner
T-WIWI-102841	Modelling, Measuring and Managing of Extreme Risks	2,5 CR	Werner

Competence Certificate
From 01.10.2017 (winter term 2017/2018) the module is no longer available.

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

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

Competence Goal
See German version.

Prerequisites
It is only possible to choose this module in combination with the module *Insurance Management I*. The module is passed only after the final partial exam of *Insurance Management I* has been passed.

Modeled Conditions
The following conditions have to be fulfilled:

1. The module M-WIWI-101469 – Insurance Management I must have been started.

Content
See German version.

Recommendation
The courses chosen from the modules Insurance Management I or Insurance Management II are supposed to complement each other. Advice and information is available from the person responsible for the examination process at the Insurance Department of FBV.

Annotation
Please note:

- T-WIWI-102636 Insurance Risk Management will be offered as a seminar starting summer term 2017.
- T-WIWI-102797 P+C Insurance Simulation Game will not be offered anymore from winter term 2016/2017 on;
- T-WIWI-102603 Principles of Insurance Management will be offered latest until summer term 2017 (beginners only);
- T-WIWI-102648 Insurance Production will be offered latest until summer term 2017 (beginners only);
- T-WIWI-102636 Insurance Risk Management will be offered latest until summer term 2017 (beginners only);
- T-WIWI-102649 Risk Communication will be offered latest until winter term 2017/2018 (beginners only);
- T-WIWI-102841 Modelling, Measuring and Managing of Extreme Risks will be offered latest until summer term 2017 (beginners only).

Workload

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

| **M** | **5.76 Module: Intellectual Property Law [M-INFO-101215]** |

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

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

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

Prerequisites
None

M 5.77 Module: Intelligent Risk and Investment Advisory [M-WIWI-103247]

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

Credits	Language	Level	Version
9	Englisch	4	3

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

Competence Certificate

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

The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

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

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

Prerequisites

None.

Content

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

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

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

Recommendation
None

Annotation
See respective lecture

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

M	5.78 Module: Intelligent Systems and Services [M-WIWI-101456]

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

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

Election block: Wahlplfichtangebot (between 9 and 10 credits)			
T-WIWI-102661	Database Systems and XML neu	5 CR	Oberweis
T-WIWI-106423	Information Service Engineering neu	5 CR	Sack
T-WIWI-102666	Knowledge Discovery neu	5 CR	Sure-Vetter
T-WIWI-103523	Advanced Lab Informatics neu	4 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner
T-WIWI-105801	Service Oriented Computing neu	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.

Algorithms for Internet Applications [T-WIWI-102658]: The examination will be offered latest until summer term 2017 (repeaters only).

Competence Goal

Students

- know the different machine learning procedures for the supervised as well as the unsupervised learning,
- identify the pros and cons of the different learning methods,
- apply the discussed network learning methods in specific scenarios,
- compare the practicality of methods and algorithms with alternative approaches.

Prerequisites

None

Content

In the broader sense learning systems are understood as biological organisms and artificial systems which are able to change their behavior by processing outside influences. Network leaning methods based on symbolic, statistic and neuronal approaches are the focus of Computer Sciences.

In this module the most important network learning methods are introduced and their applicability is discussed with regard to different information sources such as data texts and images considering especially procedures for knowledge acquirement via data and text mining, natural analogue procedures as well as the application of organic learning procedures within the finance sector.

Annotation

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

M 5.79 Module: Introduction to Video Analysis [M-INFO-100736]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101273	Introduction to Video Analysis	3 CR	Beyerer

M   **5.80 Module: Lab Course: Natural Language Processing and Software Engineering [M-INFO-103138]**

Responsible:	Prof. Dr. Walter Tichy
Organisation:	KIT Department of Informatics
Part of:	Informatics

Credits	Language	Level	Version
5	Deutsch	4	1

Mandatory			
T-INFO-106239	Lab Course: Natural Language Processing and Software Engineering	5 CR	Tichy

M 5.81 Module: Lab: Graph Visualization in Practice [M-INFO-103302]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Language	Level	Version
5	Deutsch	4	1

Mandatory			
T-INFO-106580	Lab: Graph Visualization in Practice	5 CR	Wagner

M   5.82 Module: Laboratory Course Algorithm Engineering [M-INFO-102072]

Responsible: Prof. Dr. Peter Sanders
                   Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Language	Level	Version
6	Each term	Deutsch/Englisch	4	1

Mandatory			
T-INFO-104374	Laboratory Course Algorithm Engineering	6 CR	Sanders, Wagner

M 5.83 Module: Language Technology and Compiler [M-INFO-100806]

Responsible: Prof. Dr.-Ing. Gregor Snelting
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101343	Language Technology and Compiler	8 CR	Snelting

M 5.84 Module: Machine Learning [M-WIWI-103356]

Responsible:	Prof. Dr.-Ing. Johann Marius Zöllner
Organisation:	KIT Department of Economics and Management
Part of:	**Informatics**

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

Election block: Wahlpflichtangebot (between 9 and 10 credits)			
T-WIWI-106340	**Machine Learning 1 - Basic Methods** neu	5 CR	Zöllner
T-WIWI-106341	**Machine Learning 2 – Advanced Methods** neu	5 CR	Zöllner
T-WIWI-109985	**Project Lab Cognitive Automobiles and Robots** neu	4 CR	Zöllner
T-WIWI-109983	**Project Lab Machine Learning** neu	4 CR	Zöllner

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

- Students gain knowledge of the basic methods in the field of machine learning.
- Students understand advanced concepts of machine learning and their application.
- Students can classify, formally describe and evaluate methods of machine learning.
- Students can use their knowledge to select suitable models and methods for selected problems in the field of machine learning.

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The module **M-INFO-100817 - Machine Learning 1 - Basic Methods** must not have been started.
2. The module **M-INFO-100855 - Machine Learning 2 - Advanced Methods** must not have been started.

Content

The subject area of ??machine intelligence and, in particular, machine learning, taking into account real challenges of complex application domains, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The lecture "Machine Learning 1" covers both symbolic learning methods such as inductive learning (learning from examples, learning by observation), deductive learning (explanation-based learning) and learning from analogies, as well as subsymbolic techniques such as neural networks, support vector machines, genetics Algorithms and reinforcement learning. The lecture introduces the basic principles as well as fundamental structures of learning systems and the learning theory and examines the previously developed algorithms. The design and operation of learning systems is presented and explained in some examples, especially in the fields of robotics, autonomous mobile systems and image processing.

The lecture "Machine Learning 2" deals with advanced methods of machine learning such as semi-supervised and active learning, deep neural networks (deep learning), pulsed networks, hierarchical approaches, e.g. As well as dynamic, probabilistic relational methods. Another focus is the embedding and application of machine learning methods in real systems.

The lecture introduces the latest basic principles as well as extended basic structures and elucidates previously developed algorithms. The structure and the mode of operation of the methods and methods are presented and explained by means of some application scenarios, especially in the field of technical (sub) autonomous systems (robotics, neurorobotics, image processing, etc.).

Annotation

This new module can be chosen from summer term 2017.

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

M   5.85 Module: Machine Vision [M-INFO-101239]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: Informatics

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

Election block: MVW Pflichtblock (at least 1 item as well as at least 3 credits)		
T-INFO-101273	Introduction to Video Analysis	3 CR	Beyerer
T-INFO-101292	Image Data Compression	3 CR	Beyerer, Pak
T-INFO-101363	Automated Visual Inspection and Image Processing	6 CR	Beyerer
Election block: MVW – Wahlpflicht (at least 1 item as well as at least 6 credits)		
T-INFO-101362	Pattern Recognition	3 CR	Beyerer
T-INFO-101347	Computer Vision for Human-Computer Interaction	6 CR	Stiefelhagen
T-INFO-101297	Biometric Systems for Person Identification	3 CR	Stiefelhagen
T-INFO-105943	Practical Course Computer Vision for Human-Computer Interaction	3 CR	Stiefelhagen
T-INFO-109796	Deep Learning for Computer Vision	3 CR	Stiefelhagen

M 5.86 Module: Management Accounting [M-WIWI-101498]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: **Economics and Management (Wahlmodule WIWI)**
Economics and Management (Wahlmodule BWL)

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

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

Competence Certificate
The assessment is carried out as partial exams (according to Section 4 (2), 13 SPO) of the courses of this module. The assessment procedures are described for each course of the module separately.
The overall grade of the module is the average of the grades for each course weighted by the credits
and truncated after the first decimal.

Competence Goal
Students
• are familiar with various management accounting methods,

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

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

• have the capacity to devise instruments for organizational control.

Prerequisites
None

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

Annotation
The following courses are part of this module:

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

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

M	**5.87 Module: Market Engineering [M-WIWI-101446]**

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

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

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

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

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

Competence Goal
The students

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

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

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

Recommendation
None

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

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

M 5.88 Module: Marketing Management [M-WIWI-101490]

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

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

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

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

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

Competence Goal
Students

- have an advanced knowledge about central marketing contents

- have a fundamental understanding of the marketing instruments

- know and understand several strategic concepts and how to implement them

- are able to implement their extensive marketing knowledge in a practical context

- know several qualitative and quantitative approaches to prepare decisions in Marketing

- have the theoretical knowledge to write a master thesis in Marketing

- have the theoretical knowledge to work in/together with the Marketing department

Prerequisites
None

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

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

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

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

M 5.89 Module: Mathematical Programming [M-WIWI-101473]

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

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

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

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module 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 advanced optimization methods, in particular from continuous and mixed integer programming,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve also challenging optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions,
- identifies drawbacks of the solution methods and, if necessary, is able to makes suggestions to adapt them to practical problems.

Prerequisites

There is no compulsory course in the module.

Content

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

Annotation

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

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

Workload

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

M 5.90 Module: Medical Simulation and Neural Medicine [M-INFO-101250]

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101379	Medical Simulation Systems I	3 CR	Dillmann
T-INFO-101380	Medical Simulation Systems II	3 CR	Dillmann
T-INFO-101262	Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy	3 CR	Dillmann, Spetzger

Competence Goal

On completion of this module students will know the essential components of medical simulation systems and their interaction. The objective is a basic methodological understanding regarding the identification of different problems as-well-as imparting knowledge of fundamental solution approaches for the design of medical simulation systems. The lecture aims to impart the competence to conceive dedicated systems and to make important design decisions correctly.

Students will have an understanding of construction and the complex functions of the human brain and the central nerve system. The basic principles of neural physiology are conveyed. Furthermore, diagnostic procedures are presented, with a focus on computer assisted and robot assisted surgical procedures.

Prerequisites

None

Content

The module gives an overview of medical simulation systems and gives insight into applications of computer science to medical problems. Focus is on the fields of imaging and image processing, intra-operative assistance systems, and modeling and simulation of biological systems.

Furthermore, an overview on neural medicine and a basic understanding of physiology regarding senses and nerves is conveyed, which are an important interface to the innovative research area of neural prosthodontics. A close connection to the areas of imaging, image processing and operative support systems is shown. Concrete application examples from medical diagnosis and therapy are presented.

M 5.91 Module: Meshes and Point Clouds [M-INFO-100812]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101349	Meshes and Point Clouds	3 CR	Prautzsch

M 5.92 Module: Microeconomic Theory [M-WIWI-101500]

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

Credits	Language	Level	Version
9	Deutsch	4	3

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

Competence Certificate

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

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

Competence Goal

Students

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

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

Prerequisites

None

Content

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

Workload

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

M 5.93 Module: Microservice-Based Web Applications [M-INFO-104061]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Language	Level	Version
8	Deutsch	4	1

Mandatory			
T-INFO-101271	Web Applications and Service-Oriented Architectures (II)	4 CR	Abeck
T-INFO-103121	Practical Course: Web Applications and Service-Oriented Architectures (II)	5 CR	Abeck

M 5.94 Module: Mobile Communication [M-INFO-100785]

Responsible:	Prof. Dr. Oliver Waldhorst
	Prof. Dr. Martina Zitterbart
Organisation:	KIT Department of Informatics
Part of:	Informatics

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

Mandatory			
T-INFO-101322	Mobile Communication	4 CR	Waldhorst, Zitterbart

M	**5.95 Module: Models of Parallel Processing [M-INFO-100828]**

Responsible:	Thomas Worsch
Organisation:	KIT Department of Informatics
Part of:	Informatics

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

Mandatory			
T-INFO-101365	Models of Parallel Processing	5 CR	Worsch

Recommendation

Siehe Teilleistung

M 5.96 Module: Module Master Thesis [M-WIWI-101656]

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

Credits	Language	Level	Version
30	Deutsch	4	1

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

Competence Certificate
Examination by two examiners from the two faculties. For details refer to examination regulation. The examiner has to be involved in the degree programme. Involved in the degree programme are the persons that coordinate a module or a lecture of the degree programme.

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

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

This is basically also done under consideration of social and/or ethical aspects.

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

He/she is in a position to sensibly structure a research paper, document results and clearly communicate the results in scientific form.

Prerequisites
Regulated in §11 of the examination regulation.
The requirements for the examiner are described in §14 (2) of the examination regulation.

Modeled Conditions
The following conditions have to be fulfilled:

1. You need to earn at least 60 credits in the following fields:
   - Research Course
   - Informatics
   - Law
   - Economics and Management

Content

- The master thesis shows that the candidate can autonomously investigate a problem from his discipline with scientific methods according to the state-of-the-art of the discipline within a specified time period.
- The master thesis can be written in German or English.
- The topic of a master thesis can be accepted or chosen by each of the examiners according to examination regulation. The examiner accepting a topic for a master thesis acts as the first supervisor of this thesis.
- Writing a master thesis with a supervisor who is not a member of the two faculties participating in the degree programme (Departement of Informatics, Department of Economics and Management) requires acceptance by the examination board of the degree programme. The candidate must have an opportunity to make suggestions for the topic of the master thesis.
- Candidates can write a master thesis in teams. However, this requires that the contribution and performance of each candidate to the thesis is identifiable according to objective criteria which allow a unique delineation of each candidate's contribution. The contribution of each candidate regarded in isolation must fulfill the requirements a individual master thesis.
- In exceptional cases and upon request of the candidate, the chairman of the examination board chooses a supervisor and requests that this supervisor provides the candidate with a topic for the master thesis within 4 weeks after the request. In this case, the candidate is informed by the chairman of the examination board about the topic selected.
- Topic, specification of research tasks and the volume of the master thesis should be limited by the supervisor, so that the master thesis can be written with the assigned workload of 30 credits (750-900h).
- The master thesis must contain the following declaration of the candidate: "I truthfully assure that I have autonomously written this master thesis. I have quoted all sources used precisely and completely. I have labelled everything which has been taken from the work of others with or without change." A master thesis without this declaration will not be accepted.
- The date of the assignment of the topic to a candidate as well as the date of delivery of the master thesis should be registered at the examination board. The candidate can return a topic for the master thesis only one time and only within a period of two month after he has received the topic. Upon a request of the candidate with reasons supporting an extension, the examination board may extend the deadline for the delivery of the master thesis by a maximum of three months. A master thesis not delivered within time is graded as "fail" except when the candidate is not responsible for this delay (e.g. protection of motherhood).
- The master thesis is reviewed and graded by the supervisor and the additional examiner. The team of supervisor and examiner must represent both faculties participating in the degree programme (Department of Informatics, Department of Economics and Management). At least one of the two must be professor or junior professor. If the grades of the supervisor and the examiner differ, the examination board sets the mark within this limit.
- Reviewing and grading should be done within 8 weeks after delivery of the master thesis.

Workload

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

M 5.97 Module: Network Economics [M-WIWI-101406]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: **Economics and Management (Wahlmodule WIWI)**

Credits	Level	Version
9	4	2

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

Competence Certificate

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

The exams are offered at the beginning of the recess period about the subject matter of the latest held lecture. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

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

Competence Goal

The students

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

Prerequisites

None

Content

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

Recommendation

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

Workload

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

M   5.98 Module: Network Security: Architectures and Protocols [M-INFO-100782]

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

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

Mandatory			
T-INFO-101319	Network Security: Architectures and Protocols	4 CR	Zitterbart

| **M** | **5.99 Module: Networking [M-INFO-101206]** |

Responsible:	Prof. Dr. Martina Zitterbart
Organisation:	KIT Department of Informatics
Part of:	**Informatics**

| **Credits** 8 | **Recurrence** Each term | **Duration** 1 semester | **Level** 4 | **Version** 4 |

Election block: Networking (at least 1 item as well as at least 8 credits)			
T-INFO-101321	**Next Generation Internet**	4 CR	Bless, Zitterbart
T-INFO-101319	**Network Security: Architectures and Protocols**	4 CR	Zitterbart
T-INFO-104386	**Practical Course Protocol Engineering**	4 CR	Zitterbart
T-INFO-101338	**Telematics**	6 CR	Zitterbart

Competence Goal

Each student should be able

- to learn and use the concepts and principals of wired network design
- to identify the flaws and benefits of wired communication systems
- to judge the performance of protocols, wired networks and architectures
- master advanced protocols, architectures and algorithms of wired communication systems

Content

This module details selected aspects of wired communication systems. This includes beside the requirements of secure and multimedia-based communication also the realization and controllability of large communication systems and networks. An important aspect is benchmarking and mastering the used algorithms, protocols and architectures. Also actual developments and applications are in the focus of this module.

M	**5.100 Module: Networking Labs [M-INFO-101204]**

Responsible: Prof. Dr. Hannes Hartenstein
Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: Informatics

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

Election block: Networking Labs (at least 1 item as well as at least 9 credits)			
T-INFO-101323	IT-Security Management for Networked Systems	5 CR	Hartenstein
T-INFO-101319	Network Security: Architectures and Protocols	4 CR	Zitterbart
T-INFO-106061	Access Control Systems: Foundations and Practice	4 CR	Hartenstein

Competence Goal
Each student should be able

- to learn and apply the concepts and principals of wireless network design
- to identify the flaws and benefits of wireless communication systems
- to judge the performance of protocols, wireless networks and architectures
- master advanced protocols, architectures and algorithms of wireless communication systems

Modeled Conditions
The following conditions have to be fulfilled:

1. The module M-INFO-100801 – Telematics must have been passed.

Content
This module details and applies selected aspects of communication systems. This includes beside the requirements of secure and multimedia-based communication also the realization and controllability of large communication systems and networks. An important aspect is benchmarking and mastering the used algorithms, protocols and architectures. Also actual developments and applications are in the focus of this module.

M 5.101 Module: Networking Security - Theory and Praxis [M-INFO-101207]

Responsible:	Prof. Dr. Martina Zitterbart
Organisation:	KIT Department of Informatics
Part of:	**Informatics**

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

Election block: Netzsicherheit - Theorie und Praxis (at least 1 item as well as at least 9 credits)			
T-INFO-101319	**Network Security: Architectures and Protocols**	4 CR	Zitterbart
T-INFO-101323	**IT-Security Management for Networked Systems**	5 CR	Hartenstein
T-INFO-101371	**Security**	6 CR	Hofheinz, Müller-Quade
T-INFO-101390	**Symmetric Encryption**	3 CR	Müller-Quade

Competence Goal

Each student should be able

- to recall the basic security mechanisms and theoretical foundations of networking security and cryptography
- to read and understand actual academic papers
- to judge the security level of actual security solutions
- to identify possible attacks on security solutions

Prerequisites

None

Content

This module details selected aspects of networking security and cryptography in theory and praxis.

M   5.102 Module: Operations Research in Supply Chain Management [M-WIWI-102832]

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

Credits 9	**Language** Deutsch	**Level** 4	**Version** 5

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

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

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

Prerequisites

There is no compulsory course in the module.

Modeled Conditions

The following conditions have to be fulfilled:

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

Content
Supply Chain Management is concerned with the planning and optimization of the entire, inter-company procurement, production and distribution process for several products taking place between different business partners (suppliers, logistics service providers, dealers). The main goal is to minimize the overall costs while taking into account several constraints including the satisfaction of customer demands.
This module considers several areas of SCM. On the one hand, the determination of optimal locations within a supply chain is addressed. Strategic decisions concerning the location of facilities as production plants, distribution centers or warehouses are of high importance for the rentability of Supply Chains. Thoroughly carried out, location planning tasks allow an efficient flow of materials and lead to lower costs and increased customer service. On the other hand, the planning of material transport in the context of supply chain management represents another focus of this module. By linking transport connections and different facilities, the material source (production plant) is connected with the material sink (customer). For given material flows or shipments, it is considered how to choose the optimal (in terms of minimal costs) distribution and transportation chain from the set of possible logistics chains, which asserts the compliance of delivery times and further constraints. Furthermore, this module offers the possibility to learn about different aspects of the tactical and operational planning level in Suppy Chain Mangement, including methods of scheduling as well as different approaches in procurement and distribution logistics. Finally, issues of warehousing and inventory management will be discussed.

Recommendation
Basic knowledge as conveyed in the module*Introduction toOperations Research*[WI1OR] is assumed.

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

Workload
Total effort for 9 credits: ca. 270 hours

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

M 5.103 Module: Optimization under Uncertainty in Information Engineering and Management [M-WIWI-103243]

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

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

Mandatory			
T-WIWI-106545	Optimization under Uncertainty	5 CR	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.

Competence Goal
The students are familiar with the modern concepts of stochastic modeling and are in a position to describe and to analyse simple systems in an adequate way.

Prerequisites
None

Content
Markov chains are no longer a nice theory but an important tool in order to model, analyse, and optimize a stochastic system as it evolves over time.
Topics overview: Markov chains, Poisson Processes.

Annotation
New module starting summer term 2017.

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

Workload
See German version.

M 5.104 Module: Parallel Algorithms [M-INFO-100796]

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

Credits	Duration	Language	Level	Version
5	1 term	Deutsch	4	1

Mandatory			
T-INFO-101333	Parallel Algorithms	5 CR	Sanders

M | 5.105 Module: Pattern Recognition [M-INFO-100825]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-101362	Pattern Recognition	3 CR	Beyerer

M 5.106 Module: Practical Course: Analysis of Complex Data Sets [M-INFO-102807]

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

Credits	Recurrence	Language	Level	Version
4	Each term	Englisch	4	1

Mandatory			
T-INFO-105796	Practical Course: Analysis of Complex Data Sets	4 CR	Böhm

M   5.107 Module: Practical Course: Analyzing Big Data [M-INFO-101663]

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

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

Mandatory			
T-INFO-103202	Analyzing Big Data - Laboratory Course	4 CR	Böhm

M 5.108 Module: Practical Course: Database Systems [M-INFO-101662]

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

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

Mandatory			
T-INFO-103201	Practical Course: Database Systems	4 CR	Böhm

M 5.109 Module: Practical Course: Geometric Modeling [M-INFO-101666]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics

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

Mandatory			
T-INFO-103207	Practical Course: Geometric Modeling	3 CR	Prautzsch

5 MODULES

Module: Practical Course: Implementation and Evaluation of Advanced Data
Mining Approaches for Semi-Structured Data [M-INFO-103128]

M 5.110 Module: Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data [M-INFO-103128]

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

Credits	Language	Level	Version
4	Englisch	4	1

Mandatory			
T-INFO-106219	Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data	4 CR	Böhm

M	**5.111 Module: Practical Course: Smart Data Analytics [M-INFO-103235]**

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: **Informatics**

Credits	**Recurrence**	**Language**	**Level**	**Version**
6	Each summer term	Deutsch	4	1

Mandatory			
T-INFO-106426	**Practical Course: Smart Data Analytics**	6 CR	Beigl

Modeled Conditions

The following conditions have to be fulfilled:

1. The module **M-INFO-101883 – Practical Course: Context Sensitive Ubiquitous Systems** must not have been started.

M 5.112 Module: Private Business Law [M-INFO-101216]

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

Credits	**Language**	**Level**	**Version**
9	Deutsch	4	2

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

Competence Goal
The student

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

Prerequisites
None

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

M 5.113 Module: Public Business Law [M-INFO-101217]

Responsible:	Prof. Dr. Matthias Bäcker
Organisation:	KIT Department of Informatics
Part of:	Law

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

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

Competence Certificate
see course description.

M   5.114 Module: Randomized Algorithms [M-INFO-100794]

Responsible:	Thomas Worsch
Organisation:	KIT Department of Informatics
Part of:	**Informatics**

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

Mandatory			
T-INFO-101331	**Randomized Algorithms**	5 CR	Worsch

M 5.115 Module: Robotics I - Introduction to Robotics [M-INFO-100893]

Responsible:	Prof. Dr.-Ing. Tamim Asfour
Organisation:	KIT Department of Informatics
Part of:	Informatics

Credits	Recurrence	Language	Level	Version
6	Each winter term	Deutsch	4	3

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

M 5.116 Module: Sales Management [M-WIWI-101487]

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

Credits	Duration	Level	Version
9	1 semester	4	6

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

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

Competence Goal
Students

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

Prerequisites
The course "Sales Management and Retailing" is compulsory.

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

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

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

M 5.117 Module: Secure Multiparty Computation [M-INFO-104119]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Language	Level	Version
3	Deutsch	4	1

Mandatory			
T-INFO-108540	Secure Multiparty Computation	3 CR	Müller-Quade

M 5.118 Module: Semantic Technologies [M-WIWI-101457]

Responsible:	Prof. Dr. York Sure-Vetter
Organisation:	KIT Department of Economics and Management
Part of:	**Informatics**

Credits	Recurrence	Duration	Level	Version
8	Once	1 semester	4	1

Election block: Wahlplfichtangebot (between 8 and 10 credits)			
T-WIWI-102874	**Semantic Web Technologies**	5 CR	Sure-Vetter
T-WIWI-103112	**Web Science**	5 CR	Sure-Vetter
T-WIWI-103523	**Advanced Lab Informatics**	4 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner
T-WIWI-103480	**Seminar in Informatics B (Master)**	3 CR	Professorenschaft des Fachbereichs Informatik

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

The student

- understands the koncepts behind Semantic Web and Linked Data technologies
- develops ontologies to be employed in semantic web-based applications and chooses suitable representation languages,
- is familiar with approaches in the area of knowledge representation and modelling,
- is able to transfer the methods and technologies of semantic web technologies to new application sectors,
- evaluates the potential of semantic web for new application sectors,
- understands the challenges in the areas of Data and system integration on the web is able to develop solutions.

Prerequisites

None

Content

The module Semantic Technologies covers the basics, methods and applications for intelligent systems in the World Wide Web. Fundamental to this are the scalable provision of knowledge, the provision of data as linked data, and methods for analyzing networks.Formal basics and practical aspects such as knowledge modelling and available tools for representation languages for ontologies are dealt with in detail. Methods for implementing intelligent systems on the World Wide Web will also be clarified and applications such as Web 2.0 or Service Science will be discussed and evaluated.Furthermore, methods for network analysis and the resulting findings are taught. These findings can be used to design recommendation systems and explain social networking phenomena. A variety of procedures exist to identify patterns that, if interpreted valuable, may provide previously unknown insights. This information can be predictive or descriptive.

Workload

The total workload for this module is approximately 240 hours. For further information see German version.

M 5.119 Module: Seminar Module Economic Sciences [M-WIWI-102736]

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

Credits	Language	Level	Version
3	Deutsch	4	1

Election block: Wahlpflichtangebot (1 item)			
T-WIWI-103474	**Seminar in Business Administration A (Master)**	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103478	**Seminar in Economics A (Master)**	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre
T-WIWI-103481	**Seminar in Operations Research A (Master)**	3 CR	Nickel, Rebennack, Stein
T-WIWI-103483	**Seminar in Statistics A (Master)**	3 CR	Grothe, Schienle

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 5.120 Module: Seminar Module Informatics [M-INFO-102822]

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

Part of: Research Course

Credits	Recurrence	Language	Level	Version
3	Each term	Deutsch/Englisch	4	1

Election block: Seminar Informatik (1 item)			
T-INFO-104336	Seminar Informatics A	3 CR	Abeck
T-WIWI-103480	Seminar in Informatics B (Master)	3 CR	Professorenschaft des Fachbereichs Informatik

M 5.121 Module: Seminar Module Law [M-INFO-101218]

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

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

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

5.122 Module: Service Analytics [M-WIWI-101506]

Responsible:	Prof. Dr. Hansjörg Fromm Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)** **Economics and Management (Wahlmodule BWL)**

Credits	Language	Level	Version
9	Deutsch	4	5

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

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

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

Competence Goal
Students

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

Prerequisites
None

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

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

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

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

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

M 5.123 Module: Service Computing [M-WIWI-102827]

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

Credits	Language	Level	Version
9	Deutsch	4	1

Election block: Wahlpflichtangebot (at least 9 credits)			
T-WIWI-102874	Semantic Web Technologies	5 CR	Sure-Vetter
T-WIWI-105801	Service Oriented Computing	5 CR	Sure-Vetter
T-WIWI-102666	Knowledge Discovery	5 CR	Sure-Vetter
T-WIWI-103112	Web Science	5 CR	Sure-Vetter
T-WIWI-103523	Advanced Lab Informatics	4 CR	Oberweis, Sack, Sunyaev, Sure-Vetter, Volkamer, Zöllner
T-WIWI-102670	Practical Seminar Knowledge Discovery	4 CR	Sure-Vetter

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

- demonstrates basic competency in the areas of data and system integration on the web
- learn new Web-based architectures and applications, as well as concepts related to Web 2.0, Cloud Computing and Semantic Web
- know the different machine learning procedures for the supervised as well as the unsupervised learning
- learn methods regarding network theory and network analysis

Prerequisites

None.

Content

Services can be considered from different perspectives. Computer Science considers Services and Web Services traditionally as a piece of software, which fulfills a specific task. By the permanent rise of Cloud Applications, these services become more important. The offered Services and their functionalities have to be described sufficiently in order to be detectable.

In this module the most important network learning methods are introduced and their applicability is discussed with regard to different information sources

Furthermore, network analysis is presented, as well as architectures and descriptions for Services.

Thereby, the practical usability of the presented methods and algorithms in their particular fields of application are compared.

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 5.124 Module: Service Design Thinking [M-WIWI-101503]

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

Organisation: KIT Department of Economics and Management

Part of: **Economics and Management (Wahlmodule WIWI)**
Economics and Management (Wahlmodule BWL)

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

Mandatory			
T-WIWI-102849	Service Design Thinking	9 CR	Satzger, Weinhardt

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

Competence Goal

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

Prerequisites
None

Content

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

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

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

Annotation
Due to practical project work as a component of the program, access is limited.
The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.
For more information on the application process and the program itself are provided in the module component description and the program's website (http://sdt-karlsruhe.de).
Furthermore, the KSRI conducts an information event for applicants every year in May.
This module is part of the KSRI Teaching Program „Digital Service Systems". For more information see the KSRI Teaching website: www.ksri.kit.edu/teaching.

Workload

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

M 5.125 Module: Service Economics and Management [M-WIWI-102754]

Responsible:	Prof. Dr. Gerhard Satzger
	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**
	Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Deutsch	4	2

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

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

None

Content

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

Recommendation

None

Annotation

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

Workload

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

M 5.126 Module: Service Innovation, Design & Engineering [M-WIWI-102806]

Responsible:	Prof. Dr. Alexander Mädche
	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	**Economics and Management (Wahlmodule WIWI)**
	Economics and Management (Wahlmodule BWL)

Credits	Language	Level	Version
9	Deutsch	4	2

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

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

Dependencies between courses:

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

Content

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

Recommendation

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

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

Annotation

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

Workload

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

M 5.127 Module: Service Management [M-WIWI-101448]

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

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Wahlmodule WIWI)
Economics and Management (Wahlmodule BWL)

Credits	Level	Version
9	4	4

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

Competence Certificate

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

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

Competence Goal

The students

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

Prerequisites

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

Content

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

Recommendation

None

Workload

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

M   5.128 Module: Service Operations [M-WIWI-102805]

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

Credits	Language	Level	Version
9	Deutsch	4	5

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

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO), whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

Students

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

Prerequisites

There is no compulsory course in the module.

Content

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

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

Recommendation

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

Annotation

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

Workload

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

| M | **5.129 Module: Software Methods [M-INFO-101202]** |

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: Informatics

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

Election block: Software-Methodik (at least 1 item as well as at least 9 credits)			
T-INFO-101381	Software Architecture and Quality	3 CR	Reussner
T-INFO-101256	Software-Evolution	3 CR	Reussner
T-INFO-101272	Natural Language Processing and Software Engineering	3 CR	Tichy
T-INFO-101278	Model Driven Software Development	3 CR	Reussner
T-INFO-101335	Empirical Software Engineering	4 CR	Tichy
T-INFO-101300	Requirements Engineering	3 CR	Koziolek

Competence Goal

The students learn the foundations and advanced methods for systematic planning, design, implementation, evaluation and enhancement of software systems. By acquiring knowledge and capabilities to critically evaluate modern technologies, the students are enabled to use these technologies purposefully and effectively. Apart from functional viewpoints and software properties, extra-functional properties such as security and performance are taught. Additionally, an overview of current research topics and challenges are offered.

Prerequisites

None

Content

The content is explained in the course descriptions.

M   5.130 Module: Software Systems [M-INFO-101201]

Responsible:	Prof. Dr. Ralf Reussner
Organisation:	KIT Department of Informatics
Part of:	Informatics

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

Election block: Software-Systeme (at least 1 item as well as at least 9 credits)			
T-INFO-101381	Software Architecture and Quality	3 CR	Reussner
T-INFO-101256	Software-Evolution	3 CR	Reussner
T-INFO-101272	Natural Language Processing and Software Engineering	3 CR	Tichy
T-INFO-101278	Model Driven Software Development	3 CR	Reussner
T-INFO-101339	Software Development for Modern, Parallel Platforms	3 CR	Tichy
T-INFO-101325	Multicore Computers and Computer Clusters	4 CR	Tichy
T-INFO-101281	Formal Systems II: Application	5 CR	Beckert
T-INFO-101378	Formal Systems II: Theory	5 CR	Beckert
T-INFO-101300	Requirements Engineering	3 CR	Koziolek

Competence Goal

In the courses that comprise this module, students learn different approaches and techniques for systematic and high-quality development of software systems, e.g. requirements engineering, implementing components and services, use of parallelism and multi-core platforms, as well as the verification of created software systems.

Prerequisites

None

Content

The content will be explained in the course descriptions.

M 5.131 Module: Stochastic Optimization [M-WIWI-103289]

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

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

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

Competence Certificate

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

The assessment procedures are described for each course of the module 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 advanced stochastic optimization methods, in particular, ways to algorithmically exploit the special model structures,
- knows the indispensable methods and models for quantitative analysis of stochastic optimization problems,
- models and classifies stochastic optimization problems and chooses the appropriate solution methods to solve also challenging stochastic optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions,
- identifies drawbacks of the solution methods and, if necessary, is able to makes suggestions to adapt them to practical problems.

Prerequisites

There is no compulsory course in the module.

Content

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

Recommendation

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

Annotation

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

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

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

| M | 5.132 Module: Subdivision Algorithms [M-INFO-101864] |

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Language	Level	Version
5	Deutsch	4	1

Mandatory			
T-INFO-103550	Subdivision Algorithms	5 CR	Prautzsch

Prerequisites
None

M 5.133 Module: Telematics [M-INFO-100801]

Responsible:	Prof. Dr. Martina Zitterbart
Organisation:	KIT Department of Informatics
Part of:	**Informatics**

Credits	**Recurrence**	**Duration**	**Language**	**Level**	**Version**
6	Each winter term	1 term	Deutsch	4	1

Mandatory			
T-INFO-101338	**Telematics**	6 CR	Zitterbart

M   5.134 Module: Theory and Practice of Data Warehousing and Mining [M-INFO-101256]

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

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

Election block: Praktikum (at most 1 item as well as at most 4 credits)			
T-INFO-103202	Analyzing Big Data - Laboratory Course	4 CR	Böhm
T-INFO-105796	Practical Course: Analysis of Complex Data Sets	4 CR	Böhm
T-INFO-106219	Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data	4 CR	Böhm
T-INFO-103201	Practical Course: Database Systems	4 CR	Böhm
Election block: Vorlesung (at most 5 credits)			
T-INFO-101305	Big Data Analytics	5 CR	Böhm
T-INFO-105742	Big Data Analytics 2	3 CR	Böhm
T-INFO-101317	Deployment of Database Systems	5 CR	Böhm
T-INFO-101306	Datamanagement in the Cloud	5 CR	Böhm
T-INFO-108377	Data Privacy: From Anonymization to Access Control	3 CR	Böhm

Competence Goal

The students

- know the research area of information systems in its various facets and are able to do scientific work in this area,
- are able to explain and to discuss complex aspects of the topics covered by this module with both experts and informed outsiders,
- know the concepts, algorithms, techniques and selected tools in the areas of data warehousing and data mining,
- are familiar with the practical challenges of data analysis and are able to develop respective solutions on their own.

Prerequisites

None

Content

This module aims at exposing students to modern information management, both, in 'breadth´ and 'depth´. We achieve 'breadth´ by means of a close inspection and comparison of different systems and their respective aims. We achieve 'depth´ by means of an extensive examination of the underlying concepts and design alternatives, their assessment as well as by discussing applications. In particular, we look at data warehousing and mining techniques not only from a theoretical point of view but deploy and realise such technologies in a practical course.

Annotation

The courses of this module are offered irregularly. Nonetheless, it is guaranteed that the module can be passed anytime.

M   5.135 Module: Transport Infrastructure Policy and Regional Development [M-WIWI-101485]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Wahlmodule WIWI)

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

Election block: Wahlpflichtangebot (2 items)			
T-WIWI-103107	Spatial Economics	4,5 CR	Ott
T-WIWI-100007	Transport Economics	4,5 CR	Mitusch, Szimba

Competence Certificate
The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The exams are offered at the beginning of the recess period about the subject matter of the latest held lecture. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately. The overall grade for the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal
The students

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

Prerequisites
None

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

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

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

| **M** | **5.136 Module: Ubiquitous Computing [M-INFO-100789]** |

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics

Credits	Recurrence	Duration	Language	Level	Version
5	Each winter term	1 term	Deutsch/Englisch	4	1

Mandatory			
T-INFO-101326	Ubiquitous Computing	5 CR	Beigl

M   5.137 Module: Ubiquitous Computing [M-WIWI-101458]

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

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

Mandatory		
T-INFO-101326	Ubiquitous Computing	5 CR	Beigl
Election block: Ergänzungsangebot (between 4 and 5 credits)		
T-WIWI-102761	Advanced Lab in Ubiquitous Computing	4 CR	Beigl, Schmeck
T-INFO-101323	IT-Security Management for Networked Systems	5 CR	Hartenstein

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

The student

- gets comprehensive knowledge about topics in the area of Ubiquitous Computing
- can design and evaluate ubiquitous systems in different application areas
- acquires appropriate knowledge for addressing specialized aspects in the area of ubiquitous computing

Prerequisites

See German version

Content

Ubiquitous information technology (Ubiquitous Computing) addresses the ubiquitous (or pervasive) availability of information processing. The availability of these systems has the objective to facilitate the operational environment in technical scenarios or in daily life of humans and to enrich it with new capabilities. This module provides fundamentals of ubiquitous computing and further topics like network and Internet technologies, security aspects, the analysis of autonomously operating systems in Organic Computing and also the utilisation of information and communication technologies in highly decentralized energy systems.

Workload

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

| M | **5.138 Module: Wearable Robotic Technologies [M-INFO-103294]** |

Responsible:	Prof. Dr.-Ing. Tamim Asfour
	Prof. Dr.-Ing. Michael Beigl
Organisation:	KIT Department of Informatics
Part of:	Informatics

Credits	Language	Level	Version
4	Deutsch/Englisch	4	2

Mandatory			
T-INFO-106557	Wearable Robotic Technologies neu	4 CR	Asfour, Beigl

Competence Goal

The students have received fundamental knowledge about wearable robotic technologies and understand the requirements for the design, the interface to the human body and the control of wearable robots. They are able to describe methods for modelling the human neuromusculoskeletal system, the mechatronic design, fabrication and composition of interfaces to the human body. The students understand the symbiotic human–machine interaction as a core topic of Anthropomatics and have knowledge of state of the art examples of exoskeletons, ortheses and protheses.

Content

The lecture starts with an overview of wearable robot technologies (exoskeletons, prostheses and ortheses) and its potentials, followed by the basics of wearable robotics. In addition to different approaches to the design of wearable robots and their related actuator and sensor technology, the lecture focuses on modeling the neuromusculoskeletal system of the human body and the physical and cognitive human-robot interaction for tightly coupled hybrid human-robot systems. Examples of current research and various applications of lower, upper and full body exoskeletons as well as prostheses are presented.

M 5.139 Module: Web Data Management [M-WIWI-101455]

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

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

Mandatory			
T-WIWI-102874	Semantic Web Technologies	5 CR	Sure-Vetter
Election block: Ergänzungsangebot (between 4 and 5 credits)			
T-WIWI-103112	Web Science	5 CR	Sure-Vetter
T-WIWI-103523	Advanced Lab Informatics	4 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

- develop ontologies for semantic web technologies und choose suitable representation languages,
- are able to provide data and applications via a cloud-based infrastructure
- transfer the methods and technologies of semantic web technologies and cloud computing to new application sectors,
- evaluate the potential of semantic web technologies and the cloud computing approaches for new application sectors.

Prerequisites

The lecture *Semantic Web Technologies* [2511310] is obligatory and has to be absolved.

Content

The module Web Data Management covers the basic principles, methods and applications for intelligent systems in the World Wide Web. Cloud Services are essential for the decentralized, scalable provision of data and applications as well as the methods of semantic web based on the description of data and services via metadata in form of so called ontologies.

Formal principles and practical aspects such as knowledge modeling and available representation language tools for ontologies are covered in detail. Methods for the realization of intelligent systems within the World Wide Web are treated and applications as in Web 2.0 or Service Science are discussed and evaluated.

Furthermore the application of modern Cloud technologies for the use of software and hardware as a service via internet is introduced. Cloud technologies allow the efficient implementation of applications on distributed computer clusters and permit a high scalability as well as new business models in the internet.

Workload

See German version.

M   5.140 Module: Wireless Networking [M-INFO-101203]

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

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

Election block: Wireless Networking (at least 1 item as well as at least 8 credits)			
T-INFO-101337	Internet of Everything	4 CR	Zitterbart
T-INFO-101322	Mobile Communication	4 CR	Waldhorst, Zitterbart
T-INFO-101326	Ubiquitous Computing	5 CR	Beigl
T-INFO-101319	Network Security: Architectures and Protocols	4 CR	Zitterbart

Competence Goal
Each student should be able

- to learn and use the concepts and principals of wireless network design
- to identify the flaws and benefits of wireless communication systems
- to judge the performance of protocols, wireless networks and architectures
- master advanced protocols, architectures and algorithms of wireless communication systems

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-INFO-101338 - Telematics must have been passed.

Content
This module details selected aspects of wireless communication systems. This includes beside the requirements of secure and multimedia-based communication also the realization and controllability of large communication systems and networks. An important aspect is benchmarking and mastering the used algorithms, protocols and architectures. Also actual developments and applications are in the focus of this module.

6 Courses

T   6.1 Course: A closer look at Social Innovation [T-WIWI-109932]

Responsible:	Dr. Daniela Beyer
	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovationsmanagement

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Irregular	1

Events					
SS 2019	2545105	Soziale Innovation unter die Lupe genommen	2 SWS	Seminar (S)	Beyer

Exams				
SS 2019	7900017	Soziale Innovationen unter die Lupe genommen	Prüfung (PR)	Weissenberger-Eibl

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation). The grade consists of an innovation plan (comparable to an exposé) (15%), a guideline interview (25%), a presentation of the results (20%) and a seminar paper (40%).

Prerequisites

None

Recommendation

The previous attendance of the lecture Innovation Management is recommended.

T   6.2 Course: Access Control Systems: Foundations and Practice [T-INFO-106061]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: M-INFO-101204 - Networking Labs
M-INFO-101210 - Dynamische IT-Infrastrukturen
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each term	1

Events					
SS 2019	2400089	Access Control Systems: Foundations and Practice	2 SWS	Lecture (V)	Grundmann, Hartenstein, Neudecker
Exams					
WS 18/19	7500278	Access Control Systems: Foundations and Practice	Prüfung (PR)		Hartenstein

T 6.3 Course: Advanced Game Theory [T-WIWI-102861]

Responsible:	Prof. Dr. Karl-Martin Ehrhart
	Prof. Dr. Clemens Puppe
	Prof. Dr. Johannes Philipp Reiß
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101453 - Angewandte strategische Entscheidungen
	M-WIWI-101500 - Microeconomic Theory
	M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance

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

Events					
WS 18/19	2521533	Advanced Game Theory	2 SWS	Lecture (V)	Puppe, Ehrhart, Müller
WS 18/19	2521534	Übung zu Advanced Game Theory	1 SWS	Practice (Ü)	Müller, Puppe
Exams					
WS 18/19	7900232	Advanced Game Theory		Prüfung (PR)	Puppe

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
Basic knowledge of mathematics and statistics is assumed.

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

V	**Advanced Game Theory**	**Lecture (V)**
	2521533, WS 18/19, 2 SWS, Open in study portal	

Learning Content
This course offers an advanced and rigorous treatment of game theory.

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

T 6.4 Course: Advanced Lab in Ubiquitous Computing [T-WIWI-102761]

Responsible:	Prof. Dr.-Ing. Michael Beigl
	Prof. Dr. Hartmut Schmeck
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101458 - Ubiquitous Computing

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Irregular	1

Competence Certificate
See German version

Prerequisites
None

Annotation
See German Version

T 6.5 Course: Advanced Lab Informatics [T-WIWI-103523]

Responsible:	Prof. Dr. Andreas Oberweis
	Prof. Dr. Harald Sack
	Prof. Dr. Ali Sunyaev
	Prof. Dr. York Sure-Vetter
	Prof. Dr. Melanie Volkamer
	Prof. Dr.-Ing. Johann Marius Zöllner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101455 - Web Data Management
	M-WIWI-101456 - Intelligente Systeme und Services
	M-WIWI-101457 - Semantische Technologien
	M-WIWI-101477 - Entwicklung betrieblicher Informationssysteme
	M-WIWI-102827 - Service Computing

Type Prüfungsleistung anderer Art	**Credits** 4	**Recurrence** Each term	**Version** 1

Events					
WS 18/19	2512100	Security	4 SWS	Practical course (P)	Baumgart, Volkamer, Mayer
WS 18/19	2512301	Linked Data and the Semantic Web	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Acosta Deibe, Käfer, Heling, Weller
WS 18/19	2512311	Real-World Challenges in Data Science and Analytics	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Nickel, Weinhardt, Zehnder, Brandt
WS 18/19	2512312	Cooperation seminar: Innovative applications on single board computers as well as their economic relevance	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Ott, Weller, Bälz
WS 18/19	2512400	Entwicklung Soziotechnischer Informationssysteme	SWS	Practical course (P)	Sunyaev, Kromat
WS 18/19	2512501	Projektpraktikum Kognitive Automobile und Roboter	3 SWS	Practical course (P)	Zöllner
WS 18/19	2512600	Projektpraktikum Information Service Engineering	2 SWS	Practical course (P)	Sack
SS 2019	2512101	Praktikum Betriebliche Informationssysteme: Realisierung innovativer Dienste für Studierende	3 SWS	Practical course (P)	Oberweis, Toussaint, Ullrich
SS 2019	2512300	Knowledge Discovery and Data Mining	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Färber, Nguyen, Weller
SS 2019	2513306	Data Science & Real-time Big Data Analytics	2 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Riemer, Zehnder
Exams					
WS 18/19	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
WS 18/19	7900046	Sicherheit		Prüfung (PR)	Volkamer
WS 18/19	7900094	Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON		Prüfung (PR)	Sure-Vetter, Ott
WS 18/19	7900102	Advanced Lab Information Service Engineering		Prüfung (PR)	Sack
WS 18/19	7900107	Advanced Lab Cognitive Automobile and Robots		Prüfung (PR)	Zöllner
WS 18/19	7900115	Development of Sociotechnical Information Systems		Prüfung (PR)	Sunyaev

WS 18/19	7900192	Data Science with Open Data	Prüfung (PR)	Sure-Vetter
SS 2019	7900085	Advanced Lab in Information Systems: Realization of innovative services for students	Prüfung (PR)	Oberweis
SS 2019	7900094	Knowledge Discovery and Data Mining	Prüfung (PR)	Sure-Vetter

Competence Certificate

Advanced Lab "Privacy Friendly Apps":

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of of a practical work in which a software functionality must be implemented and three interim submissions of the software to be developed. The weighting of the individual components will be announced during the first meeting.

All other courses of the Institute AIFB:

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

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

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

Prerequisites

None

Annotation

The title of this course is a generic one. Specific titles and the topics of offered seminars will be announced before the start of a semester in the internet at https://portal.wiwi.kit.edu.

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

V	**Security** 2512100, WS 18/19, 4 SWS, Open in study portal	**Practical course (P)**

Notes

More information on https://ilias.studium.kit.edu/goto.php?target=crs_719271&client_id=produktiv

V	**Linked Data and the Semantic Web** 2512301, WS 18/19, 3 SWS, Open in study portal	**Seminar / Practical course (S/P)**

Description

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

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

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

Notes

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

Learning Content

Topics of interest include, but are not limited to:

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

V	**Real-World Challenges in Data Science and Analytics** 2512311, WS 18/19, 3 SWS, Open in study portal	**Seminar / Practical course (S/P)**

Notes

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

V	**Cooperation seminar: Innovative applications on single board computers as well as their economic relevance** 2512312, WS 18/19, 3 SWS, Open in study portal	**Seminar / Practical course (S/P)**

Description

This seminar is offered cooperatively by the Chair of Web Science (AIFB) and the Chair of Economic Policy (ECON).

The cooperation seminar deals with the technical realization of innovative applications using single board computers such as Arduino (https://www.arduino.cc) or Raspberry Pi (https://www.raspberrypi.org). These single board computers can be extended by various sensors and modules, thus fulfilling a wide range of tasks. Thus, the addition of a camera allows for example gesture and face detection, or the equipment with different sensors enables the measurement of temperature and perception of moving objects.

At the same time, the implications of cost-effective availability of these basic technologies are analyzed from an economic-scientific perspective. The spread and use of these single-board computers, as well as the concepts associated with their success, can have a decisive impact on innovation processes. The reasons and obstacles as well as their relevance to innovation are therefore also addressed from an economic perspective.

Microcomputers such as the Raspberry Pi, for example, are increasingly being used and expanded in the private environment, with numerous applications being possible in the household sector. They can be used as a monitoring system, as a home server or as an electronic func- tion opener. Likewise, due to their low cost, size and ease of use, they can also significantly support the development of innovative processes, for example in the development of prototypes.

Within the scope of this seminar, the possibilities of a single board computer are investigated using the Raspberry Pi. The students are to conceive, realize and present innovative applications in two-teams. Each team is provided with a Raspberry Pi. In addition to the realization of an innovative application, each team has to deal with and discuss an economic science issue. The use of the Raspberry Pi or the underlying concepts from an innovation-economic perspective are to be analyzed.

In addition to the Raspberry Pis, various sensors and expansion modules are also provided and can be purchased after consultation with the supervisors. Furthermore, it may be necessary to develop extensions in Python during the seminar. Previous knowledge in Python and Semantic Web technologies are therefore an advantage but not an imperative requirement.

Notes

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

Learning Content

Topics of interest include, but are not limited to:

- Smart Home Applications
- Environmental measurements
- Gesture control
- Security systems

V	**Entwicklung Soziotechnischer Informationssysteme** 2512400, WS 18/19, SWS, Open in study portal	**Practical course (P)**

Description

The aim of this course is to provide a practical introduction into developing socio-technical information systems, such as web platforms, mobile apps, or desktop applications. Course participants will create (individually or in groups) software solutions for specific problems from various practical domains. The course tasks comprise requirements assessment, system design, and software implementation. Furthermore, course participants will gain insights into software quality assurance methods and software documentation.

Workload

4 ECTS = approx. 120 h

V	**Projektpraktikum Information Service Engineering** 2512600, WS 18/19, 2 SWS, Open in study portal	**Practical course (P)**

Description

The project will be worked on in teams of 3-4 students each, guided by a tutor from the teaching staff. In the winter semester 2018/19 we intend to participate in the "Cod1ng Da V1nc1" Initiative .

The ISEproject course is based on the summer semester lecture "Information Service Engineering". Goal of the course is to work on a research problem in small groups (3-4 students) related to the ISE lecture topics, i.e. Natural Language Processing, Linked Data engineering, and Knowledge Mining. The solution of the given research problemrequires the development of a software implementation.

Required coursework includes:

- Mid term presentation (5-10 min)
- Final presentation (10-15 min)
- Course report (c. 20 pages)
- Participation and contribution of the students during the course
- Software development and delivery

Notes

The ISEproject course can also be credited as a **seminar**.

The project will be worked on in teams of 3-4 students each, guided by a tutor from the teaching staff. In the winter semester 2018/19 we intend to participate in the "Cod1ng Da V1nc1" Initiative .

V	**Knowledge Discovery and Data Mining** 2512300, SS 2019, 3 SWS, Open in study portal	**Seminar / Practical course (S/P)**

Description

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Notes

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

Learning Content

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

Literature

Detailed references are indicated together with the respective subjects. For general background information look up the following textbooks:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

V	**Data Science & Real-time Big Data Analytics** 2513306, SS 2019, 2 SWS, Open in study portal	**Seminar / Practical course (S/P)**

Description

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

T 6.6 Course: Advanced Lab User Studies in Security [T-WIWI-109271]

Responsible:	Prof. Dr. Melanie Volkamer
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-104520 - Human Factors in Security and Privacy

Type Prüfungsleistung anderer Art	Credits 4	Recurrence Each summer term	Version 1

Events					
SS 2019	2512552	**Praktikum User Studies in Security and Privacy**	3 SWS	Practical course (P)	Volkamer, Gerber, Mayer
Exams					
WS 18/19	7900129	**Advanced Lab User Studies in Security**		Prüfung (PR)	Volkamer
SS 2019	7900129	**Advanced Lab User Studies in Security**		Prüfung (PR)	Volkamer

Competence Certificate

The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

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

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

Prerequisites

None

T 6.7 Course: Advanced Machine Learning [T-WIWI-109921]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
	Dr. Abdolreza Nazemi
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101470 - Data Science: Advanced CRM

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

Events					
SS 2019	2540535	Advanced Machine Learning	2 SWS	Lecture (V)	Nazemi
SS 2019	2540536	Exercise Advanced Machine Learning	1 SWS	Practice (Ü)	Nazemi

Competence Certificate

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

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites

None

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

V Advanced Machine Learning
2540535, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content
Tentative Course Outline:

- Introduction
- Statistical Inference
- Shrinkage Methods
- Model Assessment and Selection
- Tree-based Machine Learning Algorithms
- Dimensionality Reduction
- Neural Networks and Deep Learning
- Natural Language Processing with Deep Learning
- Support Vector Machine

Workload
Time of attendance

- Attending the lecture: 13 x 90min = 19h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m

Literature

- Alpaydin, E. (2014). Introduction to Machine Learning. Third Edition, MIT Press.
- De Prado, M. L. (2018). Advances in Financial Machine Learning. John Wiley & Sons.
- Goodfellow, I., Bengio, Y., and A. Courville (2017). Deep Learning. MIT Press. (online available)
- Hastie, T., Tibshirani, R., and J. Friedman (2009). Elements of Statistical Learning. Second Edition. Springer. (online available)
- Leskovec, J., Rajaraman, A., Ullman, J. D., (2014). Mining of Massive Datasets. Cambridge University Press. (online available)
- Witten, I. H., Eibe, F., Hall, M. A., Pal, C. J. (2016). Data Mining: Practical Machine Learning Tools and Techniques. Morgan Kaufmann.

| **T** | **6.8 Course: Advanced Management Accounting [T-WIWI-102885]** |

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101510 - Cross-Functional Management Accounting

Type Prüfungsleistung mündlich	Credits 4,5	Recurrence Each winter term	Version 1

Events					
WS 18/19	2579907	Advanced Management Accounting	3 SWS	Lecture (V)	Wouters, Riar
Exams					
WS 18/19	79-2579907-00	Advanced Management Accounting		Prüfung (PR)	Wouters

Competence Certificate
The assessment consists of an oral exam (20 min) taking place in the recess period (according to §4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None.

Recommendation
The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

Annotation
This course is held in English. Lectures and tutorials are integrated.

The course is compulsory and must be examined.

Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters∂kit.edu).

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

| **V** | **Advanced Management Accounting**
2579907, WS 18/19, 3 SWS, Open in study portal | **Lecture (V)** |

Learning Content
The course addresses several topics where management accounting is strongly related to marketing, finance, or organization and strategy, such as customer value propositions, financial performance measures, managing new product development, and technology investment decisions.

Annotation
This course is held in English. Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters?kit.edu).

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

Literature
Literature is mostly made available via ILIAS.

T 6.9 Course: Advanced Statistics [T-WIWI-103123]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101637 - Analytics und Statistik

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

Events					
WS 18/19	2550552	Statistik für Fortgeschrittene	2 SWS	Lecture (V)	Grothe
WS 18/19	2550553	Übung zu Statistik für Fortgeschrittene	2 SWS	Practice (Ü)	Grothe, Kaplan, Coblenz
Exams					
WS 18/19	7900219	Advanced Statistics		Prüfung (PR)	Grothe

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. A bonus program can improve the grade by one grade level (i.e. by 0.3 or 0.4). The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites
None

Annotation
New course starting winter term 2015/2016

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

V Statistik für Fortgeschrittene
2550552, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content
Basic principles
Types of convergence and limit theorems
Multivariate Distributions
Copulas
Simulation techniques, Bootstrap
Statistical Estimation
Statistical Testing
Simulation studies

Literature
Comprehensive lecture notes

T 6.10 Course: Advanced Stochastic Optimization [T-WIWI-106548]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101473 - Mathematische Optimierung
M-WIWI-103289 - Stochastische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Competence Certificate
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites
None.

T 6.11 Course: Advanced Topics in Economic Theory [T-WIWI-102609]

Responsible:	Prof. Dr. Kay Mitusch
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101406 - Netzwerkökonomie
	M-WIWI-101500 - Microeconomic Theory
	M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

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

Competence Certificate

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

The assessment consists of a written exam (60min) (following §4(2), 1 of the examination regulation) at the end of the lecture period or at the beginning of the following semester.

Prerequisites

None

Recommendation

This course is designed for advanced Master students with a strong interest in economic theory and mathematical models. Bachelor students who would like to participate are free to do so, but should be aware that the level is much more advanced than in other courses of their curriculum.

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

V Advanced Topics in Economic Theory
2520527, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content

The course deals with basic elements of modern economic theory. It is divided into two parts. The first part introduces the microeconomic foundations of general equilibrium 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 6.12 Course: Algorithm Engineering [T-INFO-101332]

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

Organisation: KIT Department of Informatics

Part of: M-INFO-100795 - Algorithm Engineering
               M-INFO-101199 - Advanced Algorithms: Design and Analysis
               M-INFO-101200 - Advanced Algorithms: Engineering and Applications
               M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each summer term	1

Events					
SS 2019	2400051	Algorithm Engineering	2/1 SWS	Lecture (V)	Sanders, Lamm
Exams					
WS 18/19	75514	Algorithm Engineering		Prüfung (PR)	Sanders

T   6.13 Course: Algorithmic Methods for Hard Optimization Problems [T-INFO-103334]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: M-INFO-101199 - Advanced Algorithms: Design and Analysis
       M-INFO-101200 - Advanced Algorithms: Engineering and Applications
       M-INFO-101237 - Algorithmische Methoden für schwere Optimierungsprobleme
       M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Irregular	1

T 6.14 Course: Algorithmic Methods for Network Analysis [T-INFO-104759]

Responsible: Prof. Dr. Henning Meyerhenke
Organisation: KIT Department of Informatics
Part of: M-INFO-102400 - Algorithmische Methoden zur Netzwerkanalyse

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Irregular	1

T   6.15 Course: Algorithms for Routing [T-INFO-100002]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: M-INFO-100031 - Algorithmen für Routenplanung
                   M-INFO-101199 - Advanced Algorithms: Design and Analysis
                   M-INFO-101200 - Advanced Algorithms: Engineering and Applications
                   M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	24638	Algorithmen für Routenplanung (mit Übungen)	3 SWS	Lecture / Practice (VÜ)	Wagner, Buchhold, Zeitz, Zündorf, Sauer
Exams					
WS 18/19	7500215	Algorithms for Routing		Prüfung (PR)	Wagner

T   6.16 Course: Algorithms for Visualization of Graphs [T-INFO-104390]

Responsible:	Prof. Dr. Dorothea Wagner
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101199 - Advanced Algorithms: Design and Analysis
	M-INFO-101200 - Advanced Algorithms: Engineering and Applications
	M-INFO-102094 - Algorithmen zur Visualisierung von Graphen
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Irregular	1

Events					
WS 18/19	24118	Algorithmen zur Visualisierung von Graphen	2+1 SWS	Lecture / Practice (VÜ)	Wagner, Mtsentlintze, Radermacher
Exams					
WS 18/19	7500046	Algorithms for Visualization of Graphs		Prüfung (PR)	Wagner

T 6.17 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 - Algorithmen II
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each winter term	1

Events					
WS 18/19	24079	Algorithms II	4 SWS	Lecture (V)	Sanders, Hespe, Lamm
Exams					
WS 18/19	7500245	Algorithms II		Prüfung (PR)	Sanders

T 6.18 Course: Algorithms in Cellular Automata [T-INFO-101334]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: M-INFO-100797 - Algorithmen in Zellularautomaten
M-INFO-101199 - Advanced Algorithms: Design and Analysis
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 5	Recurrence Each summer term	Version 1

Events					
SS 2019	24622	Algorithms for Cellular Automata	3 SWS	Lecture (V)	Worsch, Vollmar
Exams					
WS 18/19	75400001	Algorithms in Cellular Automata		Prüfung (PR)	Worsch

T 6.19 Course: Analyzing and Evaluating Innovation Processes [T-WIWI-108774]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101507 - Innovationsmanagement
	M-WIWI-101507 - Innovationsmanagement

Type Prüfungsleistung anderer Art	**Credits** 3	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	2545108	Innovationsprozesse analysieren und evaluieren	2 SWS	Seminar (S)	Beyer
Exams					
WS 18/19	7900037	Analyzing and Evaluating Innovation Processes		Prüfung (PR)	Weissenberger-Eibl

Competence Certificate
Non exam assessment (following §4(2) 3 of the examination regulation).

Innovation plan (exposé) (20%), Guided interviews/ quantitative survey (20%), presentation of results (20%), seminar paper (about 5 pages per person) (40%).

Prerequisites
None

Recommendation
Prior attendance of the course Innovation Management [2545015] is recommended.

T   6.20 Course: Analyzing Big Data - Laboratory Course [T-INFO-103202]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
M-INFO-101663 - Praktikum: Analyse großer Datenbestände
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung anderer Art	Credits 4	Recurrence Each summer term	Version 2

Events					
SS 2019	24874	Analyzing Big Data Laboratory Course	2 SWS	Practical course (P)	Böhm, Steinbuß
Exams					
SS 2019	7500091	Analyzing Big Data - Laboratory Course		Prüfung (PR)	Böhm

T 6.21 Course: Applied Econometrics [T-WIWI-103125]

Responsible:	Prof. Dr. Melanie Schienle
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101638 - Ökonometrie und Statistik I

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

Exams				
WS 18/19	7900251	Applied Econometrics	Prüfung (PR)	Schienle
WS 18/19	7900280	Applied Econometrics	Prüfung (PR)	Schienle

Competence Certificate

The assessment of this course is a written examination (90 min) according to §4(2), 1 of the examination regulation.

Prerequisites

None

Annotation

The course is not offered regularly.

T 6.22 Course: Artificial Intelligence in Service Systems [T-WIWI-108715]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101448 - Service Management
	M-WIWI-101506 - Service Analytics

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

Events					
WS 18/19	2595650	Artificial Intelligence in Service Systems	2 SWS	Lecture (V)	Kühl
Exams					
WS 18/19	7900253	Artificial Intelligence in Service Systems		Prüfung (PR)	Satzger

Competence Certificate
The assessment consists of a written exam (60 min) according to §4(2), 1 of the examination regulations.

Prerequisites
None

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

V Artificial Intelligence in Service Systems
2595650, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content
Artificial Intelligence and the application of machine learning is becoming more and more popular to solve relevant business challenges. However, it is not only important to be familiar with precise algorithms, but rather a general understanding of the necessary steps with a holistic view—from real-world challenge to successful deployment of an AI. As part of this course, we teach the complete lifecycle of an AI project with a focus on supervised machine learning challenges. We do so by also teaching the use of Python and the required packages like scikit-learn and tensorflow with exemplary data. We then take this knowledge to the more complex case of service systems with different entities (e.g. companies) who interact with each other and show possibilities on how to derive holistic insights. Two possibilities to do so are the use of meta and transfer machine learning, where we teach insights in their theory, design and application.

T 6.23 Course: Asset Pricing [T-WIWI-102647]

Responsible:	Prof. Dr. Martin Ruckes
	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 – Weitere Leistungen
	M-WIWI-101480 – Finance 3
	M-WIWI-101482 – Finance 1
	M-WIWI-101483 – Finance 2
	M-WIWI-101502 – Ökonomische Theorie und ihre Anwendung in Finance

Type Prüfungsleistung schriftlich	**Credits** 4,5	**Recurrence** Each summer term	**Version** 2

Events					
SS 2019	2530555	Asset Pricing	2 SWS	Lecture (V)	Uhrig-Homburg
SS 2019	2530556	Übung zu Asset Pricing	1 SWS	Practice (Ü)	Uhrig-Homburg, Reichenbacher
Exams					
WS 18/19	7900056	Asset Pricing		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

The success control takes place in form of a written examination (75 min) during the semester break (according to §4(2), 1 SPO).

The examination is offered every semester and can be repeated at any regular examination date.

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites

None

Recommendation

We strongly recommend knowledge of the basic topics in investments (bachelor course), which will be necessary to be able to follow the course.

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

V Asset Pricing
2530555, SS 2019, 2 SWS, Open in study portal
Lecture (V)

Description

The lecture deals with the diverse issues arising in the context of measuring and controlling credit risk. At first, the theoretical and empirical relations between ratings, probabilities of default, and credit spreads are analysed. After that, the focus is on the valuation of credit risk. Finally, the management of credit risk, e.g. using credit derivatives and credit portfolio analysis, is examined, and the legal framework and its implications are discussed

Learning Content

This lecture deals with the valuation of risky cash flows. A stochastic discount model and a central equation will be introduced, which form the basis of nearly every valuation model in finance. That includes the valuation of stocks, bonds and derivatives. The first part of the lecture will present the theory, the second part covers empirical questions related to this approach.

Workload

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

Literature
Basic literature

- Asset pricing / Cochrane, J.H. - Rev. ed., Princeton Univ. Press, 2005.

Elective literature

- Investments and Portfolio Management / Bodie, Z., Kane, A., Marcus, A.J. - 9. ed., McGraw-Hill, 2011.
- The econometrics of financial markets / Campbell, J.Y., Lo, A.W., MacKinlay, A.C. - 2. printing, with corrections, Princeton Univ. Press, 1997.

T 6.24 Course: Asymmetric Encryption Schemes [T-INFO-101260]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: M-INFO-101197 - Computersicherheit
M-INFO-101198 - Fortgeschrittene Themen der Kryptographie
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 3	Recurrence Each winter term	Version 1

Events					
WS 18/19	24115	Asymmetric Encryption Schemes	2 SWS	Lecture (V)	Müller-Quade
Exams					
WS 18/19	7500161	Asymmetric Encryption Schemes		Prüfung (PR)	Geiselmann, Müller-Quade

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

V Asymmetric Encryption Schemes
24115, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content
This course presents the theoretical and practical aspects of Public Key Cryptography.

- The most important primitives of cryptography will be covered, as there are: one-way function, hash function, digital signature, public key encryption and digital signatures (RSA, ElGamal), and various methods of key exchange (e.g. Diffie-Hellman) with their strengths and weaknesses.
- In addition to public-key systems, the lecture provides knowledge about algorithms to solve number-theoretic problems on which the security of the systems is based. Thus the choice of parameters and the related level of security of a cryptographic system can be estimated.
- Furthermore, an introduction to provable security is provided, which presents some of the key security concepts (e.g. IND-CCA).
- The combination of cryptographic primitives will be treated on currently used protocols.

T 6.25 Course: Auction Theory [T-WIWI-102613]

Responsible: Prof. Dr. Karl-Martin Ehrhart
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101446 - Market Engineering
M-WIWI-101453 - Angewandte strategische Entscheidungen
M-WIWI-101500 - Microeconomic Theory

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

Events					
WS 18/19	2520408	Auktionstheorie	2 SWS	Lecture (V)	Ehrhart
WS 18/19	2520409	Übungen zu Auktionstheorie	1 SWS	Practice (Ü)	Ehrhart
Exams					
WS 18/19	7900222	Auction 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

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

V Auktionstheorie
2520408, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content
This course deals with the analysis and modeling of auction which are based on game theory. This also includes aspects of applying and designing auctions as well as experiences with auctions. Main topics are:

- Single- and multi-unit auctions
- Selling and procurement auctions
- Electronic auctions (e.g. eBay, C2C, B2B)
- Multi-attributive auctions.

Annotation
We suggest to attend either Game Theory I or Decision Theory beforehand.

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

Literature

- Ehrhart , K.-M. und S. Seifert: Auktionstheorie, Skript zur Vorlesung, KIT, 2011
- Krishna, V.: Auction Theory, Academic Press, Second Edition, 2010
- Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2004
- Ausubel, L.M. und P. Cramton: Demand Reduction and Inefficiency in Multi-Unit Auctions, University of Maryland, 1999

T	**6.26 Course: Automated Financial Advisory [T-WIWI-106495]**

Responsible:	Prof. Dr Maxim Ulrich
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103261 - Disruptive Finanz-technologische Innovationen

Type Prüfungsleistung anderer Art	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Events					
WS 18/19	2500002	Automated Financial Advisory	2 SWS	Seminar (S)	Ulrich
SS 2019	2530372	Automated Financial Advisory	2 SWS	Seminar (S)	Ulrich
Exams					
WS 18/19	7900290	Automated Financial Advisory		Prüfung (PR)	Ulrich
SS 2019	7900124	Automated Financial Advisory		Prüfung (PR)	Ulrich

Competence Certificate

The grade consists of a written thesis and an oral presentation.

Prerequisites

There are two conditions for taking this course:

1. This course is only open for registered students of the module "Disruptive FinTech Innovations".
2. Registered students do also attend in the same semester the lecture "Engineering FinTech Solutions" and the programming internship "Computational FinTech with Python and C++".

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-106193 - Engineering FinTech Solutions must have been started.
2. The course T-WIWI-106496 - Computational FinTech with Python and C++ must have been started.

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

V	**Automated Financial Advisory** 2500002, WS 18/19, 2 SWS, Open in study portal	**Seminar (S)**

Learning Content

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

Workload

The total workload for this course is approximately 90 hours.

Literature

Literature will be distributed during the first lecture.

V	**Automated Financial Advisory** 2530372, SS 2019, 2 SWS, Open in study portal	**Seminar (S)**

Learning Content

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

Workload

The total workload for this course is approximately 90 hours.

Literature

Literature will be distributed during the first lecture.

T   6.27 Course: Automated Planning and Scheduling [T-INFO-109085]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: M-INFO-104447 - Automated Planning and Scheduling

Type Prüfungsleistung mündlich	Credits 5	Recurrence Each winter term	Version 1

Events					
WS 18/19	2400026	Automated Planning and Scheduling	2/1 SWS	Lecture / Practice (VÜ)	Balyo, Sanders, Schreiber
Exams					
WS 18/19	7500236	Automated Planning and Scheduling		Prüfung (PR)	Sanders

T 6.28 Course: Automated Visual Inspection and Image Processing [T-INFO-101363]

Responsible:	Prof. Dr.-Ing. Jürgen Beyerer
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100826 - Automatische Sichtprüfung und Bildverarbeitung
	M-INFO-101238 - Automatische Sichtprüfung
	M-INFO-101239 - Maschinelle Visuelle Wahrnehmung
	M-INFO-101241 - Bildgestützte Detektion und Klassifikation
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	6	Each winter term	1

Events					
WS 18/19	24169	Automated Visual Inspection and Image Processing	4 SWS	Lecture (V)	Beyerer
Exams					
WS 18/19	7500008	Automated Visual Inspection and Image Processing		Prüfung (PR)	Beyerer
SS 2019	7500003	Automated Visual Inspection and Image Processing		Prüfung (PR)	Beyerer

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

V Automated Visual Inspection and Image Processing
24169, WS 18/19, 4 SWS, Open in study portal

Lecture (V)

Description
Topics covered:

- sensors and concepts for image acquisition
- light and colour
- image signals (system theory, Fourier transformation, stochastic processes)
- excursion to wave optics
- pre-processing and image enhancement
- image restoration
- segmentation
- morphological image processing
- texture analysis
- detection
- image pyramids, multi scale analysis and wavelet-transform

Learning Content

- sensors and concepts for image acquisition
- light and colour
- image signals (system theory, Fourier transformation, stochastic processes)
- excursion to wave optics
- pre-processing and image enhancement
- image restoration
- segmentation
- morphological image processing
- texture analysis
- detection
- image pyramids, multi scale analysis and wavelet-transform

T 6.29 Course: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]

Responsible:	Gerd Gutekunst
	Prof. Dr. Berthold Wigger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101511 - Vertiefung Finanzwissenschaft

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

Events					
WS 18/19	2560134	Basics of German Company Tax Law and Tax Planning	3 SWS	Lecture (V)	Wigger, Gutekunst
Exams					
WS 18/19	790unbe	Basics of German Company Tax Law and Tax Planning		Prüfung (PR)	Wigger
SS 2019	790unbe	Basics of German Company Tax Law and Tax Planning		Prüfung (PR)	Wigger

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None

Recommendation

Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course "Öffentliche Einnahmen" beforehand.

T 6.30 Course: Big Data Analytics [T-INFO-101305]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-100768 - Analysetechniken für große Datenbestände
M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 5	Recurrence Each winter term	Version 1

Events					
WS 18/19	24114	Big Data Analytics	3 SWS	Lecture (V)	Böhm
Exams					
WS 18/19	7500087	Big Data Analytics		Prüfung (PR)	Böhm

T 6.31 Course: Big Data Analytics 2 [T-INFO-105742]

Responsible:	Prof. Dr.-Ing. Klemens Böhm
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
	M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
	M-INFO-102233 - Weitere Leistungen
	M-INFO-102773 - Analysetechniken für große Datenbestände 2

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Irregular	1

Events					
SS 2019	2400042	Big Data Analytics 2	2 SWS	Lecture (V)	Böhm
Exams					
WS 18/19	7500190	Big Data Analytics 2		Prüfung (PR)	Böhm

Prerequisites

T 6.32 Course: Biologically Inspired Robot [T-INFO-101351]

Responsible:	Prof. Dr.-Ing. Rüdiger Dillmann
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101251 - Autonome Robotik
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	24619	Biologisch Motivierte Robotersysteme	2 SWS	Lecture (V)	Rönnau, Dillmann
Exams					
WS 18/19	7500346	Biologically Inspired Robot		Prüfung (PR)	Dillmann
SS 2019	7500237	Biologically Inspired Robot		Prüfung (PR)	Dillmann

T   6.33 Course: Biometric Systems for Person Identification [T-INFO-101297]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen
Organisation: KIT Department of Informatics
Part of: M-INFO-101239 - Maschinelle Visuelle Wahrnehmung
                    M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 3	Version 1

Events					
SS 2019	2403011	Biometric Systems for Person Identification	2 SWS	Lecture (V)	Sarfraz
Exams					
WS 18/19	7500043	Biometric Systems for Person Identification	Prüfung (PR)	Stiefelhagen	

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

V   Biometric Systems for Person Identification
2403011, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Description
Biometrics deals with the science of recognizing and identifying humans based on their biometrics traits, such as finger prints, face, iris, gait etc. With the increasing demands put on security and surveillance e.g. safer access control, border control/passports and identifying criminals /law enforcement, biometrics becomes more and more essential and technologies are being developed to solve many issues in this demanding area of research. In this course, the students will learn the fundamental concepts of underlying biometrics technologies, understanding of various techniques for different topics/technologies used in biometrics.

The topics include
- Introduction: Biometrics acquisitions and image processing, basic introduction to the area of computer vision/machine learning applied to biometrics
- Biometrics system: requirements, enrollment, identification/verification, performance metrics
- Biometrics technologies: Overview of different biometrics technologies
- Finger print recognition: image enhancement, state-of-the art techniques, challenges
- Iris recognition: image acquisitions, feature extraction, state-of-the-art techniques, challenges
- Face recognition: introduction, current methods, applications
- Palm print recognition: current methods
- Gait recognition: emerging methods
- Multi-Biometrics: multiple modes of biometrics, fusion strategies
- Risk analysis: attacks, liveness detection, fraud preventio

Learning Content
The student will acquire the basic theoretical and practical understanding of various technologies used in biometrics, the state-of-the-art algorithms used and their analysis. Student will be able to take advance courses in the field of computer vision/pattern recognition on the completion of this course.

Literature
-Tutorials and related scientific papers will be put on the web
-Online material on the topics discussed in the lectures

T 6.34 Course: Blockchains & Cryptofinance [T-WIWI-108880]

Responsible:	Dr. Philipp Schuster
	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101409 - Electronic Markets
	M-WIWI-101446 - Market Engineering
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2
	M-WIWI-101511 - Vertiefung Finanzwissenschaft

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

Events					
WS 18/19	2530567	Blockchains & Cryptofinance	2 SWS	Lecture (V)	Schuster, Uhrig-Homburg
WS 18/19	2530568	Übung zu Blockchains & Cryptofinance	1 SWS	Practice (Ü)	Müller
Exams					
WS 18/19	7900028	Blockchains & Cryptofinance		Prüfung (PR)	Uhrig-Homburg

Competence Certificate
The assessment consists of a written exam (75 min) (§4(2), 1 of the examination regulations).

Prerequisites
None

Recommendation
None

Annotation
New course starting winter term 2018/2019.

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

V Blockchains & Cryptofinance
2530567, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Workload
Gesamtaufwand bei 4,5 Leistungspunkten: ca. 135.0 Stunden

Präsenzzeit: 30 Stunden

Vor – und Nachbereitung der LV: 45.0 Stunden

Prüfung und Prüfungsvorbereitung: 60.0 Stunden

T 6.35 Course: Building Intelligent and Robo-Adviced Portfolios [T-WIWI-106442]

Responsible:	Prof. Dr Maxim Ulrich
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103247 - Intelligente Risiko- und Investitionsberatung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each summer term	1

Competence Certificate

No exam in winter semester 2018/2019.

The exam tests the material of the current semester and takes place during the lecture-free period. Students who don't pass the exam are allowed to re-take the exam.

Details of the grade formation will be announced at the beginning of the event.

Prerequisites

None.

Recommendation

Good skills in applied math modeling (differential equations).

Annotation

The course is not offered regularly.

T 6.36 Course: Business Administration in Information Engineering and Management [T-WIWI-102886]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101409 - Electronic Markets
M-WIWI-101443 - Informationswirtschaft

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	1

Events					
SS 2019	2540500	**Business Administration in Information Engineering and Management**	2 SWS	Lecture (V)	Geyer-Schulz
SS 2019	2540501	**Übungen zu BWL der Informationsunternehmen**	1 SWS	Practice (Ü)	Nazemi
Exams					
WS 18/19	7979537	**Business Administration in Information Engineering and 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

Recommendation
Basic knowledge from Operations Research (linear programming) and from decision theory are expected.

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

V Business Administration in Information Engineering and Management
2540500, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content
In this lecture, classical Business Administration is applied to businesses in an information- and communicationtechnological environment. The process to extract relevant data for decision making from operational accounting systems receives special attention. In order to do so, topics such as activity-based costing and transaction costs models are addressed. The automization of the decision making process in businesses by data bases is another focus of the module. To solve such issues within a company, relevant methods such as decision theory and game theory are lectured. Finally, complex business relevant questions in a dynamically changing environment are adressed by presenting models and methods from system dynamics.

Workload

The total workload for this course is approximately 150 hours (5 credits):

Time of attendance

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

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 40h 00m
- Preparation of the examination: 31h 00m

Sum: 150h 00m

Literature

- G. Bamberg und A. G. Coenenberg (2006). Betriebswirtschaftliche Entscheidungslehre. (13. edition), chapter 1 - 8, pages 1 - 270.
- Russell, S. and Norvig, P. (1995). Artificial Intelligence: A Modern Approach The Intelligent Agent Book. Prentice-Hall, Upper Saddle River. chapter 2, pages 31 - 37.
- Porter, M. E. (1998a). Competitive Advantage: Creating and Sustaining Superior Performance. The Free Press, New York, 2 edition. chapter 1, pages 1 - 30
- Porter, M. E. (1998b). Competitive Strategy: Techniques for Analyzing Industries and Competitors. The Free Press, New York, 2 edition. chapters 1+2, pages 1 - 46
- Horngren, C. T., Datar, S. M., and Foster, G. (2003). Cost Accounting: A Managerial Emphasis. Prentice-Hall, Upper Saddle River, 11 edition. chapter 13, pages 446 - 460
- Cooper,W.W., Seiford, L. M., and Tone, K. (2000). Data Envelopment Analysis. Kluwer Academic Publishers, Boston. chapter 2, pages 21- 25
- Copeland, T. and Weston, F. (1988). Financial Theory and Corporate Policy. Addison-Wesley, Reading, 3 edition. pages 18 - 41 and chapter 4.E, pages 92 - 95].
- Myerson, R. B. (1997). Game Theory. Harvard University Press, London, 3 edition. pages 99-105.
- Milgrom, P. and Roberts, J. (1992). Economics, Organization and Management. Prentice Hill [Chapter 2, pp. 25-39].

T 6.37 Course: Business and IT Service Management [T-WIWI-102881]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101448 - Service Management
	M-WIWI-102754 - Service Economics and Management

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

Events					
WS 18/19	2595484	Business and IT Service Management	2 SWS	Lecture (V)	Satzger
WS 18/19	2595485	Übungen zu Business and IT Service Management	1 SWS	Practice (Ü)	Enders, Seebacher
Exams					
WS 18/19	7900242	Business and IT Service Management		Prüfung (PR)	Satzger

Competence Certificate
The assessment of this course is a written examination (60 min.) (following §4(2), 1 SPOs) and by submitting written papers as part of the exercise (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

Prerequisites
None

Recommendation
None

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

V Business and IT Service Management
2595484, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content
The rapid development of information and communication technology transforms many enterprises towards service-oriented structures, comprising new digital services, new business models and SOA-based process structures within larger service networks. Thus, strategic and operative management of service-oriented enterprises increasingly gains importance. In this course, we want to systematically acquire relevant know-how and apply this to real word examples. Focus will be placed on the interdependencies of business, IT aspects and concepts.

The course will be taught in English. It should provide ample opportunity for active participation of students. The course will integrate presentations of experts from business practice as well as a comprehensive case study ('en bloc' for 1-2 days) in which students will actively work on the strategic service-oriented shift of an enterprise.

Annotation
The credits have been changed from 5 to 4,5.

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature

Fitzsimmons J./Fitzsimmons, M., Service Management, Operations, Strategy and Information Technology, 6. ed., 2007

Maister, David H., Managing The Professional Service Firm, 1997

Teboul, J. , Service is Front Stage: Positioning services for value advantage, 2006

Grönroos, Service Management and Marketing, 2007

Cardoso et al. (Hrsg.) (2015), Fundamentalson Service Systems

Böhmann et al. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79
Vargo, S./Lusch, R. (2004) Evolving to a New Dominant Logic for Marketing, in: JoM68 (1),1–17
Schüritz et al., (2017):Datatizationas the Next Frontier of Servitization,ICIS Proceedings

T 6.38 Course: Business Data Analytics: Application and Tools [T-WIWI-109863]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103117 - Data Science: Data-Driven Information Systems
	M-WIWI-103118 - Data Science: Data-Driven User Modeling

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

Events					
SS 2019	2540466	**Business Data Analytics: Application and Tools**	2 SWS	Lecture (V)	Weinhardt, Dann, Staudt
SS 2019	2540467	**Excercise Business Data Analytics: Application and Tools**	1 SWS	Practice (Ü)	Haubner, Dann, Frankenhauser, Staudt

Competence Certificate

Assessment consists of a written exam ofone hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

Students receive one aggregated grade consisting of a written exam (60%) and the Analytics Challenge (40%). The exam and the Analytics Challenge need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the Analytics challenge.

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The course **T-WIWI-108438 - Applied Analytics with Open Source Tools** must not have been started.

Recommendation

Knowledge of object-oriented programming and statistics is helpful.

Annotation

Course name until winter semester 2018/2019 "Applied Analytics with Open Source Tools" (T-WIWI-108438)

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

V Business Data Analytics: Application and Tools
2540466, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Description

The ongoing digitalization and digitization of businesses, industries and societies is generating vast amounts of data. Hence, researchers and businesses are facing increasing pressure to build capabilities to cope with the data and generate value from the contained but yet to be discovered knowledge, insights and information. Researchers and practitioners tackling this task are referred to as data scientists and need skills at the intersection of programming, statistics and development operations. This course provides a hands-on perspective on these fields.

Learning Content

The aim of this course is to introduce practical foundations, concepts, tools and current practice of Analytics from a data scientist's perspective. The lecture is complemented with an Analytics challenge that is based on real-world data from research projects. The students immediately apply their newly acquired knowledge and learn to use a range of open source tools to solve the challenge.

Content:

- Conceptual and theoretical Foundations
- Programming languages common in data science
- Data acquisition, pre-processing
- Basics of data organization and DevOps
- Tool chain selection and automation
- Open source analytics frameworks and data processing infrastructures
- Applied analytics challenge (based on a current research project or a cooperation with an industry partner)

Workload

The total workload for this course is approximately 135 hours.

T 6.39 Course: Business Data Strategy [T-WIWI-106187]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103117 - Data Science: Data-Driven Information Systems

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

Events					
WS 18/19	2540484	**Business Data Strategy**	2 SWS	Lecture (V)	Weinhardt
WS 18/19	2540485	**Übung zu Business Data Strategy**	1 SWS	Practice (Ü)	Weinhardt, Knierim
Exams					
WS 18/19	7900226	**Business data strategy**		Prüfung (PR)	Weinhardt
WS 18/19	7900234	**Business Data Strategy**		Prüfung (PR)	Weinhardt

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulationand an alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation. The grade isdetermined by 2/3 through the written exam and by 1/3 through the alternative exam assessment (e.g., presentation).

Prerequisites
None

Recommendation
Students should be familiar with basic concepts of business organisations, information systems, and programming. However, all material will be introduced, so no formal pre-conditions are applied.

Annotation
Limited number of participants.

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

V Business Data Strategy
2540484, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content
With new methods for capturing and using different types of data and industry's recognition that society's use of data is less than optimal, the need for comprehensive strategies is more important than ever before. Advances in cybersecurity and information sharing and the use of data in its raw form for decision making all add to the complexity of integrated processes, ownership, stewardship, and sharing. The life cycle of data in its entirety spans the infrastructure, system design, development, integration, and implementation of information-enabling solutions. This lecture focuses on teaching about these dynamics and tools to comprehend and manage them in organisation contexts. Given the increasing size and complexity of data, methods for the transformation and structured preparation are an important tool in the process of sense–making. Modern software solutions and programming languages provide frameworks for such tasks that form another part of this course ranging from conceptual systems modelling to data manipulation to automated generation of HTML reports and web-applications.

Literature

- Fleckenstein & Fellows (2017) – Modern Data Strategy
- Leimeister (2015) – Einführung in die Wirtschaftsinformatik
- Urbach & Ahlemann (2016) – IT-Management im Zeitalter der Digitalisierung
- DAMA International (2009) – The DAMA Guide to the Data Management Body of Knowledge (DAMA-DMBOK)

T 6.40 Course: Business Dynamics [T-WIWI-102762]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101409 - Electronic Markets
	M-WIWI-101470 - Data Science: Advanced CRM

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

Events					
WS 18/19	2540531	Business Dynamics	2 SWS	Lecture (V)	Geyer-Schulz, Glenn
WS 18/19	2540532	Exercise Business Dynamics	1 SWS	Practice (Ü)	Geyer-Schulz, Glenn
Exams					
WS 18/19	7979777	Business Dynamics		Prüfung (PR)	Geyer-Schulz

Competence Certificate
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites
None

Recommendation
None

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

V Business Dynamics
2540531, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content
Corporate growth, the diffusion of new technologies, business processes, project management, product development, service quality management – all these are examples for application areas of business dynamics. They all are dynamic systems that are characterized by feedback loops between many different variables. By means of the tools of business dynamics such systems can be modelled. Simulations of complex systems allow the analysis, the goal centered design, as well as the optimization of markets, business processes, policies, and organizations.

Annotation
The course is generally held as block course.

Workload

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

Time of attendance

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

Self-study

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

Sum: 135h 00m

Literature

John D. Sterman. Business Dynamics: Systems Thinking and Modeling for a Complex World. McGraw-Hill, 2000.

T   6.41 Course: Business Intelligence Systems [T-WIWI-105777]

Responsible:	Prof. Dr. Alexander Mädche
	Mario Nadj
	Peyman Toreini
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101506 - Service Analytics
	M-WIWI-101510 - Cross-Functional Management Accounting
	M-WIWI-103117 - Data Science: Data-Driven Information Systems
	M-WIWI-104068 - Information Systems in Organizations

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

Events					
WS 18/19	2540422	Business Intelligence Systems	2 + 1 SWS	Lecture (V)	Mädche, Nadj
Exams					
WS 18/19	7900224	Business Intelligence Systems		Prüfung (PR)	Mädche

Competence Certificate
Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.
Students receive one aggregated grade consisting of a written exam (60%) and the Business Intelligence System challenge (40%). The exam and the Business Intelligence System challenge need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the Business Intelligence System challenge.

Prerequisites
None

Recommendation
Basic knowledge on database systems is helpful.

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

V   Business Intelligence Systems
2540422, WS 18/19, 2 + 1 SWS, Open in study portal   **Lecture (V)**

Description
In most modern enterprises, Business Intelligence Systems represent a core enabler of managerial decision making in that they are supplying up-to-date and accurate information about all relevant aspects of a company's planning and operations: from stock levels to sales volumes, from process cycle times to key indicators of corporate performance.

The aim of this course is to introduce theoretical foundations, concepts, tools, and current practice of Business Intelligence Systems from a managerial and technical perspective. The lecture is complemented with a Business Intelligence System challenge, where students work with real-world data and enable system-based decision making using commercial Business Intelligence software packages.

Learning Content

· Conceptual Foundations

· Provisioning: ETL Process, Metadata, Data Warehouse & Data Marts and Big Data Technologies

· Consumption: Reporting, Dashboards and its relation to (Big Data) Analytics

· BI Strategy & Governance

· BI Implementation & Post-Implementation Management

· Business Intelligence System Challenge (in cooperation with industry partner)

Literature

Turban, E., Aronson, J., Liang T.-P., Sharda, R. 2008. "Decision Support and Business Intelligence Systems". Pearson.

Watson, H. J. 2014. "Tutorial: Big Data Analytics: Concepts, Technologies, and Applications," Communications of the Association for Information Systems (34), p. 24.

Arnott, D., and Pervan, G. 2014. "A critical analysis of decision support systems research revisited: The rise of design science," Journal of Information Technology (29:4), Nature Publishing Group, pp. 269–293 (doi: 10.1057/jit.2014.16).

Carlo, V. (2009). "Business intelligence: data mining and optimization for decision making". Editorial John Wiley and Sons, 308-317.

Chen, H., Chiang, R. H. L, and Storey, V. C. 2012. „Business Intelligence and Analytics: From Big Data to Big Impact," MIS Quarterly (36:4), pp. 1165-1188.

Davenport, T. 2014. Big Data @ Work, Boston, MA: Harvard Business Review.

Economist Intelligence Unit. 2015 "Big data evolution: Forging new corporate capabilities for the long term"

Power, D. J. 2008. "Decision Support Systems: A Historical Overview," Handbook on Decision Support Systems, pp. 121–140 (doi: 10.1007/978-3-540-48713-5_7).

Sharma, R., Mithras, S., and Kankanhalli, A. 2014. „Transforming decision-making processes: a research agenda for understanding the impact of business analytics on organisations," European Journal of Information Systems (23:4), pp. 433-441.

Silver, M. S. 1991. "Decisional Guidance for Computer-Based Decision Support," MIS Quarterly (15:1), pp. 105-122.

T 6.42 Course: Business Models in the Internet: Planning and Implementation [T-WIWI-102639]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-102806 - Service Innovation, Design & Engineering

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

Events					
SS 2019	2540456	Internet Business Models	2 SWS	Lecture (V)	Weinhardt, Peukert, Dann
SS 2019	2540457	Übungen zu Geschäftsmodelle im Internet: Planung und Umsetzung	1 SWS	Practice (Ü)	Peukert, Dann

Competence Certificate
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations) and by submitting written essays as part of the exercise (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015). 50% of the final grade is based on the written exam and 50% is based on assignments from the exercises. Successful completion of the exercises is a prerequisite for admission to the written exam. The points obtained in the exercises only apply to the first and second exam of the semester in which they were obtained.

Prerequisites
None

Recommendation
None

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

V Internet Business Models
2540456, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Description
The emergence of internet economy has resulted in an accelerated evolution of commerce models in eBusiness. Early adopters have experimented with a variety of new business models, technologies and application designs. At the same time, there has been a growing demand for new standards to facilitate the exchange of information, catalogue content and transactions between buyers and sellers. But the true understanding of how to bring buyers and sellers together is still widely missing, leading to multiple cases of costly missed investments. This course focuses on the design and implementation of successful business models for eBusiness applications for the World Wide Web (WWW), imparting the basic knowledge for building successful eBusiness applications. We consider not only technical foundations of eBusiness applications but also economical aspects. In small groups, students develop and implement an eBusiness model that is eventually discussed with a representative from the venture capitalist industry.

Learning Content
The emergence of internet economy has resulted in an accelerated evolution of commerce models in eBusiness. Early adopters have experimented with a variety of new business models, technologies and application designs. At the same time, there has been a growing demand for new standards to facilitate the exchange of information, catalogue content and transactions between buyers and sellers. But the true understanding of how to bring buyers and sellers together is still widely missing, leading to multiple cases of costly missed investments. This course focuses on the design and implementation of successful business models for eBusiness applications for the World Wide Web (WWW), imparting the basic knowledge for building successful eBusiness applications. We consider not only technical foundations of eBusiness applications but also economical aspects. In small groups, students develop and implement an eBusiness model that is eventually discussed with a representative from the venture capitalist industry.

Workload

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

Literature

Will be announced within the course.

| **T** | **6.43 Course: Business Planning [T-WIWI-102865]** |

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type Prüfungsleistung anderer Art	**Credits** 3	**Recurrence** Each term	**Version** 1

Events					
WS 18/19	2545007	Business Planning for Founders (ENTECH)	2 SWS	Seminar (S)	Wohlfeil, Bauman, Terzidis
SS 2019	2545005	Geschäftsplanung für Gründer (Track 1)	2 SWS	Seminar (S)	Terzidis, Tittel, Ntagiakou
Exams					
WS 18/19	7900023	Business Planning for Founders		Prüfung (PR)	Terzidis

Competence Certificate
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

Prerequisites
None

Recommendation
None

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

| **V** | **Geschäftsplanung für Gründer (Track 1)**
2545005, SS 2019, 2 SWS, Open in study portal | **Seminar (S)** |

Description
This seminar introduces basic concepts of business planning for entrepreneurs to the participants. It focusses on practical concepts andhands-on-methods on how to turn business ideas into solid businesses (e.g. Business Modelling, Market Potential, Planning of Ressorces, and further more) and on the creation of a realistic and viable Business Plan (with or without Venture Capital)

T 6.44 Course: Business Strategies of Banks [T-WIWI-102626]

Responsible:	Prof. Dr. Wolfgang Müller
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2530299	**Business Strategies of Banks**	2 SWS	Lecture (V)	Müller
Exams					
WS 18/19	7900064	**Business Strategies of Banks**		Prüfung (PR)	Müller, Ruckes
SS 2019	7900079	**Business Strategies of Banks**		Prüfung (PR)	Müller

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

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

V Business Strategies of Banks
2530299, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Description
The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.
The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

Learning Content
The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.
The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

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

Literature
Elective literature:

- A script is disseminated chapter by chapter during the course of the lecture.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2000, Bankbetriebslehre, 6th edition, Springer

T 6.45 Course: Case Studies in Sales and Pricing [T-WIWI-102834]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101487 - Sales Management

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each winter term	3

Events					
WS 18/19	2572182	Case Studies in Sales and Pricing	1 SWS	Block (B)	Klarmann, Assistenten
Exams					
WS 18/19	7900153	Case Studies in Sales and Pricing		Prüfung (PR)	Klarmann

Competence Certificate
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015). The assessment consists of a group presentation with a subsequent round of questions totalling 30 minutes.

Prerequisites
None

Recommendation
None

Annotation
Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing &amp; Sales (marketing.iism.kit.edu).
Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed.
For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu).
Please note that only one of the 1.5-ECTS courses can be attended in this module.

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

V Case Studies in Sales and Pricing
2572182, WS 18/19, 1 SWS, Open in study portal

Block (B)

Learning Content
Students work in groups on case studies from the field of sales and pricing. The case studies contain quantitative calculations in the context of sales and pricing as well as tasks which are to be solved by logical reasoning. When solving the case studies, theoretical sales and pricing content is applied to practical problems. Finally, the results are presented by the group and discussed.

Annotation

- The final presentations can be held in German or English.
- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in winter term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in winter term starts.
- Please note that only one of the 1.5-ECTS courses can be chosen in the Sales Management Module.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1,5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

Workload
Total work load for 1.5 ECTS: ca. 45 hours

Literature
Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T   6.46 Course: Case Studies Seminar: Innovation Management [T-WIWI-102852]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovationsmanagement
	M-WIWI-101507 - Innovationsmanagement

Type Prüfungsleistung anderer Art	**Credits** 3	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	2545105	Case studies seminar: Innovation management	2 SWS	Seminar (S)	Weissenberger-Eibl
Exams					
WS 18/19	7900237	Case Studies Seminar: Innovation Management		Prüfung (PR)	Weissenberger-Eibl

Competence Certificate

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

Prerequisites

None

Recommendation

Prior attendance of the course *Innovation Management* [2545015] is recommended.

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

V	**Case studies seminar: Innovation management** 2545105, WS 18/19, 2 SWS, Open in study portal	**Seminar (S)**

Learning Content

The objective of the seminar is to master selected concepts and methods of innovation management and then to apply these practically. Working in groups, the students apply the described concepts and methods of innovation management to a case study from the automotive industry to answer specific questions. Accordingly, the block seminar involves a switch from input to the application of this input. At the end, the results of the group work are presented in the form of a seminar paper and discussed by the whole course.

A short introduction to presentation techniques is planned to help students prepare the seminar papers.

Workload

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

T 6.47 Course: Challenges in Supply Chain Management [T-WIWI-102872]

Responsible:	Esther Mohr
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102805 - Service Operations
	M-WIWI-102808 - Digital Service Systems in Industry

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

Events					
SS 2019	2550494	Challenges in Supply Chain Management	3 SWS	Lecture (V)	Mohr

Competence Certificate
The assessment consists of a written paper and an oral exam of ca. 30-40 min (non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015)).

Prerequisites
None

Recommendation
Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation
The number of course participants is limited to 12 participants due to joint work in BASF project teams. Due to these capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is offered irregularly. The planned lectures and courses for the next three years are announced online.

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

V Challenges in Supply Chain Management
2550494, SS 2019, 3 SWS, Open in study portal   Lecture (V)

Learning Content
The course consists of case studies of BASF which cover future challenges of supply chain management. Thus, the course aims at a case-study based presentation, critical evaluation and exemplary discussion of recent questions in supply chain management. The focus lies on future challenges and trends, also with regard to their applicability in practical cases (especially in the chemical industry).

The main part of the course is working on a project together with BASF in Ludwigshafen. The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the project topic.

This course will include working on cutting edge supply chain topics like Industry 4.0 / "Internet of Everything in production", supply chain analytics, risk management, procurement and production in SCM. The team essays / project reports will be linked to industry-related challenges as well as to upcoming theoretical concepts. The topics of the seminar will be announced at the beginning of the term in a preliminary meeting.

Annotation
The number of course participants is limited to 12 participants due to joint work in BASF project teams. Due to these capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is offered irregularly. The planned lectures and courses for the next three years are announced online.

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

Literature
To be defined depending on the topic.

| **T** | **6.48 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 - Kognitive Systeme
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	**Credits** 6	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	24572	Kognitive Systeme	4 SWS	Lecture / Practice (VÜ)	Dillmann, Waibel, Stüker, Constantin, Schneider
Exams					
WS 18/19	7500332	Cognitive Systems examination		Prüfung (PR)	Waibel, Dillmann
SS 2019	7500157	Cognitive Systems		Prüfung (PR)	Dillmann, Waibel

T 6.49 Course: Competition in Networks [T-WIWI-100005]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101406 - Netzwerkökonomie

Type Prüfungsleistung schriftlich	Credits 4,5	Recurrence Each winter term	Version 2

Events					
WS 18/19	2561204	Competition in Networks	2 SWS	Lecture (V)	Mitusch
WS 18/19	2561205	Übung zu Wettbewerb in Netzen	1 SWS	Practice (Ü)	Wisotzky
Exams					
WS 18/19	7900268	Competition in Networks		Prüfung (PR)	Mitusch

Competence Certificate
Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC).
Examination is offered every semester and can be retried at any regular examination date.

Prerequisites
None.

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

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

V Competition in Networks
2561204, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Description
Network or infrastructure industries like telecommunication, transport, and utilities form the backbone of modern economies. The lecture provides an overview of the economic characteristics of network industries. The planning of networks is complicated by the multitude of aspects involved (like spatial differentiation and the like). The interactions of different companies - competition or cooperation or both - are characterized by complex interdependencies within the networks: network effects, economies of scale, effects of vertical integration, switching costs, standardization, compatibility etc. appear increasingly in these sectors and even tend to appear in combination. Additionally, government interventions can often be observed, partly driven by the aims of competition policy and partly driven by the aims industrial policy. All these issues are brought up, analyzed formally (in part) and illustrated by several examples in the lecture.

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

Literature
Will be announced in the lecture.

T 6.50 Course: Computational Complexity Theory, with a View Towards Cryptography [T-INFO-103014]

Responsible:	Prof. Dr. Dennis Hofheinz
	Prof. Dr. Jörn Müller-Quade
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101575 - Komplexitätstheorie, mit Anwendungen in der Kryptographie

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	6	Each term	1

Events					
WS 18/19	2400063	Computational Complexity Theory, with a View Towards Cryptography	4 SWS	Lecture (V)	Hofheinz

Exams				
WS 18/19	7500092	Computational Complexity Theory, with a View Towards Cryptography	Prüfung (PR)	Hofheinz
SS 2019	7500183	Computational Complexity Theory, with a View Towards Cryptography	Prüfung (PR)	Geiselmann, Hofheinz

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

V Computational Complexity Theory, with a View Towards Cryptography
2400063, WS 18/19, 4 SWS, Open in study portal

Lecture (V)

Description

What is an "efficient" algorithm? Can every algorithmic task be solved efficiently? Or are there inherently hard problems? Computational complexity provides a rigorous, mathematical foundation to reason about problems like these. In this course, we will discuss concepts such as

- machine model, time and space complexity, separations,
- nondeterminism, reductions, completeness,
- the polynomial hierarchy,
- probabilism, one-way functions,
- alternation, interactive proofs, zero-knowledge,

and illustrate them with practical examples. The course provides an outlook to applications of computational complexity theory, with a view towards cryptography.".

| **T** | **6.51 Course: Computational FinTech with Python and C++ [T-WIWI-106496]** |

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-103261 - Disruptive Finanz-technologische Innovationen

Type Prüfungsleistung anderer Art	**Credits** 1,5	**Recurrence** Each summer term	**Version** 1

Events					
WS 18/19	2500003	Computational FinTech with Python and C++	1,5 SWS	Practical course (P)	Ulrich
SS 2019	2530373	Computational FinTech with Python and C++	1 SWS	Practical course (P)	Ulrich
Exams					
WS 18/19	7900289	Computational FinTech with Python and C++		Prüfung (PR)	Ulrich
SS 2019	7900123	Computational FinTech with Python and C++		Prüfung (PR)	Ulrich

Competence Certificate
The grade is based on a larger or several smaller programming exercises.

Prerequisites
There are two conditions for taking this course:

1. This course is only open for registered students of the module "Disruptive FinTech Innovations".
2. Registered students do also attend in the same semester the lecture "Engineering FinTech Solutions" and the seminar "Automated Financial Advisory".

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-WIWI-106193 - Engineering FinTech Solutions must have been started.
2. The course T-WIWI-106495 - Automated Financial Advisory must have been started.

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

| **V** | **Computational FinTech with Python and C++**
2500003, WS 18/19, 1,5 SWS, Open in study portal | **Practical course (P)** |

Learning Content
At the beginning of the semester, each student receives a personalized set of programming tasks .

Workload
Roughly 45 hours.

| **V** | **Computational FinTech with Python and C++**
2530373, SS 2019, 1 SWS, Open in study portal | **Practical course (P)** |

Learning Content
At the beginning of the semester, each student receives a personalized set of programming tasks .

Workload
Roughly 45 hours.

T   6.52 Course: Computational Geometry [T-INFO-104429]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: M-INFO-101214 - Algorithmen der Computergrafik
                     M-INFO-102110 - Algorithmische Geometrie
                     M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Irregular	1

Exams				
WS 18/19	7500237	Computational Geometry	Prüfung (PR)	Wagner

T   6.53 Course: Computational Risk and Asset Management I [T-WIWI-107032]

Responsible:	Prof. Dr Maxim Ulrich
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103247 - Intelligente Risiko- und Investitionsberatung

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

Competence Certificate
No exam in winter semester 2018/2019.

The grade consists of an exam and seven problem sets, which are distributed throughout the semester. All problem sets count equally and make up in total 25% of the final grade. The exam accounts for the remaining 75%. The exam is based on all the material that is taught in the current semester. The exam takes place in the last week of the lecture period. Students who fail the exam are allowed to retake the exam.

Prerequisites
None.

Modeled Conditions
The following conditions have to be fulfilled:

1. The course **T-WIWI-102878 - Computational Risk and Asset Management** must not have been started.

Recommendation
None

T   6.54 Course: Computational Risk and Asset Management II [T-WIWI-106494]

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-103247 - Intelligente Risiko- und Investitionsberatung

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

Competence Certificate

No exam in winter term 2018/2019.

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation and 6 problem sets, which are distributed throughout the semester. All problem sets count equally and make up in total 25% of the final grade. The exam accounts for the remaining 75%. The exam is based on all the material that is taught in the current semester. The exam takes place in the last week of the lecture period. Students who fail the exam are allowed to retake the exam.

Prerequisites

None.

Recommendation

It is recommend that students have studied the material of „Computational Risk and Asset Management I".

Annotation

New course starting winter term 2017/2018.

T | 6.55 Course: Computer Contract Law [T-INFO-102036]

Responsible:	Prof. Dr. Thomas Dreier
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101215 - Recht des Geistigen Eigentums
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	Credits 3	Recurrence Each term	Version 1

Events					
WS 18/19	2411604	Computer Contract Law	2 SWS	Lecture (V)	Bartsch, Harnischmacher
Exams					
WS 18/19	7500065	Computer Contract Law		Prüfung (PR)	Dreier, Matz
SS 2019	7500066	Computer Contract Law		Prüfung (PR)	Dreier, Matz

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

V | Computer Contract Law
2411604, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Description
The course deals with contracts from the following areas:

- Contracts of programming, licencing and maintaining software
- Contracts in the field of IT employment law
- IT projects and IT Outsourcing
- Internet Contracts

From these areas single contracts will be chosen and discussed (e.g. software maintenance, employment contract with a software engineer). Concerning the respective contract the technical features, the economic background and the subsumption in the national law of obligation (BGB-Schuldrecht) will be discussed. As a result different contractual clauses will be developed by the students. Afterwards typical contracts and conditions will be analysed with regard to their legitimacy as standard business terms (AGB). It is the aim to show the effects of the german law of standard business terms (AGB-Recht) and to point out that contracts are a means of drafting business concepts and market appearance.

Learning Content
It is the aim of this course to provide students with knowledge in the area of contract formation and formulation in practice that builds upon the knowledge the students have already acquired concerning the legal protection of computer programs. Students shall understand how the legal rules depend upon, and interact with, the economic background and the technical features of the subject. The contract drafts shall be prepared by the students and will be corporately completed during the lecture. It is the aim of the course that students will be able to formulate contracts by themselves.

Literature

- Langenfeld, Gerrit Vertragsgestaltung Verlag C.H.Beck, III. Aufl. 2004
- Heussen, Benno Handbuch Vertragsverhandlung und Vertragsmanagement Verlag C.H.Beck, II. Aufl. 2002
- Schneider, Jochen Handbuch des EDV-Rechts Verlag Dr. Otto Schmidt KG, III. Aufl. 2002

Elective Literature

tba in the transparencies

T 6.56 Course: Computer Vision for Human-Computer Interaction [T-INFO-101347]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen
Organisation: KIT Department of Informatics
Part of: M-INFO-101239 - Maschinelle Visuelle Wahrnehmung
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	6	Each winter term	1

Events					
WS 18/19	24180	Computer Vision for Human-Computer Interaction	4 SWS	Lecture (V)	Stiefelhagen, Sarfraz
Exams					
WS 18/19	7500044	Computer Vsion for Human-Computer Interaction		Prüfung (PR)	Stiefelhagen
SS 2019	7500060	Computer Vision for Human-Computer Interaction		Prüfung (PR)	Stiefelhagen

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

V Computer Vision for Human-Computer Interaction
24180, WS 18/19, 4 SWS, Open in study portal

Lecture (V)

Description
In this lecture current projects of the field of image processing will be presented which deal with the visual perception of persons re. human-computer interaction.
In respect of the individual topics we will discuss various methods and algorithms, their pros and cons and state of the art:
• Face detection and localisation
• Facial expression
• Assessment of head turns and viewing direction
• Person tracking and localisation
• Articulated body tracking
• Gesture recognition
• Audio-visual speech recognition
• Multi-camera environments
• Tools and libraries

Learning Content
The student acquires a basic understanding of computer vision topics within the context of human-computer interaction and learns how to apply them.

T   6.57 Course: Consulting in Practice [T-INFO-101975]

Responsible:	Prof. Dr.-Ing. Klemens Böhm
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
	M-INFO-102233 - Weitere Leistungen

Type Studienleistung	**Credits** 1,5	**Recurrence** Irregular	**Version** 1

Events					
WS 18/19	24664	Praxis der Unternehmensberatung	2 SWS	Lecture (V)	Böhm, Lang
Exams					
WS 18/19	7500227	Consulting in Practice		Prüfung (PR)	Böhm

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

V   Praxis der Unternehmensberatung
24664, WS 18/19, 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 6.58 Course: Context Sensitive Systems [T-INFO-107499]

Responsible:	Prof. Dr.-Ing. Michael Beigl
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100728 - Kontextsensitive Systeme

Type Prüfungsleistung mündlich	Credits 5	Recurrence Each summer term	Version 1

Events					
SS 2019	2400099	Context Sensitive Systems	1 SWS	Practice (Ü)	Riedel
SS 2019	24658	Context Sensitive Systems	2 SWS	Lecture (V)	Riedel, Beigl
Exams					
WS 18/19	7500255_01	Context Sensitive Systems		Prüfung (PR)	Riedel, Beigl

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-101265 - Context Sensitive Systems must not have been started.

T 6.59 Course: Convex Analysis [T-WIWI-102856]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
SS 2019	2550120	Konvexe Analysis	SWS	Lecture (V)	Stein

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

Prerequisites
None

Recommendation
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Annotation
The lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

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

V Konvexe Analysis
2550120, SS 2019, SWS, Open in study portal

Lecture (V)

Learning Content
Convex Analysis deals with properties of convex functions and convex sets, in particular with respect to the minimization of convex functions over convex sets. That the involved functions are not necessarily assumed to be differentiable allows a number a applications which are not covered by techniques from smooth optimization, e.g. approximation problems with respect to the Manhattan or maximum norms, classification problems or the theory of statistical estimates. The lecture develops along another, geometrically simple example, where a nonsmooth obstacle set is to be described by a single smooth convex constraint such that minimal and maximal distances to the obstacle can be computed. The lecture is structured as follows:

- Introductory examples and terminology
- Convex subdifferential, Lipschitz continuity and the safety margin
- Normal cones, error bounds and the maximal distance

Literature
Elective literature:

- J. Borwein, A. Lewis, Convex Analysis and Nonlinear Optimization: Theory and Examples (2 ed.), Springer, 2006.
- S. Boyd, L. Vandenberghe, Convex Optimization, Cambridge University Press, 2004.
- O. Güler, Foundations of Optimization, Springer, 2010.
- J.-B. Hiriart-Urruty, C. Lemarechal, Fundamentals of Convex Analysis, Springer, 2001.
- R.T. Rockafellar, Convex Analysis, Princeton University Press, 1970.
- R.T. Rockafellar, R.J.B. Wets, Variational Analysis, Springer, Berlin, 1998.

| **T** | **6.60 Course: Copyright [T-INFO-101308]** |

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101215 - Recht des Geistigen Eigentums
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each term	**Version** 1

Events					
WS 18/19	24121	Copyright	2 SWS	Lecture (V)	Dreier
Exams					
WS 18/19	7500064	Copyright		Prüfung (PR)	Dreier, Matz
SS 2019	7500064	Copyright		Prüfung (PR)	Dreier, Matz

T	6.61 Course: Corporate Compliance [T-INFO-101288]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101242 - Governance, Risk & Compliance
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2400087	Corporate Compliance	2 SWS	Lecture (V)	Herzig
Exams					
WS 18/19	7500063	Corporate Compliance		Prüfung (PR)	Dreier, Matz
SS 2019	7500063	Corporate Compliance		Prüfung (PR)	Dreier, Matz

T   6.62 Course: Corporate Financial Policy [T-WIWI-102622]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101453 - Angewandte strategische Entscheidungen
M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2
M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance

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

Exams				
WS 18/19	7900058	Corporate Financial Policy	Prüfung (PR)	Ruckes
SS 2019	7900073	Corporate Financial Policy	Prüfung (PR)	Ruckes

Competence Certificate
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

Prerequisites
None

Annotation
The course will not be offered in summer term 2019. However, the exam can be written on the regular date at the end of the semester.

T   **6.63 Course: Corporate Risk Management [T-WIWI-109050]**

Responsible:	Prof. Dr. Martin Ruckes
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2
	M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance

Type Prüfungsleistung schriftlich	Credits 4,5	Recurrence Each summer term	Version 2

Events					
SS 2019	2530218	Corporate Risk Management	SWS	Lecture (V)	Ruckes, Hoang
SS 2019	2530219	Übung zu Corporate Risk Management	SWS	Practice (Ü)	Silbereis, Ruckes, Hoang
Exams					
WS 18/19	7900136	Corporate Risk Management		Prüfung (PR)	Ruckes

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The exam is offered each semester. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.

Prerequisites

None

Recommendation

None

Annotation

The course is offered as a block course in the summer term.

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

V   **Corporate Risk Management**   **Lecture (V)**
         2530218, SS 2019, SWS, Open in study portal

Learning Content

- Stochastic basics
- Firm decisions under risk - expected utility theory
- The value motive for corporate risk management
- Common risk measures from practice (e.g. Cash-flow at Risk)
- Operational and financial risk management instruments
- The risk management organization (central vs. decentral)
- External risk reporting (e.g. obligations and incentives)

Workload

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

Literature

- Friberg, Richard. *Managing Risk and Uncertainity: A Strategic Approach.* Cambridge, MA: Managing RIsk and Uncertainity, 2015.
- Stulz, René M. *Risk Management & Derivatives.* Mason, Ohio: Cengage Learning, Inc, 2002.
- Jorion, Philippe. *Value at Risk, 3rd Ed*: *The new Benchmark for Managing Financial Risk.* 3 ed. New York: General Finance & Investing, 2006.

| V | **Übung zu Corporate Risk Management**
2530219, SS 2019, SWS, Open in study portal | **Practice (Ü)** |

Learning Content

- Stochastic basics
- Firm decisions under risk - expected utility theory
- The value motive for corporate risk management
- Common risk measures from practice (e.g. Cash-flow at Risk)
- Operational and financial risk management instruments
- The risk management organization (central vs. decentral)
- External risk reporting (e.g. obligations and incentives)

Workload

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

Literature

- Friberg, Richard. *Managing Risk and Uncertainity: A Strategic Approach.* Cambridge, MA: Managing RIsk and Uncertainity, 2015.
- Stulz, René M. *Risk Management & Derivatives.* Mason, Ohio: Cengage Learning, Inc, 2002.
- Jorion, Philippe. *Value at Risk, 3rd Ed*: *The new Benchmark for Managing Financial Risk*. 3 ed. New York: General Finance & Investing, 2006.

T 6.64 Course: Country Manager Simulation [T-WIWI-106137]

Responsible:	Dr. Sven Feurer
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101487 - Sales Management
	M-WIWI-101490 - Marketing Management

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	1,5	Each winter term	1

Events					
WS 18/19	2572172	Country Manager Simulation	SWS	Block (B)	Feurer
Exams					
WS 18/19	7900154	Country Manager Simulation		Prüfung (PR)	Klarmann

Competence Certificate
Alternative exam assessment (30 minutes presentation) according to § 4 paragraph 2 Nr. 3 of the examination regulation SPO 2015.

Annotation
The course language is English. In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in winter term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in winter term starts.
Please note that only one of the 1.5-ECTS courses can be chosen in this Module.
Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1,5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

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

V Country Manager Simulation
2572172, WS 18/19, SWS, Open in study portal   Block (B)

Learning Content
Understanding Culture
Understanding International Buyer Behavior
Market Entry Decisions
International Marketing and Sales Management (adaptation vs. differentiation)

Annotation

- The course language is English.
- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in winter term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in winter term starts.
- Please note that only one of the following courses can be chosen in the Sales Management Module: Country Manager Simulation, Case Studies in Sales and Pricing or Preisverhandlungen und Verkaufspräsentationen.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1,5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

Workload
Total workload for 1.5 ECTS: ca. 45 hours

Literature
Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T 6.65 Course: Credit Risk [T-WIWI-102645]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2

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

Events					
WS 18/19	2530565	Credit Risk	3 SWS	Lecture / Practice (VÜ)	Uhrig-Homburg, Hofmann
Exams					
WS 18/19	7900055	Credit Risk		Prüfung (PR)	Uhrig-Homburg

Competence Certificate
The assessment consists of a written exam (75 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation and may be supplemented by a non exam assessment according to § 4 paragraph 2 Nr. 3. The examination is offered every semester and can be repeated at every regular examination date.

Prerequisites
None

Recommendation
See German version.

Annotation
See German version.

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

V Credit Risk
2530565, WS 18/19, 3 SWS, Open in study portal

Lecture / Practice (VÜ)

Description
The lecture deals with the diverse issues arising in the context of measuring and controlling credit risk. At first, the theoretical and empirical relations between ratings, probabilities of default, and credit spreads are analysed. After that, the focus is on the valuation of credit risk. Finally, the management of credit risk, e.g. using credit derivatives and credit portfolio analysis, is examined, and the legal framework and its implications are discussed

Learning Content
The lecture deals with the diverse issues arising in the context of measuring and controlling credit risk. At first, the theoretical and empirical relations between ratings, probabilities of default, and credit spreads are analysed. After that, the focus is on the valuation of credit risk. Finally, the management of credit risk, e.g. using credit derivatives and credit portfolio analysis, is examined, and the legal framework and its implications are discussed

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

Literature

- Lando, D., Credit risk modeling: Theory and Applications, Princeton Univ. Press, (2004).
- Uhrig-Homburg, M., Fremdkapitalkosten, Bonitätsrisiken und optimale Kapitalstruktur, Beiträge zur betriebswirtschaftlichen Forschung 92, Gabler Verlag, (2001).

Elective literature:

- Bluhm, C., Overbeck, L., Wagner, C. , Introduction to Credit Risk Modelling, 2nd Edition, Chapman & Hall, CRC Financial Mathematics Series, (2010).
- Duffie, D., Singleton, K.J., Credit Risk: Pricing, Measurement and Management, Princeton Series of Finance, Prentice Hall, (2003).

T 6.66 Course: Critical Information Infrastructures [T-WIWI-109248]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-104403 - Critical Digital Infrastructures

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	5	Each winter term	3

Events					
WS 18/19	2511400	Critical Information Infrastructures	2 SWS	Lecture (V)	Sunyaev
WS 18/19	2511401	Übungen zu Critical Information Infrastructures	1 SWS	Practice (Ü)	Sunyaev
Exams					
WS 18/19	7900067	Critical Information Infrastructures		Prüfung (PR)	Sunyaev
SS 2019	7900061	Critical Information Infrastructures		Prüfung (PR)	Sunyaev

Competence Certificate
The alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- the preparation of a written elaboration as well as
- an oral examination as part of a presentation of the work.

Details of the grades will be announced at the beginning of the course.

Prerequisites
None.

Annotation
New lecture from winter semester 2018/2019.

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

V Critical Information Infrastructures
2511400, WS 18/19, 2 SWS, Open in study portal   **Lecture (V)**

Description
The lecture critical information infrastructures introduces students to the world of these complex sociotechnical systems that permeate societies on a global scale. Students will learn to handle the complexities involved in the design, development, operation and evaluation of critical information infrastructures. In the beginning of the lecture, critical information infrastructures will be introduced on a general level. The following sessions will focus on an in-depth exploration of selected cases that represent current challenges in research and practice. For example, students will learn how to continuously monitor and audit critical information infrastructures to ensure reliability and security. Likewise, students will get to know how to deal with cascading failures in interconnected infrastructures.

T 6.67 Course: Cryptographic Voting Schemes [T-INFO-101279]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: M-INFO-101197 - Computersicherheit
M-INFO-101198 - Fortgeschrittene Themen der Kryptographie
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Irregular	1

Exams				
WS 18/19	7500091	Cryptographic Voting Schemes	Prüfung (PR)	Geiselmann, Müller-Quade

T   6.68 Course: Current Issues in Innovation Management [T-WIWI-102873]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101507 - Innovationsmanagement
	M-WIWI-101507 - Innovationsmanagement

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Irregular	1

Exams				
WS 18/19	7900041	Current Issues in Innovation Management	Prüfung (PR)	Weissenberger-Eibl

Competence Certificate
Non exam assessment (following §4(2) 3 of the examination regulation).

Prerequisites
None

Recommendation
None

Annotation
Please note that the seminars we offer vary from semester to semester. Information about the currently offered seminars can be found in the Wiwi-Portal and on the iTM Website.

T 6.69 Course: Current Issues in the Insurance Industry [T-WIWI-102637]

Responsible:	Wolf-Rüdiger Heilmann
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101449 - Insurance Management II

Type	**Credits**	**Recurrence**	**Version**
Prüfungsleistung schriftlich	2	Each summer term	1

Competence Certificate

The exam is offered latest in summer term 2016.

The assessment consists of a written exam (according to Section 4 (2), 1 of the examination regulation) .

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

Prerequisites

None

Recommendation

For the understanding of this course knowledge of *Private and Social Insurance* [2530050] is required.

Annotation

Block course. For organizational reasons, please register with the secretay of the chair: thomas.mueller3@kit.edu.

T   6.70 Course: Data and Storage Management [T-INFO-101276]

Responsible:	Prof. Dr. Bernhard Neumair
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101210 - Dynamische IT-Infrastrukturen
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	24074	Data and Storage Management	2 SWS	Lecture (V)	Neumair
Exams					
WS 18/19	7500112	Data and Storage Management		Prüfung (PR)	Neumair

T 6.71 Course: Data Mining and Applications [T-WIWI-103066]

Responsible: Rheza Nakhaeizadeh
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101638 - Ökonometrie und Statistik I
M-WIWI-101639 - Ökonometrie und Statistik II

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	Each summer term	2

Events					
SS 2019	2520375	Data Mining and Applications	2/4 SWS	Lecture (V)	Nakhaeizadeh

Competence Certificate

- Conduction of a larger 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, Open in study portal

Lecture (V)

Learning Content
Part one: Data Mining

Why Data Mining?

- What is Data Mining?
- History of Data Mining
- Conferences and Journals on Data Mining
- Potential Applications
- Data Mining Process:
- Business Understanding
- Data Understanding
- Data Preparation
- Modeling
- Evaluation
- Deployment
- Interdisciplinary aspects of Data Mining
- Data Mining tasks
- Data Mining Algorithms (Decision Trees, Association Rules,
- Regression, Clustering, Neural Networks)
- Fuzzy Mining
- OLAP and Data Warehouse
- Data Mining Tools
- Trends in Data Mining

Part two: Examples of application of Data Mining

- Success parameters of Data Mining Projects
- Application in industry
- Application in Commerce

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature
U. Fayyad, G. Piatetsky-Shapiro, P. Smyth, R. Uthurusamy, editors, Advances in Knowledge Discovery and Data Mining, AAAI/ MIT Press, 1996 (order on-line from Amazon.com or from MIT Press).

- Jiawei Han, Micheline Kamber, Data Mining : Concepts and Techniques, 2nd edition, Morgan Kaufmann, ISBN 1558609016, 2006.
- David J. Hand, Heikki Mannila and Padhraic Smyth, Principles of Data Mining , MIT Press, Fall 2000
- Trevor Hastie, Robert Tibshirani, Jerome Friedman, The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Springer Verlag, 2001.
- Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson Addison wesley (May, 2005). Hardcover: 769 pages. ISBN: 0321321367
- Ripley, B.D. (1996) Pattern Recognition and Neural Networks, Cambridge: Cambridge University Press.
- Ian witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques, 2nd Edition, Morgan Kaufmann, ISBN 0120884070, 2005.

T 6.72 Course: Data Privacy: From Anonymization to Access Control [T-INFO-108377]

Responsible:	Prof. Dr.-Ing. Klemens Böhm
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
	M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
	M-INFO-104045 - Datenschutz von Anonymisierung bis Zugriffskontrolle

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Irregular	1

T 6.73 Course: Data Protection by Design [T-INFO-108405]

Responsible: PD Dr. Oliver Raabe
Organisation: KIT Department of Informatics
Part of: M-INFO-101242 - Governance, Risk & Compliance

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	2

Events					
WS 18/19	2400052	Data protection by design	2 SWS	Lecture (V)	Raabe
Exams					
WS 18/19	7500071	Data Protection by Design		Prüfung (PR)	Raabe
SS 2019	7500223	Data protection by design		Prüfung (PR)	Raabe

T   6.74 Course: Data Protection Law [T-INFO-101303]

Responsible:	Prof. Dr. Nikolaus Marsch
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101217 - Öffentliches Wirtschaftsrecht
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	24018	Datenschutzrecht	2 SWS	Lecture (V)	Marsch
Exams					
WS 18/19	7500162	Data Protection Law		Prüfung (PR)	Marsch
SS 2019	7500083	Data Protection Law		Prüfung (PR)	Marsch

T 6.75 Course: Database Systems [T-INFO-101497]

Responsible: Prof. Dr.-Ing. Klemens Böhm

Organisation: KIT Department of Informatics

Part of: M-INFO-101178 - Kommunikation und Datenhaltung
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	Credits 4	Recurrence Each summer term	Version 1

Events					
SS 2019	24516	Datenbanksysteme	2 SWS	Lecture (V)	Böhm, Mülle
Exams					
WS 18/19	7500189	Database Systems		Prüfung (PR)	Böhm

T 6.76 Course: Database Systems and XML [T-WIWI-102661]

Responsible:	Prof. Dr. Andreas Oberweis
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101456 - Intelligente Systeme und Services
	M-WIWI-101477 - Entwicklung betrieblicher Informationssysteme

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2511202	Database Systems and XML	2 SWS	Lecture (V)	Oberweis, Schiefer
WS 18/19	2511203	Übungen zu Datenbanksysteme und XML	1 SWS	Practice (Ü)	Oberweis, Schiefer, Fritsch
Exams					
WS 18/19	7900007	Database Systems and XML		Prüfung (PR)	Oberweis
SS 2019	7900046	Database Systems and XML		Prüfung (PR)	Oberweis

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites
None

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

V Database Systems and XML
2511202, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content
Databases are a proven technology for managing large amounts of data. The oldest database model, the hierarchical model, was replaced by different models such as the relational or the object-oriented data model. The hierarchical model became particularly more important with the emergence of the extensible Markup Language XML. XML is a data format for structured, semi-structured, and unstructured data. In order to store XML documents consistently and reliably, databases or extensions of existing data base systems are required. Among other things, this lecture covers the data model of XML, concepts of XML query languages, aspects of storage of XML documents, and XML-oriented database systems.

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam 1h

Total: 150h

Literature

- M. Klettke, H. Meyer: XML & Datenbanken: Konzepte, Sprachen und Systeme. dpunkt.verlag 2003
- H. Schöning: XML und Datenbanken: Konzepte und Systeme. Carl Hanser Verlag 2003
- W. Kazakos, A. Schmidt, P. Tomchyk: Datenbanken und XML. Springer-Verlag 2002
- R. Elmasri, S. B. Navathe: Grundlagen der Datenbanksysteme. 2009
- G. Vossen: Datenbankmodelle, Datenbanksprachen und Datenbankmanagementsysteme. Oldenbourg 2008

Further literature will be given individually.

T 6.77 Course: Datamanagement in the Cloud [T-INFO-101306]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-100769 - Datenhaltung in der Cloud
M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Irregular	1

Prerequisites

T   6.78 Course: Deep Learning and Neural Networks [T-INFO-109124]

Responsible:	Prof. Dr. Alexander Waibel
Organisation:	KIT Department of Informatics
Part of:	M-INFO-102233 - Weitere Leistungen
	M-INFO-104460 - Deep Learning und Neuronale Netze

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events					
SS 2019	2400024	Deep Learning and Neural Networks	4 SWS	Lecture (V)	Waibel, Pham
Exams					
WS 18/19	7500316	Neural Networks		Prüfung (PR)	Waibel
SS 2019	7500044	Deep Learning and Neural Networks		Prüfung (PR)	Waibel

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-101383 - Neural Networks must not have been started.

T 6.79 Course: Deep Learning for Computer Vision [T-INFO-109796]

Responsible: Prof. Dr.-Ing. Rainer Stiefelhagen
Organisation: KIT Department of Informatics
Part of: M-INFO-101239 - Maschinelle Visuelle Wahrnehmung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	24628	Deep Learning for Computer Vision	2 SWS	Lecture (V)	Stiefelhagen, Sarfraz
Exams					
SS 2019	7500024	Deep Learning for Computer Vision		Prüfung (PR)	Stiefelhagen

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-INFO-101389 - Content-based Image and Video Retrieval must not have been started.

Recommendation
Basic knowledge of pattern recognition as taught in the module Cognitive Systems, is expected.

Annotation
The course is partially given in German and English.

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

V Deep Learning for Computer Vision
24628, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content
The lecture introduces the basics, as well as advanced aspects of deep learning methods and their application for a number of computer vision tasks. The following topics will be addressed in the lecture:

- Introduction to Deep Learning
- Convolutional Neural Networks (CNN): Background
- CNNs: basic architectures and learning algorithms
- Object Recognition with CNN
- Image Segmentation with CNN
- Recurrent Neural Networks
- Generating image descriptions (Image Captioning)
- Automatic question answering (Visual Question Answering)
- Generative Adversarial Networks (GAN) and their applications
- Deep Learning platforms and tools

Annotation
The lecture is partially given in German and English.

T 6.80 Course: Deployment of Database Systems [T-INFO-101317]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-100780 - Datenbankeinsatz
M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 5	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	2400020	Datenbankeinsatz	3 SWS	Lecture (V)	Schäler
Exams					
WS 18/19	7500007	Deployment of Database Systems		Prüfung (PR)	Böhm

T 6.81 Course: Derivatives [T-WIWI-102643]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
                     M-WIWI-101480 - Finance 3
                     M-WIWI-101482 - Finance 1
                     M-WIWI-101483 - Finance 2

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

Events					
SS 2019	2530550	**Derivatives**	2 SWS	Lecture (V)	Uhrig-Homburg
SS 2019	2530551	**Übungen zu Derivate**	1 SWS	Practice (Ü)	Uhrig-Homburg, Eska
Exams					
WS 18/19	7900051	**Derivatives**		Prüfung (PR)	Uhrig-Homburg

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

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

V Derivatives
2530550, SS 2019, 2 SWS, Open in study portal
Lecture (V)

Description
The lecture deals with the application areas and valuation of financial derivatives. After an overview of the most important derivatives and their relevance, forwards and futures are analysed. Then, an introduction to the Option Pricing Theory follows. The main emphasis is on option valuation in discrete and continuous time models. Finally, construction and usage of derivatives are discussed, e.g. in the context of risk management.

Learning Content
The lecture deals with the application areas and valuation of financial derivatives. After an overview of the most important derivatives and their relevance, forwards and futures are analysed. Then, an introduction to the Option Pricing Theory follows. The main emphasis is on option valuation in discrete and continuous time models. Finally, construction and usage of derivatives are discussed, e.g. in the context of risk management.

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

Literature

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

Elective literature:

Cox/Rubinstein (1985): Option Markets, Prentice Hall

T 6.82 Course: Design Thinking [T-WIWI-102866]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
                   M-WIWI-101488 - Entrepreneurship (EnTechnon)
                   M-WIWI-101488 - Entrepreneurship (EnTechnon)
                   M-WIWI-101507 - Innovationsmanagement

Type Prüfungsleistung anderer Art	**Credits** 3	**Recurrence** Each term	**Version** 1

Events					
WS 18/19	2545009	Design Thinking (Track 2)	2 SWS	Seminar (S)	Haller, Terzidis
SS 2019	2545008	Design Thinking (Track 1)	2 SWS	Seminar (S)	Terzidis, Jochem, Lau
Exams					
WS 18/19	7900025	Design Thinking (Track 2)		Prüfung (PR)	Terzidis

Competence Certificate
Alternative exam assessments (§4(2), 3 SPO).

Prerequisites
None

Recommendation
None

Annotation
The seminar content will be published on the website of the institute.

T 6.83 Course: Developing Business Models for the Semantic Web [T-WIWI-102851]

Responsible:	Prof. Dr. Rudi Studer
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	1

Competence Certificate

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

Prerequisites

None

Recommendation

As a recommendation to attending the seminar, basic knowledge about semantic technologies and concepts should be available. This may be acquired by attending one of the following lectures – Wissensmanagement, Semantic Web Technologies 1, Semantic Web Technologies 2 or by studying related literature. Furthermore the topic entrepreneurship should be of interest.

T 6.84 Course: Digital Circuits Design [T-INFO-103469]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: M-INFO-102233 - Weitere Leistungen
M-INFO-102978 - Digitaltechnik und Entwurfsverfahren

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events					
SS 2019	24007	**Digitaltechnik und Entwurfsverfahren**	3 SWS	Lecture (V)	Hanebeck, Bromberger
Exams					
WS 18/19	7500254	**Digital Circuits Design**		Prüfung (PR)	Henkel, Karl, Tahoori

T 6.85 Course: Digital Health [T-WIWI-109246]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-104403 - Critical Digital Infrastructures

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each winter term	1

Events					
WS 18/19	2511402	Digital Health	2 SWS	Lecture (V)	Sunyaev, Kromat
Exams					
WS 18/19	7900068	Digital Health		Prüfung (PR)	Sunyaev
SS 2019	7900062	Digital Health		Prüfung (PR)	Sunyaev

Competence Certificate
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites
None.

Annotation
New lecture from winter semester 2018/2019.

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

V Digital Health
2511402, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Description
The lecture "Digital Health" has a twofold purpose: first, to introduce theoretical foundations of various topics in digital health (they include, for instance, eHealth, health information systems, ambient assisted living, and smart homes in health care); and second, to introduce current topics in research on digital health (this includes for example genomics, gamification in health care, mobile health, and information privacy) by presenting papers and research projects the research group is working on. In addition, students are given the opportunity to combine the theoretical knowledge with real problems through a practical lecture.

Workload
4 ECTS = approx. 120 h.

T 6.86 Course: Digital Marketing and Sales in B2B [T-WIWI-106981]

Responsible: Anja Konhäuser
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101487 - Sales Management

Type Prüfungsleistung anderer Art	Credits 1,5	Recurrence Each winter term	Version 1

Events					
WS 18/19	2572176	Digital Marketing and Sales in B2B	1 SWS	Others (sonst.)	Konhäuser
Exams					
WS 18/19	7900169	Digital Marketing and Sales in B2B		Prüfung (PR)	Klarmann

Competence Certificate
Alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation. (team presentation of a case study with subsequent discussion totalling 30 minutes).

Prerequisites
None.

Annotation
Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing and Sales (marketing.iism.kit.edu).
Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed.
For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu).
Please note that only one of the 1.5-ECTS courses can be attended in this module.

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

V Digital Marketing and Sales in B2B
2572176, WS 18/19, 1 SWS, Open in study portal
Others (sonst.)

Learning Content
Learning Sessions:

The class gives insights into digital marketing strategies as well as the effects and potential of different channels (e.g., SEO, SEA, Social Media). After an overview of possible activities and leverages in the digital marketing field, including their advantages and limits, the focus will turn to the B2B markets. There are certain requirements in digital strategy specific to the B2B market, particularly in relation to the value chain, sales management and customer support. Therefore, certain digital channels are more relevant for B2B marketing than for B2C marketing.
Once the digital marketing and tactics for the B2B markets are defined, further insights will be given regarding core elements of a digital strategy: device relevance (mobile, tablet), usability concepts, website appearance, app decision, market research and content management. A major advantage of digital marketing is the possibility of being able to track many aspects of of user reactions and user behaviour. Therefore, an overview of key performance indicators (KPIs) will be discussed and relationships between these KPIs will be explained. To measure the effectiveness of digital activities, a digital report should be set up and connected to the performance numbers of the company (e.g. product sales) – within the course the setup of the KPI dashboard and combination of digital and non-digital measures will be shown to calculate the Return on Investment (RoI).

Presentation Sessions:

After the learning sessions, the students will form groups and work on digital strategies within a case study format. The presentation of the digital strategy will be in front of the class whereas the presentation will take 20 minutes followed by 10 minutes questions and answers.

Workload

time of presentness = 15 hrs.

private study = 30 hrs.

Literature

-

T 6.87 Course: Digital Service Design [T-WIWI-105773]

Responsible:	Prof. Dr. Alexander Mädche
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102806 - Service Innovation, Design & Engineering
	M-WIWI-104080 - Designing Interactive Information Systems

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

Events					
WS 18/19	2540420	Digital Service Design	2 SWS	Lecture (V)	Mädche, Liu, Toreini
Exams					
WS 18/19	7900210	Digital Service Design		Prüfung (PR)	Mädche

Competence Certificate
Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.
Students receive one aggregated grade consisting of a written exam (60%) and the Digital Service Design challenge (40%). The exam and the Digital Service Design challenge need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the Digital Service Design challenge.

Prerequisites
None

Recommendation
None

Annotation
The course is held in English.

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

V Digital Service Design
2540420, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Description
Designing services is different from designing products. In contrast to products being discrete and tangible objects, services are co-produced by people and only provide value when they are actually used. Digital services represent a specific category of services and specifically leverage and integrate information technology in the service delivery process.

The aim of this course is to introduce key concepts and theoretical foundations of digital service design. Furthermore, a management perspective looking at the entire service lifecycle, covering the organizational and team level as well as state-of-the-art digital service design processes (e.g. agile, lean, continuous delivery) is provided. Finally, an introduction of important digital service design practices and tools supporting user research, conceptualization & prototyping as well as evaluation is given.

The lecture is complemented with a Digital Service Design challenge, where students leverage practices and tools from the lecture to suggest improvements for an existing digital service. The challenge is carried out in cooperation with practice partners (e.g. Commerzbank).

Learning Content

- Definition and key concepts of digital service design and related terms
- Introduction to the business and design perspective of a service design project
- The digital service design process from strategy through planning and prototyping to launching the digital service.
- Practice-oriented capstone project focusing on the design of a real-world digital service

Literature

Benyon, D. (2014). Designing interactive systems: A comprehensive guide to HCI, UX and interaction design (3. ed.). Harlow: Pearson.

Williams, Kevin, Samir Chatterjee, and Matti Rossi. 2008. "Design of Emerging Digital Services: A Taxonomy." European Journal of Information Systems 17(5): 505–17

Hill, T.P. 1977. "On Goods and Services." The review of income and wealth 23(4): 315–38.

Werder K, Zobel B, Maedche A (2016) PDISC -- Towards a Method for Software Product DISCovery. In: Maglyas A, Lamprecht A-L (eds) Softw. Bus. 7th Int. Conf. ICSOB 2016, Ljubljana, Slov. June 13-14, 2016, Proc. Springer International Publishing, Cham, pp 47–62

Pichler R (2016) Strategize: Product Strategy and Product Roadmap Practices for the Digital Age. Pichler Consulting

Liu, X., Werder, K., & Maedche, A. (2016). A Taxonomy of Digital Service Design Techniques. In *Proceedings of the 2016 International Conference on Information Systems*

T   6.88 Course: Digital Signatures [T-INFO-101280]

Responsible: Prof. Dr. Dennis Hofheinz
Organisation: KIT Department of Informatics
Part of: M-INFO-101198 - Fortgeschrittene Themen der Kryptographie
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 3	Recurrence Each winter term	Version 1

Events					
WS 18/19	24654	Digital Signatures	2 SWS	Lecture (V)	Pan, Hofheinz
SS 2019	24654	Digital Signatures	2 SWS	Lecture (V)	Hofheinz
Exams					
WS 18/19	7500094	Digital signatures		Prüfung (PR)	Geiselmann, Müller-Quade, Hofheinz

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

V   Digital Signatures
24654, WS 18/19, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content

Digital signatures are a fundamental primitive of modern cryptography. Their practical applications include, for instance, authenticated e-mail or certificate hierarchies on the internet.
This lecture will give an overview of important signature schemes with theoretical or practical relevance. This includes:

- One-time signatures, tree-based signatures, and chameleon hash functions
- RSA-based signatures
- Signatures in bilinear groups

Goal of this lecture is not only to describe these schemes, but also to discuss their security. Therefore we will introduce various security notions for digital signatures, and analyze whether the presented schemes provably meet these notions (under certain hardness assumptions).

Depending on the student's preferences, the remaining time will be used to discuss advanced topics, such as:

- Schnorr signatures
- Programmable hash functions
- Tightness of reductions
- Analysis of hardness assumptions in the generic group model

V   Digital Signatures
24654, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content

Digital signatures are a fundamental primitive of modern cryptography. Their practical applications include, for instance, authenticated e-mail or certificate hierarchies on the internet.

This lecture will give an overview of important signature schemes with theoretical or practical relevance. This includes:

- One-time signatures, tree-based signatures, and chameleon hash functions
- RSA-based signatures
- Signatures in bilinear groups

Goal of this lecture is not only to describe these schemes, but also to discuss their security. Therefore we will introduce various security notions for digital signatures, and analyze whether the presented schemes provably meet these notions (under certain hardness assumptions).

Depending on the student's preferences, the remaining time will be used to discuss advanced topics, such as:

- Schnorr signatures
- Programmable hash functions
- Tightness of reductions
- Analysis of hardness assumptions in the generic group model

T 6.89 Course: Digital Transformation and Business Models [T-WIWI-108875]

Responsible:	Dr. Daniel Jeffrey Koch
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovationsmanagement

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Exams				
SS 2019	7900284	Digital Transformation and Business Models	Prüfung (PR)	Weissenberger-Eibl

Competence Certificate

Non exam assessment (following §4(2) 3 of the examination regulation).

The final grade is composed 75% of the grade of the written paper and 25% of the presentation.

Prerequisites

None

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

T 6.90 Course: Digital Transformation of Organizations [T-WIWI-106201]

Responsible:	Prof. Dr. Alexander Mädche
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101448 - Service Management
	M-WIWI-102754 - Service Economics and Management
	M-WIWI-102808 - Digital Service Systems in Industry
	M-WIWI-104068 - Information Systems in Organizations

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

Events					
SS 2019	2540556	**Digital Transformation and Organizations**	3 SWS	Lecture (V)	Mädche
Exams					
WS 18/19	7900230	**Digital Transformation of Organizations**		Prüfung (PR)	Mädche

Competence Certificate

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

Students receive one aggregated grade consisting of a written exam (60%) and case study deliverable (40%). The exam and the case study need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the case study.

Prerequisites

None

Annotation

The course will be held in English.

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

V Digital Transformation and Organizations
2540556, SS 2019, 3 SWS, Open in study portal

Lecture (V)

Description

During the last decades we witnessed a growing importance of Information Technology (IT) in the business world along with faster and faster innovation cycles. IT has become core for businesses from an operational company-internal and external customer perspective. Today, IT is considered as key enabler of operational excellence ranging from the enrichment of routine working tasks (e.g., enterprise resource planning systems) to e-enabled integration of entire business eco-systems (e.g., e-supply chains). Complementing this primarily company-internal perspective on IT, we have recently have seen a massive growth of digital extensions of existing products and services across all industries. The disruptive potential of IT has already transformed selected key industries, e.g. media or retail, and its impact is continuously growing in all areas of business and society.

Large-scale information systems (IS) in organizations strongly interplay with work practices of individual employees as well as organizational structures shaping and being shaped by individuals' behavior. Thus, successful implementation of IS requires dealing with transformation beyond technology. The ability to implement and use IS in a way supporting its overall value proposition has become a central success determinant. Accordingly, the course "Management of Information Systems" course is designed to provide a comprehensive insight into theoretical foundations, concepts, tools, and current practice of IS. The lecture is complemented with a case study. Students get the opportunity to analyze and propose solutions for a selected real-world IS implementation.

Learning Content

- Definition and key concepts of Information Systems

- Introduction of different types of application systems (organizational process & information-centric systems, customer-centric systems, supplier-centric systems and people-centric systems) and their characteristics

- The digital transformation process: The pre-implementation, implementation and post-implementation phase covering facets such as business/IT alignment, packaged software selection, IS implementation projects, as well as adoption & use of IS

- Practice-oriented case study focusing on real-world IS scenarios

Literature

Daft, R. L. (2009). Organization theory and design. Cengage learning.

Laudon, K. C. and Laudon, J. P. (2014). Management Information Systems: Managing the Digital Firm, 13th Edition, Pearson.

Sambamurthy, V and Zmud, R. Z. (2012). Guiding the Digital Transformation of Organizations. Legerity Digital Press, ISBN 978-0-9857955-0-4.

T 6.91 Course: Discrete-Event Simulation in Production and Logistics [T-WIWI-102718]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102805 - Service Operations
	M-WIWI-102832 - Operations Research im Supply Chain Management

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

Events					
SS 2019	2550488	Ereignisdiskrete Simulation in Produktion und Logistik	3 SWS	Lecture (V)	Spieckermann

Competence Certificate
The assessment consists of a written paper and an oral exam of about 30-40 min (non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015)).

Prerequisites
None

Recommendation
Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is planned to be held every summer term.

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

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

V Ereignisdiskrete Simulation in Produktion und Logistik   Lecture (V)
2550488, SS 2019, 3 SWS, Open in study portal

Learning Content
Simulation of production and logistics systems is an interdisciplinary subject connecting expert knowledge from production management and operations research with mathematics/statistics as well as computer science and software engineering. With completion of this course, students know statistical foundations of discrete simulation, are able to classify and apply related software applications, and know the relation between simulation and optimization as well as a number of application examples. Furthermore, students are enabled to structure simulation studies and are aware of specific project scheduling issues.

Annotation
Basic knowledge as conveyed in the module "Introduction toOperations Research" is assumed.

Besides knowledge of Operations Research students are assumed to be familiar with the following topics:

- Introduction in Statistics
- Programming basics (algorithms and data structures)
- Basic knowledge in production and logistics

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

Literature

- Banks J., Carson II J. S., Nelson B. L., Nicol D. M. (2010) Discrete-event system simulation, 5.Aufl., Pearson, Upper Saddle River.
- Eley, M. (2012): Simulation in der Logistik - Einführung in die Erstellung ereignisdiskreter Modelle unter Verwendung des Werkzeuges "Plant Simulation", Springer, Berlin und Heidelberg
- Kosturiak, J. und M. Gregor (1995): Simulation von Produktionssystemen. Springer, Wien und New York.
- Law, A. M. (2015): Simulation Modeling and Analysis. 5th Edition, McGraw-Hill, New York usw.
- Liebl, F. (1995): Simulation. 2. Auflage, Oldenbourg, München.
- Noche, B. und S. Wenzel (1991): Marktspiegel Simulationstechnik. In: Produktion und Logistik. TÜV Rheinland, Köln.
- Pidd, M. (2004): Computer Simulation in Management Science. 5th Edition, Wiley, Chichester.
- Robinson S (2004) Simulation: the practice of model development and use. John Wiley & Sons, Chichester
- VDI (2014): Simulation von Logistik-, Materialfluß- und Produktionssystemen. VDI Richtlinie 3633, Blatt 1, VDI-Verlag, Düsseldorf.

T 6.92 Course: Distributed Computing [T-INFO-101298]

Responsible: Prof. Dr. Achim Streit
Organisation: KIT Department of Informatics
Part of: M-INFO-101210 - Dynamische IT-Infrastrukturen
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	Credits 4	Recurrence Each winter term	Version 2

Events					
WS 18/19	2400050	**Distributed Computing**	2 SWS	Lecture (V)	Streit, Krauß
Exams					
WS 18/19	7500172	**Distributed Computing**		Prüfung (PR)	Streit

T 6.93 Course: Dynamic Macroeconomics [T-WIWI-109194]

Responsible:	Prof. Dr. Johannes Brumm
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101478 - Innovation und Wachstum
	M-WIWI-101496 - Wachstum und Agglomeration

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

Events					
WS 18/19	2560402	Dynamic Macroeconomics	2 SWS	Lecture (V)	Brumm
WS 18/19	2560403	Übung zu Dynamic Macroeconomics	1 SWS	Practice (Ü)	Krause
Exams					
WS 18/19	7900261	Dynamic Macroeconomics		Prüfung (PR)	Scheffel

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None.

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

V Dynamic Macroeconomics
2560402, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Description
The course Dynamic Macroeconomics addresses macroeconomic questions on an advanced level. The main focus of this course is on dynamic programming and its fundamental role in modern macroeconomics. After starting with the necessary mathematical tools, several applications in labor economics, economic growth, and asset pricing are introduced. The course pursues a hands-on approach so that students not only gain theoretical insights but also learn numerical tools to solve dynamic economic models using the modern programming language Python.

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature
Literature and lecture notes are provided during the course.

| T | **6.94 Course: Efficient Energy Systems and Electric Mobility [T-WIWI-102793]** |

Responsible:	PD Dr. Patrick Jochem
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101452 - Energiewirtschaft und Technologie

Type Prüfungsleistung schriftlich	**Credits** 3,5	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	2581006	Efficient Energy Systems and Electric Mobility	2 SWS	Lecture (V)	Jochem, McKenna
Exams					
WS 18/19	7981006	Efficient Energy Systems and Electric Mobility		Prüfung (PR)	Fichtner

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

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

| V | **Efficient Energy Systems and Electric Mobility** 2581006, SS 2019, 2 SWS, Open in study portal | **Lecture (V)** |

Learning Content
This lecture series combines two of the most central topics in the field of energy economics at present, namely energy efficiency and electric mobility. The objective of the lecture is to provide an introduction and overview to these two subject areas, including theoretical as well as practical aspects, such as the technologies, political framework conditions and broader implications of these for national and international energy systems.

The energy efficiency part of the lecture provides an introduction to the concept of energy efficiency, the means of affecting it and the relevant framework conditions. Further insights into economy-wide measurements of energy efficiency, and associated difficulties, are given with recourse to several practical examples. The problems associated with market failures in this area are also highlighted, including the Rebound Effect. Finally and by way of an outlook, perspectives for energy efficiency in diverse economic sectors are examined.

The electric mobility part of the lecture examines all relevant issues associated with an increased penetration of electric vehicles including their technology, their impact on the electricity system (power plants and grid), their environmental impact as well as their optimal integration in the future private electricity demand (i.e. smart grids and V2G). Besides technical aspects the user acceptance and behavioral aspects are also discussed.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature
Will be anounced in the lecture.

T 6.95 Course: eFinance: Information Systems for Securities Trading [T-WIWI-109941]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101446 - Market Engineering
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

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

Events					
WS 18/19	2540454	eFinance: Information Systems for Securities Trading	2 SWS	Lecture (V)	Weinhardt, Notheisen, Glaser
WS 18/19	2540455	Übungen zu eFinance: Wirtschaftsinformatik für den Wertpapierhandel	1 SWS	Practice (Ü)	Notheisen, Glaser

Competence Certificate

The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations) and by submitting written essays as part of the exercise (§4(2), 3 SPO 2007 respectively §4(3) SPO 2015). 70% of the final grade is based on the written exam and 30% is based on assignments from the exercises. The points obtained in the exercises only apply to the first and second exam of the semester in which they were obtained.

Prerequisites

see below

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-102600 - eFinance: Information Engineering and Management for Securities Trading must not have been started.

Recommendation

None

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

V eFinance: Information Systems for Securities Trading
2540454, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Description

The theoretical part of the course examines the New Institutions Economics which provides a theoretically found explanation for the existence of markets and intermediaries. Building upon the foundations of the market micro structure, several key parameters and factors of electronic trading are examined. These insights gained along a structured securities trading process are complemented and verified by the analysis of prototypical trading systems developed at the institute as well as selected trading systems used by leading exchanges in the world. In the more practical-oriented second part of the lecture, speakers from practice will give talks about financial trading systems and link the theoretical findings to real-world systems and applications.

Learning Content

The theoretical part of the course examines the New Institutions Economics which provides a theoretically found explanation for the existence of markets and intermediaries. Building upon the foundations of the market micro structure, several key parameters and factors of electronic trading are examined. These insights gained along a structured securities trading process are complemented and verified by the analysis of prototypical trading systems developed at the institute as well as selected trading systems used by leading exchanges in the world. In the more practical-oriented second part of the lecture, speakers from practice will give talks about financial trading systems and link the theoretical findings to real-world systems and applications.

Workload

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

Literature

- Picot, Arnold, Christine Bortenländer, 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 6.96 Course: Emerging Trends in Critical Information Infrastructures [T-WIWI-109250]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-104403 - Critical Digital Infrastructures

Type Prüfungsleistung anderer Art	Credits 4	Recurrence Each term	Version 1

Events					
WS 18/19	2513400	Emerging Trends in Critical Information Infrastructures	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
Exams					
WS 18/19	7900114	Emerging Trends in Critical Information Infrastructures		Prüfung (PR)	Sunyaev
SS 2019	7900187	Emerging Trends in Critical Information Infrastructures		Prüfung (PR)	Sunyaev

Competence Certificate
The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of a final thesis.

Prerequisites
None.

Annotation
The course is usually held as a block course.

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

V Emerging Trends in Critical Information Infrastructures
2513400, WS 18/19, 2 SWS, Open in study portal   **Seminar (S)**

Description
The block seminar Emerging Trends in Critical Information Infrastructures aims to provide insights into emerging topics in the field of information systems and to offer students an opportunity to write their first academic paper alone or in a group of students. Each semester, different topics are offered around the lectures and research domains of Prof. Sunyaev's chair, especially Trusted Engineering, Digital Health, Internet Technologies as well as Auditing and Certifications. Students can also submit their own topic suggestions within the framework of the main topics specified in the respective semester.

T 6.97 Course: Emissions into the Environment [T-WIWI-102634]

Responsible:	Ute Karl
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101412 - Industrielle Produktion III
	M-WIWI-101471 - Industrielle Produktion II

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581962	Emissions into the Environment	2 SWS	Lecture (V)	Karl
Exams					
WS 18/19	7981962	Emissions into the Environment		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Recommendation

None

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

V Emissions into the Environment
2581962, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content

The course will provide an overview of sources of air pollution, waste and municipal waste; methods to monitor and to reduce/manage pollutant flows; regulatory framework on national and international level.

A Air pollution control

- Indtroduction and definitions
- Sources an dpoluutants
- Regulatory framework
- Emission monitoring
- Air pollution control measures

B Waste management and Recycling

- Introduction and regulatory framework
- Statistics and logistics
- Recycling and disposal
- Waste treatment

C Waste water treatment

- Municipal waste water treatment systems
- Sewage sludge disposal

Workload

The total workload for this course is approximately 105 hours. For further information see German version.

Literature

Will be announced in thecourse.

T 6.98 Course: Empirical Software Engineering [T-INFO-101335]

Responsible:	Prof. Dr. Walter Tichy
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101202 - Software-Methodik
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 4	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	24156	Empirische Softwaretechnik	2 SWS	Lecture (V)	Tichy
Exams					
WS 18/19	7500150	Empirical Software Engineering		Prüfung (PR)	Tichy
SS 2019	7500168	Empirical Software Engineering		Prüfung (PR)	Tichy

T 6.99 Course: Employment Law I [T-INFO-101329]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101216 - Recht der Wirtschaftsunternehmen
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
WS 18/19	24167	Employment Law I	2 SWS	Lecture (V)	Hoff
Exams					
WS 18/19	7500040	Employment Law I		Prüfung (PR)	Dreier, Matz
SS 2019	7500097	Employment Law I		Prüfung (PR)	Dreier, Matz

T 6.100 Course: Employment Law II [T-INFO-101330]

Responsible:	Prof. Dr. Thomas Dreier
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101216 - Recht der Wirtschaftsunternehmen
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
SS 2019	24668	**Employment Law II**	2 SWS	Lecture (V)	Hoff
Exams					
WS 18/19	7500058	**Employment Law II**		Prüfung (PR)	Dreier, Matz
SS 2019	7500098	**Employment Law II**		Prüfung (PR)	Dreier, Matz

T 6.101 Course: Energy and Environment [T-WIWI-102650]

Responsible: Ute Karl
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
                     M-WIWI-101452 - Energiewirtschaft und Technologie
                     M-WIWI-101468 - Umwelt- und Ressourcenökonomie

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

Events					
SS 2019	2581003	Energy and Environment	2 SWS	Lecture (V)	Karl
SS 2019	2581004	Übungen zu Energie und Umwelt	1 SWS	Practice (Ü)	Seddig, Keles
Exams					
WS 18/19	7981003	Energy and Environment		Prüfung (PR)	Fichtner

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None.

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

V Energy and Environment
2581003, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content
The focus of the lecture is put on environmental impacts of fossil fuel conversion and related assessment methods. The list of topics is given below.

- Fundamentals of energy conversion
- Air pollutant formation from fossil fuel combustion
- Control of air pollutant emissions from fossil-fuelled power plants.
- Measures to improve conversion efficiency of fossil fuelled power plants.
- External effects of energy supply (Life Cycle Assessment of selected energy systems)
- Integrated Assessment models supporting the European Thematic Strategy on Air
- Cost-effectiveness analyses and cost-benefit analyses of air pollution control measures
- Monetary evaluation of external effects of energy supply (external costs)

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

Literature
Thr references for further reading are included in the lecture documents (see ILIAS)

T 6.102 Course: Energy Market Engineering [T-WIWI-107501]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101446 - Market Engineering
	M-WIWI-101451 - Energiewirtschaft und Energiemärkte
	M-WIWI-103720 - eEnergy: Markets, Services and Systems

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

Events					
SS 2019	2540464	Energy Market Engineering	2 SWS	Lecture (V)	Weinhardt, Staudt
SS 2019	2540465	Übung zu Energy Market Engineering	1 SWS	Practice (Ü)	Staudt, vom Scheidt

Competence Certificate
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites
None

Recommendation
None

Annotation
Former course title until summer term 2017: T-WIWI-102794 "eEnergy: Markets, Services, Systems".

The lecture has also been added in the IIP Module *Basics of Liberalised Energy Markets.*

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

V Energy Market Engineering
2540464, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content
This lecture discusses different design options for electricity markets. We will focus on different approaches of nodal and zonal pricing as well as single price mechanisms and capacity markets. After a short recap of German and European market designs, the different design options will be discussed scientifically and with the help of examples. Furthermore, we will evaluate alternative market design options like microgrids. Besides the fundamental functioning of those markets, we will introduce and discuss methodological knowledge to evaluate market design options.

Annotation
The lecture has also been added in the IIP Module *Basics of Liberalised Energy Markets.*

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

Literature

- Erdmann G, Zweifel P. *Energieökonomik, Theorie und Anwendungen*. Berlin Heidelberg: Springer; 2007.
- Grimm V, Ockenfels A, Zoettl G. Strommarktdesign: Zur Ausgestaltung der Auktionsregeln an der EEX *. *Zeitschrift für Energiewirtschaft*. 2008:147-161.
- Stoft S. *Power System Economics: Designing Markets for Electricity*. IEEE; 2002.,
- Ströbele W, Pfaffenberger W, Heuterkes M. *Energiewirtschaft: Einführung in Theorie und Politik*. 2nd ed. München: Oldenbourg Verlag; 2010:349.

T   6.103 Course: Energy Networks and Regulation [T-WIWI-107503]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101446 - Market Engineering
	M-WIWI-103720 - eEnergy: Markets, Services and Systems

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

Events					
WS 18/19	2540494	Energy Networks and Regulation	2 SWS	Lecture (V)	Rogat
WS 18/19	2540495	Übung zu Energy Networks and Regulation	1 SWS	Practice (Ü)	Rogat
Exams					
WS 18/19	7900198	Energy Networks and Regulation		Prüfung (PR)	Weinhardt
WS 18/19	7900236	Energy Networks and Regulation		Prüfung (PR)	Weinhardt

Competence Certificate
The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.
The exam is offered every semester. Re-examinations are offered on every ordinary examination date.

Prerequisites
None

Recommendation
None

Annotation
Former course title until summer term 2017: T-WIWI-103131 "Regulatory Management and Grid Management - Economic Efficiency of Network Operation"

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

V   Energy Networks and Regulation
2540494, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content
The lecture "Energy Networks and Regulation" provides insights into the regulatory framework of electricity and gas. It touches upon the way the grids are operated and how regulation affects almost all grid activities. The lecture also addresses approaches of grid companies to cope with regulation on a managerial level. We analyze how the system influences managerial decisions and strategies such as investment or maintenance. Furthermore, we discuss how the system affects the operator's abilities to deal with the massive challenges lying ahead ("Energiewende", redispatch, European grid integration, electric vehicles etc.). Finally, we look at current developments and major upcoming challenges, e.g., the smart meter rollout. Covered topics include:

- Grid operation as a heterogeneous landscape: big vs. small, urban vs. rural, TSO vs. DSO.
- Objectives of regulation: Fair price calculation and high standard access conditions.
- The functioning of incentive regulation
- Amendment to the incentive regulation: its merits, its flaws
- The revenue cap and how it is adjusted according to certain exogenous factors
- Grid tariffs: How are they calculated, what is the underlying rationale, do we need a reform (and which)?
- Exogenous costs shifted (arbitrarily) into the grid, e.g. feed-in tariffs for renewable energy or decentralized supply.

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

Literature

Averch, H.; Johnson, L.L (1962). Behavior of the firm under regulatory constraint, in: American Economic Review, 52 (5), S. 1052 – 1069.

Bundesnetzagentur (2006): Bericht der Bundesnetzagentur nach § 112a EnWG zur Einführung der Anreizregulierung nach § 21a EnWG, http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/ Unternehmen_Institutionen/Netzentgelte/Anreizregulierung/BerichtEinfuehrgAnreizregulierung.pdf? __blob=publicationFile&v=3.

Bundesnetzagentur (2015): Evaluierungsbericht nach § 33 Anreizregulierungsverordnung, https://www.bmwi.de/Redaktion/ DE/Downloads/A/anreizregulierungsverordnung-evaluierungsbericht.pdf?__blob=publicationFile&v=1.

Filippini, M.; Wild, J.; Luchsinger, C. (2001) : Regulierung der Verteilnetzpreise zu Beginn der Marktöffnung. Erfahrungen in Norwegen und Schweden, Bundesamt für Energie, Bern, http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/ 34/066/34066585.pdf.

Gómez, T. (2013): Monopoly Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 151 – 198, Springer-Verlag, London.

Gómez, T. (2013): Electricity Distribution, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 199 – 250, Springer-Verlag, London.

Pérez-Arriaga, I.J. (2013): Challenges in Power Sector Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 647 – 678, Springer-Verlag, London.

Rivier, M.; Pérez-Arriaga, I.J.; Olmos, L. (2013): Electricity Transmission, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 251 – 340, Springer-Verlag, London.

T 6.104 Course: Energy Systems Analysis [T-WIWI-102830]

Responsible:	Dr. Armin Ardone
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101452 - Energiewirtschaft und Technologie

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2581002	**Energy Systems Analysis**	2 SWS	Lecture (V)	Ardone
Exams					
WS 18/19	7981002	**Energy Systems Analysis**		Prüfung (PR)	Fichtner

Competence Certificate

The assessment consists of a written exam according to Section 4(2), 1 of the examination regulation.

Prerequisites

None

Recommendation

None

Annotation

Since 2011 the lecture is offered in winter term. Exams can still be taken in summer term.

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

V Energy Systems Analysis
2581002, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content

1. Overview and classification of energy systems modelling approaches

2. Usage of scenario techniques for energy systems analysis

3. Unit commitment of power plants

4. Interdependencies in energy economics

5. Scenario-based decision making in the energy sector

6. Visualisation and GIS techniques for decision support in the energy sector

Annotation

Since 2011 the lecture is offered in winter term. Exams can still be taken in summer term.

Workload

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

T 6.105 Course: Energy Trade and Risk Management [T-WIWI-102691]

Responsible:	Dr. Clemens Cremer
	Prof. Dr. Wolf Fichtner
	Dr. Dogan Keles
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101451 - Energiewirtschaft und Energiemärkte

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Events					
SS 2019	2581020	Energy Trade and Risk Management	3 SWS	Lecture (V)	Keles, Cremer
Exams					
WS 18/19	7981020	Energy Trade and Risk Management		Prüfung (PR)	Fichtner

Competence Certificate
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation.

Prerequisites
None

Recommendation
None

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

V Energy Trade and Risk Management
2581020, SS 2019, 3 SWS, Open in study portal   **Lecture (V)**

Learning Content

1. Introduction to Markets, Mechanisms, Interactions
2. Basics of Risk Management
3. Oil Markets
4. Gas Markets
5. Coal Markets
6. Emission Markets
7. Simulation Game
8. Power Markets
9. Risk Management in Utilities

Annotation
The credits have been changed from 3.5 to 4.

Workload
The total workload for this course is approximately 120.0 hours. For further information see German version.

Literature
Elective literature:

Burger, M., Graeber, B., Schindlmayr, G. (2007): *Managing energy risk: An integrated view on power and other energy markets*, Wiley&Sons, Chichester, England

EEX (2010): *Einführung in den Börsenhandel an der EEX auf Xetra und Eurex*, www.eex.de

Erdmann, G., Zweifel, P. (2008), Energieökonomik, Theorie und Anwendungen, Springer, ISBN: 978-3-540-71698-3

Hull, J.C. (2006): *Options, Futures and other Derivatives*, 6. Edition, Pearson Prentice Hall, New Jersey, USA

Borchert, J., Schlemm, R., Korth, S. (2006): *Stromhandel: Institutionen, Marktmodelle, Pricing und Risikomanagement (Gebundene Ausgabe)*, Schäffer-Poeschel Verlag

www.riskglossary.com

T   6.106 Course: Engineering FinTech Solutions [T-WIWI-106193]

Responsible:	Prof. Dr Maxim Ulrich
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103247 - Intelligente Risiko- und Investitionsberatung
	M-WIWI-103261 - Disruptive Finanz-technologische Innovationen

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each summer term	2

Events					
WS 18/19	2530357	**Engineering FinTech Solutions**	2 SWS	Lecture (V)	Ulrich
SS 2019	2530357	**Engineering FinTech Solutions**	3 SWS	Lecture (V)	Ulrich
Exams					
WS 18/19	7900287	**Engineering FinTech Solutions**		Prüfung (PR)	Ulrich
SS 2019	7900125	**Engineering FinTech Solutions**		Prüfung (PR)	Ulrich

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). Details of the grade formation will be announced at the beginning of the course.

Prerequisites
This course is only open for registered students of the module "Intelligent Risk and Investment Advisory" and "Disruptive FinTech Solutions".

Recommendation
None

Annotation
The course will be held in English language.

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

V   Engineering FinTech Solutions
2530357, WS 18/19, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content
This project-oriented lecture invites students to work independently and yet, under close monitoring of researchers and the professor of the C-RAM research group, on a sub-problem of a larger FinTech research question. Students will in a personalized manner be introduced to the necessary concepts, tools and methods that are necessary to solve the question at hand. Students obtain the opportunity to connect newest research insights with modern information technology to move a step closer towards their own development of a prototype. Depending on the topic, students work alone or in groups. An essential part of the guided research mentoring is that students take part in weekly meetings to discuss open issues, to present their progress and to learn from their fellow students

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature
Literature will be distributed during the first lecture.

V   Engineering FinTech Solutions
2530357, SS 2019, 3 SWS, Open in study portal   **Lecture (V)**

Notes
New course starting summer term 2019.

Learning Content
This project-oriented lecture invites students to work independently and yet, under close monitoring of researchers and the professor of the C-RAM research group, on a sub-problem of a larger FinTech research question. Students will in a personalized manner be introduced to the necessary concepts, tools and methods that are necessary to solve the question at hand. Students obtain the opportunity to connect newest research insights with modern information technology to move a step closer towards their own development of a prototype. Depending on the topic, students work alone or in groups. An essential part of the guided research mentoring is that students take part in weekly meetings to discuss open issues, to present their progress and to learn from their fellow students

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature
Literature will be distributed during the first lecture.

T   6.107 Course: Entrepreneurial Leadership & Innovation Management [T-WIWI-102833]

Responsible:	Dr. Carsten Linz
	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovationsmanagement

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	2

Competence Certificate

Please note: The seminar cannot be offered in the winter semester 2018/2019 due to organizational reasons.

Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

Prerequisites

None

Recommendation

None

T   6.108 Course: Entrepreneurship [T-WIWI-102864]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovationsmanagement

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each term	**Version** 1

Events					
SS 2019	2545001	**Entrepreneurship**	2 SWS	Lecture (V)	Terzidis, Mitarbeiter
Exams					
WS 18/19	7900045	**Entrepreneurship**		Prüfung (PR)	Terzidis
WS 18/19	7900215	**Entrepreneurship**		Prüfung (PR)	Terzidis
WS 18/19	7900229	**Entrepreneurship**		Prüfung (PR)	Terzidis

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
None

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

V   Entrepreneurship
2545001, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Description
This lecture, as an obligatory part of the module "Entrepreneurship", introduces basic concepts of entrepreneurship. It approaches the individual steps of dynamic corporate development. The focus here is the introduction to methods for generating innovative business ideas, the translation of patents into business concepts and general principles of business planning.
Other topics are the design and use of service-oriented information systems for founders, technology management, business model generation and lean startup methods for the implementation of business ideas in the way of controlled experiments in the market.

Learning Content
This lecture, as an obligatory part of the module "Entrepreneurship", introduces basic concepts of entrepreneurship. It approaches the individual steps of dynamic corporate development. The focus here is the introduction to methods for generating innovative business ideas, the translation of patents into business concepts and general principles of financial planning.
Other topics are the design and use of service-oriented information systems for founders, technology management, business model generation and lean startup methods for the implementation of business ideas in the way of controlled experiments in the market.

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

| **T** | **6.109 Course: Entrepreneurship Research [T-WIWI-102894]** |

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type Prüfungsleistung anderer Art	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	2545002	Entrepreneurship Research	2 SWS	Seminar (S)	Avila Albez, Terzidis, Tittel

Competence Certificate
The performance review is done via a so called other methods of performance review (term paper) (non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015)). The final grade is a result from both, the grade of the term paper and its presentation, as well as active participation during the seminar.

Prerequisites
None

Recommendation
None

Annotation
The topics will be prepared in groups. The presentation of the results is done during a a block period seminar at the end of the semester. Students have to be present all day long during the seminar.

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

| **V** | **Entrepreneurship Research** 2545002, SS 2019, 2 SWS, Open in study portal | **Seminar (S)** |

Learning Content
Content of the seminar is most recently discussed topics in the field of entrepreneurship. Topics and dates will be communicated online via the seminar portal.

Annotation
The topics are prepared in small groups. The seminar consists of two attendance meetings (kick-off event and final presentation). Between the appointments, independent work is required. The results will be presented at the end of the semester. There is an obligation to attend all seminars.

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

Literature
Will be announced during/prior to the seminar as this varies from topic to topic.

T 6.110 Course: Environmental and Resource Policy [T-WIWI-102616]

Responsible:	Rainer Walz
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101468 - Umwelt- und Ressourcenökonomie

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	1

Exams				
WS 18/19	7900271	Environmental and Resource Policy	Prüfung (PR)	Mitusch

Competence Certificate
See German version

Recommendation
It is recommended to already have knowledge in the area of industrial organization and economic policy. This knowledge may be acquired in the courses*Introduction to Industrial Organization* [2520371] and*Economic Policy*[2560280].

T   6.111 Course: Environmental Economics and Sustainability [T-WIWI-102615]

Responsible:	Rainer Walz
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101468 - Umwelt- und Ressourcenökonomie

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2521547	Umweltökonomik und Nachhaltigkeit (mit Übung)	2 SWS	Lecture / Practice (VÜ)	Walz
Exams					
WS 18/19	7900273	Environmental Economics and Sustainability	Prüfung (PR)		Mitusch

Competence Certificate
See German version

Prerequisites
None

Recommendation
It is recommended to already have knowledge in the area of macro- and microeconomics. This knowledge may be acquired in the courses *Economics I: Microeconomics* [2600012] and *Economics II: Macroeconomics* [2600014].

T 6.112 Course: Environmental Law [T-INFO-101348]

Responsible: Prof. Dr. Matthias Bäcker
Organisation: KIT Department of Informatics
Part of: M-INFO-101217 - Öffentliches Wirtschaftsrecht
M-INFO-102233 - Weitere Leistungen
M-WIWI-101468 - Umwelt- und Ressourcenökonomie

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
WS 18/19	24140	Umweltrecht	2 SWS	Lecture (V)	Marsch
Exams					
WS 18/19	7500050	Environmental Law		Prüfung (PR)	Marsch
SS 2019	7500082	Environmental Law		Prüfung (PR)	Marsch

T 6.113 Course: European and International Law [T-INFO-101312]

Responsible: Ulf Brühann
Organisation: KIT Department of Informatics
Part of: M-INFO-101217 - Öffentliches Wirtschaftsrecht
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	24666	Europäisches und Internationales Recht	2 SWS	Lecture (V)	Brühann
Exams					
WS 18/19	7500048	European and International Law		Prüfung (PR)	Marsch
SS 2019	7500084	European and International Law		Prüfung (PR)	Marsch

T 6.114 Course: Exchanges [T-WIWI-102625]

Responsible:	Dr. Jörg Franke
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

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

Exams				
WS 18/19	7900062	**Exchanges**	Prüfung (PR)	Franke, Ruckes

Competence Certificate

The examination will be offered latest until winter term 2018/2019 (repeaters only).

Prerequisites

None

Recommendation

None

T 6.115 Course: Experimental Economics [T-WIWI-102614]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101446 - Market Engineering
	M-WIWI-101453 - Angewandte strategische Entscheidungen
	M-WIWI-101505 - Experimentelle Wirtschaftsforschung
	M-WIWI-103118 - Data Science: Data-Driven User Modeling

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

Events					
WS 18/19	2540489	Experimental Economics	2 SWS	Lecture (V)	Pfeiffer, Peukert, Dorner, Knierim
WS 18/19	2540493	Übung zu Experimentelle Wirtschaftsforschung	1 SWS	Practice (Ü)	Knierim
Exams					
WS 18/19	7900178	Experimental Economics		Prüfung (PR)	Weinhardt
WS 18/19	7900194	Experimental Economics		Prüfung (PR)	Weinhardt

Competence Certificate

The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites

None

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

V Experimental Economics
2540489, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content

Experimental Economics have become a separate field in Economics. Nearly all fields of the economic discipline use economic experiments to verify theoretical results. Besides being used for empricial validation, this method is applied in political and strategic consulting. The lecture gives an introduction to experimental methods in economics and shows differences to experiments in natural sciences. Scientific studies are used to show exemplary applications.

Workload

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

Literature

- Strategische Spiele; S. Berninghaus, K.-M. Ehrhart, W. Güth; Springer Verlag, 2nd ed., 2006.
- Handbook of Experimental Economics; J. Kagel, A. Roth; Princeton University Press, 1995.
- Experiments in Economics; J.D. Hey; Blackwell Publishers, 1991.
- Experimental Economics; D.D. Davis, C.A. Holt; Princeton University Press, 1993.
- Experimental Methods: A Primer for Economists; D. Friedman, S. Sunder; Cambridge University Press, 1994.

T 6.116 Course: Extraordinary additional course in the module Cross-Functional Management Accounting [T-WIWI-108651]

Responsible:	Prof. Dr. Marcus Wouters
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101510 - Cross-Functional Management Accounting

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

Competence Certificate
The assessment depends on which extraordinary course becomes part of the module "Cross-Functional Management Accounting".

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Prerequisites
None

Annotation
The pupose of this placeholder is to make it possible zu include an extraordinary course in the module "Cross-Functional Management Accounting". Proposals for specific courses have to be approved in advance by the module coordinator.

T 6.117 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-INFO-102233 - Weitere Leistungen
M-WIWI-102832 - Operations Research im Supply Chain Management

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	4

Events					
WS 18/19	2550486	**Facility Location and Strategic Supply Chain Management**	2 SWS	Lecture (V)	Nickel
WS 18/19	2550487	**Übungen zu Standortplanung und strategisches SCM**	1 SWS	Practice (Ü)	Bakker
Exams					
WS 18/19	7900221	**Facility Location and Strategic Supply Chain Management**		Prüfung (PR)	Nickel

Competence Certificate
Due to a research semester of Professor Nickel in WS 19/20, the course "Facility Location and Strategic Supply Chain Management" does NOT take place in WS 19/20. In particular, neither WS 19/20 nor SS 20 will offer an exam for the lecture. The follow-up exam to the lecture in WS 18/19 takes place in SS 19 and is exclusively for students in the second examination.

The assessment consists of a written exam (60 min) according to Section 4 (2), 1 of the examination regulation.

The exam takes place in every semester.

Prerequisite for admission to examination is the 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.

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

V Facility Location and Strategic Supply Chain Management
2550486, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content
Since the classical work "Theory of the Location of Industries" of Weber from 1909, the determination of an optimal location of a new facility with respect to existing customers is strongly connected to strategical logistics planning. Strategic decisions concerning the location of facilities as production plants, distribution centers or warehouses are of high importance for the rentability of supply chains. Thoroughly carried out, location planning allows an efficient flow of materials and leads to lower costs and increased customer service.

Subject of the course is an introduction to the most important terms and definitions in location planning as well as the presentation of basic quantitative location planning models. Furthermore, specialized location planning models for Supply Chain Management will be addressed as they are part in many commercial SCM tools for strategic planning tasks.

Annotation
The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

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

Literature
Elective literature:

- Daskin: Network and Discrete Location: Models, Algorithms, and Applications, Wiley, 1995
- Domschke, Drexl: Logistik: Standorte, 4. Auflage, Oldenbourg, 1996
- Francis, McGinnis, White: Facility Layout and Location: An Analytical Approach, 2nd Edition, Prentice Hall, 1992
- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
- Thonemann: Operations Management - Konzepte, Methoden und Anwendungen, Pearson Studium, 2005

T   6.118 Course: Financial Analysis [T-WIWI-102900]

Responsible:	Dr. Torsten Luedecke
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

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

Events					
SS 2019	2530205	**Financial Analysis**	2 SWS	Lecture (V)	Luedecke
SS 2019	2530206	**Übungen zu Financial Analysis**	2 SWS	Practice (Ü)	Luedecke
Exams					
WS 18/19	7900059	**Financial Analysis**		Prüfung (PR)	Luedecke, Ruckes
SS 2019	7900075	**Financial Analysis**		Prüfung (PR)	Luedecke

Competence Certificate
See German version.

Prerequisites
None

Recommendation
Basic knowledge in corporate finance, accounting, and valuation is required.

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

V   Financial Analysis
2530205, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Description
This lecture reviews the key financial statements according to international financial reporting standards and provides analytical tools to evaluate the income statement, the balance sheet, and the cash flow statement in order to measure a firm's liquidity, operational efficiency, and profitability.

Learning Content
Topics:

- Introduction to Financial Analysis
- Financial Reporting Standards
- Major Financial Statements and Other Information
- Recognition and Measurement Issues
- Analysis of Financial Statements
- Financial Reporting Quality

Literature

- Alexander, D. and C. Nobes (2017): Financial Accounting – An International Introduction, 6th ed., Pearson.
- Penman, S.H. (2013): Financial Statement Analysis and Security Valuation, 5th ed., McGraw Hill.

T 6.119 Course: Financial Econometrics [T-WIWI-103064]

Responsible:	Prof. Dr. Melanie Schienle
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101638 - Ökonometrie und Statistik I
	M-WIWI-101639 - Ökonometrie und Statistik II

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Competence Certificate
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Annotation
The course takes place each second summer term: 2018/2020....

T 6.120 Course: Financial Intermediation [T-WIWI-102623]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101453 - Angewandte strategische Entscheidungen
M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2
M-WIWI-101502 - Ökonomische Theorie und ihre Anwendung in Finance

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

Events					
WS 18/19	2530232	Financial Intermediation	2 SWS	Lecture (V)	Ruckes
WS 18/19	2530233	Übung zu Finanzintermediation	1 SWS	Practice (Ü)	Ruckes, Hoang, Benz
Exams					
WS 18/19	7900063	Financial Intermediation		Prüfung (PR)	Ruckes
SS 2019	7900078	Financial Intermediation		Prüfung (PR)	Ruckes

Competence Certificate
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
The exam is offered each semester.

Prerequisites
None

Recommendation
None

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

V Financial Intermediation
2530232, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Description

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Competition in the banking sector
- Stability of the financial system
- The macroeconomic role of financial intermediation

Learning Content

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Stability of the financial system
- The macroeconomic role of financial intermediation
- Principles of the prudential regulation of banks

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

Literature
Elective literature:

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6th edition, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2nd edition, MIT Press.

T 6.121 Course: Fixed Income Securities [T-WIWI-102644]

Responsible:	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

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

Exams				
WS 18/19	7900053	Fixed Income Securities	Prüfung (PR)	Uhrig-Homburg

Competence Certificate

Please note that the lecture is not held in winter semester 18/19.

The assessment consists of a written exam (75 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation SPO2015 and may be supplemented by a non exam assessment according to § 4 paragraph 2 Nr. 3.The examination is offered every semester and can be repeated at every regular examination date.

Prerequisites

None

Recommendation

Knowledge from the course "Derivatives" is very helpful.

Annotation

See German version.

T   6.122 Course: Formal Systems [T-INFO-101336]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: M-INFO-100799 - Formale Systeme
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	Credits 6	Recurrence Each winter term	Version 1

Events					
WS 18/19	24086	Formale Systeme	4 SWS	Lecture / Practice (VÜ)	Beckert, Ulbrich
Exams					
WS 18/19	7500036	Formal Systems		Prüfung (PR)	Beckert
SS 2019	7500009	Formal Systems		Prüfung (PR)	Beckert

T 6.123 Course: Formal Systems II: Application [T-INFO-101281]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: M-INFO-100744 - Formale Systeme II: Anwendung
M-INFO-101201 - Software-Systeme
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 5	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	2400093	Formal Systems II: Application	3 SWS	Lecture (V)	Ulbrich, Beckert
Exams					
SS 2019	7500006	Formale Systeme II: Anwendung		Prüfung (PR)	Beckert

T 6.124 Course: Formal Systems II: Theory [T-INFO-101378]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: M-INFO-100841 - Formale Systeme II: Theorie
M-INFO-101201 - Software-Systeme
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each summer term	1

T   6.125 Course: Foundations of Information Systems [T-WIWI-109918]

Responsible:	Prof. Dr. Alexander Mädche
	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101443 - Informationswirtschaft

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2540450	Foundations of Information Systems	2 SWS	Lecture (V)	Weinhardt, Mädche
WS 18/19	2540451	Übungen zu "Foundations of Information Systems"	1 SWS	Practice (Ü)	Jung, Mädche, Weinhardt

Competence Certificate
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
None

Annotation
This course replaces T-WIWI-102638 "Principles of Information Engineering and Management" as of summer semester 2019.

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

V   Foundations of Information Systems
2540450, WS 18/19, 2 SWS, Open in study portal   **Lecture (V)**

Description
Information plays a central role in today's society. The resulting structures and processes cannot be explained intuitively with traditional approaches of economic theory. Formerly, information has only been implicitly treated as a production factor; its role as a competitive factor used to be neglected. In order to deal with the central role of information we developed the concept of the 'information lifecycle' that systematizes all phases from information generation to information distribution. The state of the art of economic theory is presented across this information lifecycle within the lectures.
The content of the lecture is deepened in accompanying lecture courses.

Learning Content

Information plays a central role in today's society. The resulting structures and processes cannot be explained intuitively with traditional approaches of economic theory. Formerly, information has only been implicitly treated as a production factor; its role as a competitive factor used to be neglected. In order to deal with the central role of information we developed the concept of the "information lifecycle" that systematizes all phases from information generation to information distribution. The single phases of that cycle,

- extraction/generation,
- storage,
- transformation,
- evaluation,
- marketing
- and usage of information

are analyzed from the business administration perspective and the microeconomic perspective. The state of the art of economic theory is presented across this information lifecycle within the lectures. The content of the lecture is deepened in accompanying lecture courses.

Workload

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

Literature

- Shapiro, C., Varian, H., Information Rules: A Strategic Guide to the Network Economy. Harvard Business School Press 1999.
- Stahlknecht, P., Hasenkamp, U., Einführung in die Wirtschaftsinformatik. Springer Verlag 7. Auflage, 1999.
- Wirth, H., Electronic Business. Gabler Verlag 2001.

T   6.126 Course: Geometric Optimzation [T-INFO-101267]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: M-INFO-100730 - Geometrische Optimierung
M-INFO-101214 - Algorithmen der Computergrafik
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Irregular	1

T 6.127 Course: Global Optimization I [T-WIWI-102726]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung

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

Events					
SS 2019	2550134	Globale Optimierung I	2 SWS	Lecture (V)	Stein
SS 2019	2550135	Übungen zu Globale Optimierung I+II	1 SWS	Practice (Ü)	Stein
Exams					
WS 18/19	7900007_NK_WS1819	Global Optimization I		Prüfung (PR)	Stein

Competence Certificate

Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO) and possibly of a compulsory prerequisite.

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-103638 - Global Optimization I and II must not have been started.

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the *same*semester.

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

V	**Globale Optimierung I** 2550134, SS 2019, 2 SWS, Open in study portal	Lecture (V)

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

Part I of the lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Numerical methods

Nonconvex optimization problems are treated in part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

T 6.128 Course: Global Optimization I and II [T-WIWI-103638]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101473 - Mathematische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each summer term	1

Events					
SS 2019	2550134	Globale Optimierung I	2 SWS	Lecture (V)	Stein
SS 2019	2550136	Globale Optimierung II	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900001_NK_WS1819	Global optimization I and II		Prüfung (PR)	Stein

Competence Certificate
The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The examination is held in the semester of the lecture and in the following semester.

Prerequisites
None

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-WIWI-102726 - Global Optimization I must not have been started.
2. The course T-WIWI-102727 - Global Optimization II must not have been started.

Recommendation
None

Annotation
Part I and II of the lecture are held consecutively in the *same* semester.

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

V	**Globale Optimierung I** 2550134, SS 2019, 2 SWS, Open in study portal	Lecture (V)

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

Part I of the lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Numerical methods

Nonconvex optimization problems are treated in part II of the lecture.

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

V	**Globale Optimierung II** 2550136, SS 2019, 2 SWS, **Open in study portal**	**Lecture (V)**

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The global solution of convex optimization problems is subject of part I of the lecture.

Part II of the lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via aBB method
- Branch and bound methods
- Lipschitz optimization

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

T   6.129 Course: Global Optimization II [T-WIWI-102727]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung

Type Prüfungsleistung schriftlich	**Credits** 4,5	**Recurrence** Each summer term	**Version** 2

Events					
SS 2019	2550135	Übungen zu Globale Optimierung I+II	1 SWS	Practice (Ü)	Stein
SS 2019	2550136	Globale Optimierung II	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900152_NK_WS1819	Global Optimization II		Prüfung (PR)	Stein

Competence Certificate
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Prerequisites
None

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-WIWI-103638 - Global Optimization I and II must not have been started.

Annotation
Part I and II of the lecture are held consecutively in the *same*semester.

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

V	**Globale Optimierung II** 2550136, SS 2019, 2 SWS, Open in study portal	**Lecture (V)**

Learning Content

In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The global solution of convex optimization problems is subject of part I of the lecture.

Part II of the lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via aBB method
- Branch and bound methods
- Lipschitz optimization

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

T 6.130 Course: Graph Theory and Advanced Location Models [T-WIWI-102723]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung
	M-WIWI-102832 - Operations Research im Supply Chain Management
	M-WIWI-103289 - Stochastische Optimierung

Type	**Credits**	**Recurrence**	**Version**
Prüfungsleistung schriftlich	4,5	Irregular	2

Exams				
WS 18/19	7900276	Graph Theory and Advanced Location Models	Prüfung (PR)	Nickel

Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

T 6.131 Course: Heat Economy [T-WIWI-102695]

Responsible:	Prof. Dr. Wolf Fichtner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101452 - Energiewirtschaft und Technologie

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Exams				
WS 18/19	7981001	Heat Economy	Prüfung (PR)	Fichtner

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None.

Recommendation

None

Annotation

See German version.

6 COURSES

Course: Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy [T-INFO-101262]

T 6.132 Course: Human Brain and Central Nervous System: Anatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy [T-INFO-101262]

Responsible:	Prof. Dr.-Ing. Rüdiger Dillmann Prof. Uwe Spetzger
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101250 - Medizinische Simulationssysteme und Neuromedizin M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 3	**Recurrence** Each term	**Version** 1

Events					
WS 18/19	24139	Gehirn und Zentrales Nervensystem: Struktur, Informationstransfer, Reizverarbeitung, Neurophysiologie und Therapie	2 SWS	Lecture (V)	Spetzger
SS 2019	24678	Gehirn und Zentrales Nervensystem: Struktur, Informationstransfer, Reizverarbeitung, Neurophysiologie und Therapie	2 SWS	Lecture (V)	Spetzger
Exams					
WS 18/19	7500118	Human Brain and Central Nervous System: Snatomy, Information Transfer, Signal Processing, Neurophysiology and Therapy	Prüfung (PR)		Dillmann

| T | **6.133 Course: Human Factors in Security and Privacy [T-WIWI-109270]** |

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-104520 - Human Factors in Security and Privacy

Type Prüfungsleistung schriftlich	Credits 5	Recurrence Each winter term	Version 1

Events					
WS 18/19	2511554	Human Factors in Security and Privacy	2 SWS	Lecture (V)	Volkamer
WS 18/19	2511555	Übungen zu Human Factors in Security and Privacy	1 SWS	Practice (Ü)	Volkamer
Exams					
WS 18/19	7900113	Human Factors in Security and Privacy		Prüfung (PR)	Volkamer
SS 2019	7900084	Human Factors in Security and Privacy		Prüfung (PR)	Volkamer

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

Successful participation in the exercises.

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

| V | **Human Factors in Security and Privacy** 2511554, WS 18/19, 2 SWS, Open in study portal | Lecture (V) |

Description

The history of information security and privacy has taught us that it takes more than technological innovation to develop effective security and privacy mechanisms: Many aspects of information security and privacy actually depend on both technical and human factors. As a result of focusing on the technical factors, we are seeing a persistent gap between theoretical security and actual security in real world which becomes an increasing problem in the age of digitalization. The gap is mainly caused by strong and actually unrealistic assumptions regarding the users' knowledge and behavior.

Human factors in security and privacy research addresses several types of security and privacy mechanisms, e.g., authentication mechanisms including text and graphical passwords, security and privacy indicators (such as the icons in the address bar of nowadays web browsers) and security and privacy interventions like warning messages, permission dialogs and security and privacy policies as well as corresponding configuration interfaces. Besides security and privacy mechanisms, human factors in security and privacy researchers deal with security and privacy awareness, education, and training approaches.

'Human factors in security & privacy' research areas are:

- identifying users' mental models using techniques such as (semi-)structured interviews or focus groups,
- evaluating existing approaches regarding their effectiveness in supporting their users in making secure decisions / informed decisions in the context of privacy using techniques such as cognitive walkthroughs, lab user studies or even field studies,
- proposing improved / new approaches and evaluating their effectiveness using the so called human-centered security / privacy by design approach.

This lecture and the corresponding exercises discuss the various problems of existing security and privacy mechanisms and security and privacy awareness/education/training approaches. The lecture addresses relevant psychological and sociological aspects which are important to know and to consider when developing more usable security/privacy mechanisms and more effective awareness/education/training approaches. The human centered security and privacy by design approach is introduced. Furthermore, some of the methodologies used in this area are explained and a subset of them is applied. Finally, positive examples, such as graphical passwords, are introduced and discussed. Note,the main part of the exercise is replicating an interview based study.

Learning Content

This lecture and the corresponding exercises discuss the various problems of existing security and privacy mechanisms and security and privacy awareness/education/training approaches. The lecture addresses relevant psychological and sociological aspects which are important to know and to consider when developing more usable security/privacy mechanisms and more effective awareness/education/training approaches. This includes the importance of mental models. The human centered security and privacy by design approach is introduced. Furthermore, some of the methodologies used in this area are explained and a subset of them is also applied. Finally, positive examples, such as graphical passwords, are introduced and discussed. Note, the main part of the exercise is replicating an interview based study.

Literature

- Usable Security: History, Themes, and Challenges (Synthesis Lectures on Information Security, Privacy, and Trust): Simson Garfinkel und Heather Richter Lipford. 2014
- Security and Usability: Designing Secure Systems that People Can Use von Lorrie Faith Cranor und Simson Garfinkel. 2005
- Melanie Volkamer, Karen Renaud: Mental Models - General Introduction and Review of Their Application to Human-Centred Security. In Number Theory and Cryptography (2013): 255-280: **https://link.springer.com/chapter/10.1007/978-3-642-42001-6_18**
- Paul Gerber, Marco Ghiglierie, Birgit Henhapl, Oksana Kulyk, Karola Marky, Peter Mayer, Benjamin Reinheimer, Melanie Volkamer: Human Factors in Security. In: Reuter C. (eds) Sicherheitskritische Mensch-Computer-Interaktion. Springer (2018) **https://link.springer.com/chapter/10.1007/978-3-658-19523-6_5**
- Bruce Schneier: Psychology of Security (2018): **https://www.schneier.com/essays/archives/2008/01/the_psychology_of_se.html**
- Ross Anderson: security /usability and psychology. In Security Engineering. **http://www.cl.cam.ac.uk/~rja14/Papers/SEv2-c02.pdf**
- Andrew Odlyzko: Economics, Psychology and Sociology of Security: **http://www.dtc.umn.edu/~odlyzko/doc/econ.psych.security.pdf**

T 6.134 Course: Human-Machine-Interaction [T-INFO-106257]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-INFO-100729 - Mensch-Maschine-Interaktion
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Studienleistung	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
Exams					
SS 2019	7500121	Human-Machine-Interaction		Prüfung (PR)	Beigl

T   6.135 Course: Human-Machine-Interaction [T-INFO-101266]

Responsible:	Prof. Dr.-Ing. Michael Beigl
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100729 - Mensch-Maschine-Interaktion
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	**Credits** 6	**Recurrence** Each summer term	**Version** 2

Events					
SS 2019	24659	Human-Computer-Interaction	2 SWS	Lecture (V)	Beigl
Exams					
WS 18/19	7500076	Human-Machine-Interaction		Prüfung (PR)	Beigl
SS 2019	7500048	Human-Machine-Interaction		Prüfung (PR)	Beigl

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-106257 - Human-Machine-Interaction must have been passed.

T   6.136 Course: Image Data Compression [T-INFO-101292]

Responsible:	Prof. Dr.-Ing. Jürgen Beyerer
	Dr. Alexey Pak
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100755 - Bilddatenkompression
	M-INFO-101238 - Automatische Sichtprüfung
	M-INFO-101239 - Maschinelle Visuelle Wahrnehmung
	M-INFO-101241 - Bildgestützte Detektion und Klassifikation
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	2400112	Image Data Compression	2 SWS	Lecture (V)	Beyerer, Pak
Exams					
WS 18/19	7500013	Image Data Compression		Prüfung (PR)	Beyerer
SS 2019	7500002	Image Data Compression		Prüfung (PR)	Beyerer

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

V   Image Data Compression
2400112, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content

This module conveys to the students the theoretical and practical aspects of the principal stages in image data acquisition and compression. The discussion progresses from the coding of un-correlated sequential data streams to de-correlation of natural 2D images and to exploitation of temporal correlations in video data coding. Each considered technique is provided with a statistical justification and characterised with basic information-theoretic metrics.

In the end of the class, an outlook is given to non-conventional image-based information coding schemes (watermarking and steganography).

T	**6.137 Course: Incentives in Organizations [T-WIWI-105781]**

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101453 - Angewandte strategische Entscheidungen
M-WIWI-101500 - Microeconomic Theory
M-WIWI-101505 - Experimentelle Wirtschaftsforschung
M-WIWI-101510 - Cross-Functional Management Accounting

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

Events					
SS 2019	2573003	Incentives in Organizations	2 SWS	Lecture (V)	Nieken
SS 2019	2573004	Übung zu Incentives in Organizations	1 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
WS 18/19	7900201	Incentives in Organizations		Prüfung (PR)	Nieken

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites
None

Recommendation
Knowledge of microeconomics, game theory, and statistics is assumed.

Annotation
The course is carried out routinely in summer.

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

| V | **Incentives in Organizations**
2573003, SS 2019, 2 SWS, Open in study portal | **Lecture (V)** |
|---|---|---|

Learning Content
The students acquire profound knowledge about the design and the impact of different incentive and compensation systems. Topics covered are, for instance, performance based compensation, team work, intrinsic motivation, multitasking, and subjective performance evaluations. We will use microeconomic or behavioral models as well as empirical data to analyze incentive systems. We will investigate several widely used compensation schemes and their relationship with corporate strategy. Students will learn to develop practical implications which are based on the acquired knowledge of this course.

Annotation
is carried out routinely in summer.

Workload
The total workload for this course is approximately 135 hours.

Lecture 32h

Preparation of lecture 52h

Exam preparation 51h

Literature

Literature (mandatory): Slides, case studies, and selected research papers announced in the lecture

Literature (additional):

Brickley / Smith / Zimmerman: Managerial Economics and Organizantional Architecture

Camerer: Behavioral Game Theory

Lazear / Gibbs: Personnel Economics in Practice

Wooldridge: Introduction to Econometrics

Wooldridge: Econometric Analysis of Cross Section and Panel Data

T 6.138 Course: Industrial Services [T-WIWI-102822]

Responsible: Prof. Dr. Hansjörg Fromm
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
                   M-WIWI-101448 - Service Management
                   M-WIWI-101506 - Service Analytics
                   M-WIWI-102808 - Digital Service Systems in Industry

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

Events					
WS 18/19	2595505	Industrial Services	2 SWS	Lecture (V)	Fromm
WS 18/19	2595506	Übungen zu Industrial Services	1 SWS	Practice (Ü)	Walk
Exams					
WS 18/19	7900241	Industrial Services		Prüfung (PR)	Fromm

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None

Recommendation
None

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

V Industrial Services   Lecture (V)
2595505, WS 18/19, 2 SWS, Open in study portal

Learning Content

Services are becoming ever more important in business. Today, the gross income share of services in Germany exceeds 70%. Following this trend, many companies that previously focused solely on the sale of goods, strive to an extension of their business model: In order to realize new competitive advantages in domestic and international markets, they enrich their material goods with customer-specific services. This transformation to a provider of integrated solutions is called "Servitization" (Neely 2009). For this reason, so-called industrial services to companies of increasing importance. They benefit from the increasingly detailed data collected (on "Big Data"), e.g. concerning user profiles, failure statistics, usage history, accrued expenses, etc. Only these data allow in principle to end products and spare parts are delivered faster, cheaper and more targeted and technicians can be used more efficiently with the correct skills. This requires, however, also suitable methods of optimization, prognosis or predictive modeling. When used properly, such methods can minimize logistics costs, increase availability, prevent potential failures and improve repair planning. This is also enabled by latest "Technology Enabled Services" along with corresponding data transfer and analysis ("Internet of Things", automatic error detection, remote diagnostics, centralized collection of consumption data, etc.). The change from goods manufacturer to a provider of integrated solutions requires new services, transformation of business models as well as intelligent new contract types, which are addressed in the course as well.

More specifically, the lessons of this lecture will include:

- Servitization – The Manufacturer's Transformationto Integrated Solution Provider
- Service Levels – Definitions, Agreements, Measurements and Service Level Engineering
- The "Services Supply Chain"
- Spare Parts Planning – Forecasting, Assortment Planning, Order Quantities and Safety Stocks
- Distribution Network Planning – Network Types, Models, Optimization
- Service Technician Planning
- Condition Monitoring, Predictive Maintenance, Diagnose Systems
- Call Center Services
- Full Service Contracts
- IT-enabled Value-Add Services – Industrial Service Innovation

Workload

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

Literature

Silver, E. A., Pyke, D. F., & Peterson, R. (1998). *Inventory management and production planning and scheduling* (Vol. 3, p. 30). New York: Wiley.

Pintelon, L., & Van Puyvelde, F. (2013). *Asset Management. The Maintenance Perspective*. Acco.

Chopra, S., & Meindl, P. (2007). Supply chain management. Strategy, planning & operation. In *Das summa summarum des management* (pp. 265-275). Gabler.

Koole, G. (2007). Call Center Mathematics: A scientific method for understanding and improving contact centers. *Departement of Mathematics, Vrije Universiteit, Amsterdam*.

Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International journal of service industry management*, *14*(2), 160-172.

T 6.139 Course: Information Service Engineering [T-WIWI-106423]

Responsible: Prof. Dr. Harald Sack
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101456 - Intelligente Systeme und Services

Type Prüfungsleistung schriftlich	**Credits** 5	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	2511606	Information Service Engineering	2 SWS	Lecture (V)	Sack
SS 2019	2511607	Übungen zu Information Service Engineering	1 SWS	Practice (Ü)	Sack
Exams					
WS 18/19	7900071	Information Service Engineering		Prüfung (PR)	Sack
SS 2019	7900070	Information Service Engineering		Prüfung (PR)	Sack

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.
The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites
None

Annotation
New course starting summer term 2017.

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

V	**Information Service Engineering** 2511606, SS 2019, 2 SWS, Open in study portal	Lecture (V)

Learning Content

- Information, Natural Language and the Web

- Natural Language Processing

  • NLP and Basic Linguistic Knowledge
  • NLP Applications, Techniques & Challenges
  • Evaluation, Precision and Recall
  • Regular Expressions and Automata
  • Tokenization
  • Language Model and N-Grams
  • Part-of-Speech Tagging

- Linked Data Engineering

  • Knowledge Representations and Ontologies
  • What's in an URI?
  • Resource Description Framework (RDF)
  • Creating new Models with RDFS
  • Querying RDF(S) with SPARQL
  • More Expressivity with Web Ontology Language (OWL)
  • The Web of Data
  • Vocabularies and Ontologies in the Web of Data
  • Wikipedia, DBpedia, and Wikidata

- Information Retrieval

  • Information Retrieval Models
  • Retrieval Evaluation
  • Web Information Retrieval
  • Document Crawling, Text Processing, and Indexing
  • Query Processing and Result Representation
  • Question Answering

- Knowledge Mining

  • From Data to Knowledge
  • Data Mining
  • Machine Learning Basics for Knowledge Mining
  • Mining Knowledge from Wikipedia
  • Named Entity Resolution

- Exploratory Search and Recommender Systems

  • Semantic Search and Entity Centric Search
  • Collaborative Filtering and Content Based Recommendations
  • From Search to Intelligent Browsing
  • Linked Data Based Exploratory Search
  • Fact Ranking

Annotation
New lecture, since summer semester 2017

Literature

  • D. Jurafsky, J.H. Martin, Speech and Language Processing, 2nd ed. Pearson Int., 2009.
  • S. Hitzler, S. Rudolph, Foundations of Semantic Web Technologies, Chapman / Hall, 2009.
  • R. Baeza-Yates, B. Ribeiro-Neto, Modern Information Retrieval, 2nd ed., Addison Wesley, 2010.#

T   6.140 Course: Innovation Management: Concepts, Strategies and Methods [T-WIWI-102893]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovationsmanagement

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2545100	Innovation Management: Concepts, Strategies and Methods	2 SWS	Lecture (V)	Weissenberger-Eibl
Exams					
SS 2019	7900144	Innovation Management: Concepts, Strategies and Methods		Prüfung (PR)	Weissenberger-Eibl
SS 2019	7900145	Innovation Management: Concepts, Strategies and Methods		Prüfung (PR)	Weissenberger-Eibl

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
None

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

V   Innovation Management: Concepts, Strategies and Methods
2545100, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Notes
The lecture will be held in German.

Learning Content
The course 'Innovation Management: Concepts, Strategies and Methods' offers scientific concepts which facilitate the understanding of the different phases of the innovation process and resulting strategies and appropriate methodologies suitable for application.

The concepts refer to the entire innovation process so that an integrated perspective is made possible. This is the basis for the teaching of strategies and methods which fulfil the diverse demands of the complex innovation process. The course focuses particu-larly on the creation of interfaces between departments and between various actors in a company's environment and the organisation of a company's internal procedures. In this context a basic understanding of knowledge and communication is taught in addi-tion to the specific characteristics of the respective actors. Subsequently methods are shown which are suitable for the profitable and innovation-led implementation of inte-grated knowledge.

Annotation
This course was formerly named "Innovation Management".

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

Literature
A detailed bibliography is provided with the lecture notes.

T 6.141 Course: Innovationtheory and -Policy [T-WIWI-102840]

Responsible:	Prof. Dr. Ingrid Ott
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101478 - Innovation und Wachstum
	M-WIWI-101514 - Innovationsökonomik

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

Events					
SS 2019	2560236	**Innovationtheory and -policy**	SWS	Lecture (V)	Ott
SS 2019	2560237	**Übung zu Innovationstheorie und -politik**	SWS	Practice (Ü)	Ott, Eraydin
Exams					
WS 18/19	7900077	**Innovationtheory and -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.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

Prerequisites

None

Recommendation

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

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

V Innovationtheory and -policy   Lecture (V)
2560236, SS 2019, SWS, **Open in study portal**

Learning Content

- Incentives for the emergence of innovations
- Patents
- Diffusion
- Impact of technological progress
- Innovation Policy

Workload

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

Literature
Excerpt:

- Aghion, P., Howitt, P. (2009), The Economics of Growth, MIT Press, Cambridge MA.
- de la Fuente, A. (2000), Mathematical Methods and Models for Economists. Cambridge University Press, Cambridge, UK.
- Klodt, H. (1995), Grundlagen der Forschungs- und Technologiepolitik. Vahlen, München.
- Linde, R. (2000), Allokation, Wettbewerb, Verteilung - Theorie, UNIBUCH Verlag, Lüneburg.
- Ruttan, V. W. (2001), Technology, Growth, and Development. Oxford University Press, Oxford.
- Scotchmer, S. (2004), Incentives and Innovation, MIT Press.
- Tirole, Jean (1988), The Theory of Industrial Organization, MIT Press, Cambridge MA.

T 6.142 Course: Insurance Marketing [T-WIWI-102601]

Responsible:	Edmund Schwake
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101449 - Insurance Management II

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

Competence Certificate
The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).
The overall grade consists of the assessment of the oral presentations incl. papers (50 percent) and the assessment of the oral exam (50 percent).

Prerequisites
None

Recommendation
None

T 6.143 Course: Insurance Production [T-WIWI-102648]

Responsible:	Prof. Dr. Ute Werner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101449 - Insurance Management II

Type Prüfungsleistung mündlich	**Credits** 4,5	**Recurrence** Irregular	**Version** 1

Competence Certificate

The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).
The overall grade consists of the assessment of the oral presentations incl. papers (50 percent) and the assessment of the oral exam (50 percent).

T-WIWI-102648 Insurance Production will be offered latest until summer term 2017 (beginners only).

Prerequisites

None

Recommendation

None

Annotation

This course is offered on demand. For further information, see: http://insurance.fbv.kit.edu

T 6.144 Course: Insurance Risk Management [T-WIWI-102636]

Responsible:	Harald Maser
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101449 - Insurance Management II

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	2,5	Each summer term	1

Competence Certificate

The assessment consists of a written or an oral exam (according to Section 4 (2), 1 or 2 of the examination regulation).

T-WIWI-102636 Insurance Risk Management will be offered as a seminar starting summer term 2017. The examination will be offered latest until summer term 2017 (beginners only).

Prerequisites

None

Recommendation

None

Annotation

Block course. For organizational reasons, please register with the secretary of the chair: thomas.mueller3@kit.edu.

T 6.145 Course: Integrated Network and Systems Management [T-INFO-101284]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: M-INFO-101210 - Dynamische IT-Infrastrukturen
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 4	Recurrence Each summer term	Version 1

Events

SS 2019	2400004	Integrated Network and Systems Management	2 SWS	Lecture (V)	Neumair

T 6.146 Course: Intelligent CRM Architectures [T-WIWI-103549]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101470 - Data Science: Advanced CRM

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	2

Events					
WS 18/19	2540525	Intelligent CRM Architectures	2 SWS	Lecture (V)	Geyer-Schulz
WS 18/19	2540526	Übung zu Intelligent CRM Architectures	1 SWS	Practice (Ü)	Ball
Exams					
WS 18/19	79011480	Intelligent CRM Architectures		Prüfung (PR)	Geyer-Schulz

Competence Certificate

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

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites

None

Recommendation

It is recommended to additionally review the Bachelor-level lecture "Customer Relationship Management" from the module "CRM and Servicemanagement".

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

V Intelligent CRM Architectures
2540525, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content

The lecture is structured in three parts:

In the first part the methods used for architecture design are introduced (system analysis, UML, formal specification of interfaces, software and analysis patterns, and the separation in conceptual and IT-architectures. The second part is dedicated to learning architectures and machine learning methods. The third part presents examples of learning CRM-Architectures.

Workload

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

Time of attendance

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

Self-study

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

Sum: 135h 00m

Literature

- P. Clements *et al.*, *Documenting Software Architectures. Views and Beyond*. Upper Saddle River: Addison-Wesley, 2011.
- M. Fowler, *Patterns of Enterprise Application Architecture*. Amsterdam: Addison-Wesley Longman, 2002.
- S. Russell and P. Norvig, *Artificial Intelligence: A Modern Approach*, 3rd ed. Harlow Essex England: Pearson New International Edition, 2014.
- V. N. Vapnik, *The Nature of Statistical Learning Theory*. New York: Springer, 1995.

T   6.147 Course: Interactive Information Systems [T-WIWI-108461]

Responsible:	Prof. Dr. Alexander Mädche
	Dr. Stefan Morana
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-104068 - Information Systems in Organizations
	M-WIWI-104080 - Designing Interactive Information Systems

Type	**Credits**	**Recurrence**	**Version**
Prüfungsleistung anderer Art	4,5	Each summer term	3

Events					
SS 2019	2540558	**Interactive Systems**	3 SWS	Lecture (V)	Mädche, Morana
Exams					
WS 18/19	7900228	**Interactive Information Systems**		Prüfung (PR)	Mädche

Competence Certificate

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

Students receive one aggregated grade consisting of a written exam (70%) and research paper (30%). The exam and the research paper need to be both passed. A fail in one element results in a fail of the entire lecture. There will be one retake possibility for the exam, no retake possibilities will be provided for the research paper.

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-106342 - Interactive Systems must not have been started.

Annotation

This course replaces T-WIWI-106342 "Interactive Systems" starting summer term 2018.
The course is held in english.

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

V   Interactive Systems

2540558, SS 2019, 3 SWS, Open in study portal
Lecture (V)

Description

Advanced information and communication technologies make interactive systems ever-present in the users' private and business life. They are an integral part of smartphones, devices in the smart home, mobility vehicles as well as at the working place in production and administration (e.g. in the form of dashboards).

With the continuous growing capabilities of computers, the design of the interaction between human and computer becomes even more important. The aim of this course is to introduce the foundations, theoretical grounding, key concepts and principles as well as current practice of interactive systems. The contents of the course abstract from the technical implementation details. The students get the necessary knowledge to guide the successful implementation of interactive systems in business and private life.

Notes

The lecture is complemented with a capstone project assignment, where students analyze and review existing interactive systems and suggest areas of improvement / extensions.

Learning Content

· Basics

· Theoretical foundations

· Key concepts and design principles for specific interactive systems classes

· Capstone project

Literature

The lecture bases to a large extend on

· Benyon, D. (2014). Designing interactive systems: A comprehensive guide to HCI, UX and interaction design (3. ed.). Harlow: Pearson.

Additional literature will be provided in the lecture.

T   6.148 Course: International Finance [T-WIWI-102646]

Responsible:	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	2530570	**International Finance**	2 SWS	Lecture (V)	Walter, Uhrig-Homburg
Exams					
WS 18/19	7900052	**International Finance**		Prüfung (PR)	Uhrig-Homburg

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

Annotation
See German version.

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

V   International Finance
2530570, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Description
The main aspects of this course are the chances and the risks which are associated with international transactions. We carry 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 6.149 Course: International Management in Engineering and Production [T-WIWI-102882]

Responsible: Dr. Henning Sasse
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101412 - Industrielle Produktion III
M-WIWI-101471 - Industrielle Produktion II

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581956	International Management in Engineering and Production	2 SWS	Lecture (V)	Sasse
Exams					
WS 18/19	7981956	International Management in Engineering and Production		Prüfung (PR)	Schultmann

Competence Certificate
The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

Prerequisites
None

Recommendation
None

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

V International Management in Engineering and Production
2581956, WS 18/19, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content

- Fundamentals of international business
- Forms of international cooperation and value creation
- Site selection
- Cost driven internationalization and site selection
- Sales and customer driven internationalization and site selection
- Challenges, risks and risk mitigation
- Management of international production sites
- Types and case studies of international production

Workload
The total workload for this course is approximately 105 hours. For further information see German version.

Literature
Will be announced in the course.

T 6.150 Course: Internet Law [T-INFO-101307]

Responsible:	Prof. Dr. Thomas Dreier
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101215 - Recht des Geistigen Eigentums
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	2

Events					
WS 18/19	24354	Internet Law	2 SWS	Lecture (V)	Dreier
Exams					
WS 18/19	7500060	Internet Law		Prüfung (PR)	Dreier, Matz
SS 2019	7500057	Internet Law		Prüfung (PR)	Dreier, Matz

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-108462 - Selected legal issues of Internet law must not have been started.

T   6.151 Course: Internet of Everything [T-INFO-101337]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: M-INFO-101203 - Wireless Networking
M-INFO-101205 - Future Networking
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	24104	Internet of Everything	2 SWS	Lecture (V)	Friebe, Gerhard, Jung, Zitterbart
Exams					
WS 18/19	7500009	Internet of Everything		Prüfung (PR)	Zitterbart

T 6.152 Course: Introduction in Computer Networks [T-INFO-102015]

Responsible:	Prof. Dr. Martina Zitterbart
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101178 - Kommunikation und Datenhaltung
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	**Credits** 4	**Recurrence** Each summer term	**Version** 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					
WS 18/19	7500201	Introduction to Computer Networking		Prüfung (PR)	Zitterbart

T 6.153 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

Responsible:	Prof. Dr. Steffen Rebennack
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102832 - Operations Research im Supply Chain Management
	M-WIWI-103289 - Stochastische Optimierung

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

Events					
SS 2019	2550470	Einführung in die Stochastische Optimierung	2 SWS	Lecture (V)	Rebennack
SS 2019	2550471	Übung zur Einführung in die Stochastische Optimierung	1 SWS	Practice (Ü)	Rebennack, Assistenten
Exams					
WS 18/19	7900143	Introduction to Stochastic Optimization		Prüfung (PR)	Rebennack

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites

None.

T 6.154 Course: Introduction to Video Analysis [T-INFO-101273]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: M-INFO-100736 - Einführung in die Bildfolgenauswertung
M-INFO-101239 - Maschinelle Visuelle Wahrnehmung
M-INFO-101241 - Bildgestützte Detektion und Klassifikation
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	24684	**Introduction to Video Analysis**	2 SWS	Lecture (V)	Arens
Exams					
WS 18/19	7500099	**Introduction to Video Analysis**		Prüfung (PR)	Beyerer, Arens
SS 2019	7500031	**Introduction to Video Analysis**		Prüfung (PR)	Beyerer, Arens

| **T** | **6.155 Course: IT- Security Law [T-INFO-109910]** |

Responsible: PD Dr. Oliver Raabe
Organisation: KIT Department of Informatics
Part of: M-INFO-101242 - Governance, Risk & Compliance

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	2400007	IT SECURITY LAW	2 SWS	Lecture (V)	Raabe

T 6.156 Course: IT-Security Management for Networked Systems [T-INFO-101323]

Responsible: Prof. Dr. Hannes Hartenstein
Organisation: KIT Department of Informatics
Part of: M-INFO-101204 - Networking Labs
M-INFO-101207 - Netzsicherheit - Theorie und Praxis
M-INFO-101210 - Dynamische IT-Infrastrukturen
M-INFO-102233 - Weitere Leistungen
M-WIWI-101458 - Ubiquitous Computing

Type Prüfungsleistung mündlich	Credits 5	Recurrence Each winter term	Version 1

Events					
WS 18/19	24149	IT-Security Management for Networked Systems	3 SWS	Lecture / Practice (VÜ)	Hartenstein, Grashöfer, Neudecker
Exams					
WS 18/19	7500348	IT-Security Management for Networked Systems		Prüfung (PR)	Hartenstein

T 6.157 Course: Joint Entrepreneurship Summer School [T-WIWI-109064]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	6	Irregular	1

Competence Certificate
The learning control of the program (Summer School) consists of two parts:

A) **Investor Pitch**:
Based on a presentation (investor pitch) in front of a jury, the insights gained and developed during the course of the event are presented and the business idea presented. Among other things, the presentation performance of the team, the structured content and the logical consistency of the business idea are evaluated. The exact evaluation criteria will be announced in the course.

B) **Written elaboration**:
The second part of the assessment is a written report. The iterative knowledge gain of the entire event is systematically logged and can be further supplemented by the contents of the presentation. The report documents key action steps, applied methods, findings, market analyzes and interviews and prepares them in writing. The exact structure and requirements will be announced in the course.

The grade consists of 50% presentation performance and 50% written preparation.

Prerequisites
The Summer School is aimed at master students of KIT. Prerequisite is the participation in the selection process.

Recommendation
We recommend basic business knowledge, the lecture Entrepreneurship as well as openness and interest in intercultural exchange. Solid knowledge of the English language is an advantage.

Annotation
The working language during the Summer School is English. A one-week stay in China is part of the Summer School.

T   6.158 Course: Knowledge Discovery [T-WIWI-102666]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
                   M-WIWI-101456 - Intelligente Systeme und Services
                   M-WIWI-102827 - Service Computing

Type Prüfungsleistung schriftlich	Credits 5	Recurrence Each winter term	Version 1

Events					
WS 18/19	2511302	Knowledge Discovery	2 SWS	Lecture (V)	Sure-Vetter, Rettinger
WS 18/19	2511303	Exercises to Knowledge Discovery	1 SWS	Practice (Ü)	Sure-Vetter, Rettinger, Thoma, Weller
Exams					
WS 18/19	7900013	Knowledge Discovery		Prüfung (PR)	Sure-Vetter
SS 2019	7900039	Knowledge Discovery		Prüfung (PR)	Sure-Vetter

Competence Certificate
The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation.

Students can be awarded a bonus on their final grade if they successfully complete special assignments.

Prerequisites
None

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

V   Knowledge Discovery
2511302, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Description
Knowledge discovery is a well-established field with a large community investigating methods for the discovery of patterns and regularities in large data sets, including relational databases and unstructured text.

A variety of methods are available to assist in extracting patterns that, if interpreted, provide valuable, possibly previously unknown, insights. This information can be predictive or descriptive in nature.

This lecture provides an overview of this field. The lecture imparts specific techniques and methods, challenges and current and future research workin this field.

Learning Content
Topics of the lectures comprise the whole Machine Learning and Data Mining process like CRISP, data warehousing, OLAP-techniques, learning algorithms, visualization and empircial evaluation. Covered learning techniques range from traditional approaches like decision trees, neural networks and support vector machines to selected approaches resulting from current research. Discussed learning problems are amongst others feauturevector-based learning, text mining and social network analysis.

Workload

- The total workload for 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

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (http://www-stat.stanford.edu/~tibs/ElemStatLearn/)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

| V | **Exercises to Knowledge Discovery**
2511303, WS 18/19, 1 SWS, **Open in study portal** | **Practice (Ü)** |

Description

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

Learning Content

Topics of the lectures comprise the whole Machine Learning and Data Mining process like CRISP, data warehousing, OLAP-techniques, learning algorithms, visualization and empircial evaluation. Covered learning techniques range from traditional approaches like decision trees, neural networks and support vector machines to selected approaches resulting from current research. Discussed learning problems are amongst others feauturevector-based learning, text mining and social network analysis.

Workload

The total workload for the lecture Knowledge Discovery is given out on the description of the lecture.

Literature

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (http://www-stat.stanford.edu/~tibs/ElemStatLearn/)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

T 6.159 Course: Lab Course: Natural Language Processing and Software Engineering [T-INFO-106239]

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: M-INFO-102233 - Weitere Leistungen
                     M-INFO-103138 - Praktikum der Sprachverarbeitung in der Softwaretechnik

Type Prüfungsleistung anderer Art	**Credits** 5	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	2400082	Lab Course: Natural Language Processing and Software Engineering	4 SWS	Practical course (P)	Blersch, Weigelt, Hey
Exams					
WS 18/19	7500003	Natural Language Processing and Software Engineering		Prüfung (PR)	Tichy

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

V Lab Course: Natural Language Processing and Software Engineering
2400082, WS 18/19, 4 SWS, Open in study portal   **Practical course (P)**

Annotation
We recommend to attend the course "Sprachverarbeitung in der Softwaretechnik".

Workload
150h

Literature
Needed literature will be given in the lab.

T   6.160 Course: Lab: Graph Visualization in Practice [T-INFO-106580]

Responsible:	Prof. Dr. Dorothea Wagner
Organisation:	KIT Department of Informatics
Part of:	M-INFO-102233 - Weitere Leistungen
	M-INFO-103302 - Praktikum: Graphenvisualisierung in der Praxis

Type Prüfungsleistung anderer Art	**Credits** 5	**Recurrence** Irregular	**Version** 1

Events

SS 2019	2400037	Graph Visualization in Practice	2 SWS	Practical course (P)	Wagner, Mtsentlintze, Radermacher

T 6.161 Course: Laboratory Course Algorithm Engineering [T-INFO-104374]

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

Organisation: KIT Department of Informatics

Part of: M-INFO-101199 - Advanced Algorithms: Design and Analysis
M-INFO-101200 - Advanced Algorithms: Engineering and Applications
M-INFO-102072 - Praktikum Algorithmentechnik
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	6	Irregular	1

Events					
WS 18/19	24305	Practical Course in Algorithm Design	4 SWS	Practical course (P)	Wagner, Buchhold, Zündorf, Zeitz
Exams					
WS 18/19	7500072	Practical Course in Algorithm Design		Prüfung (PR)	Wagner

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

V Practical Course in Algorithm Design
24305, WS 18/19, 4 SWS, Open in study portal

Practical course (P)

Workload
150 h

T 6.162 Course: Language Technology and Compiler [T-INFO-101343]

Responsible:	Prof. Dr.-Ing. Gregor Snelting
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100806 - Sprachtechnologie und Compiler
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	8	Each summer term	1

Events					
SS 2019	24661	Language Technology and Compiler	4 SWS	Lecture (V)	Snelting
Exams					
WS 18/19	7500107	Language Technology and Compiler		Prüfung (PR)	Snelting

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

V Language Technology and Compiler
24661, SS 2019, 4 SWS, Open in study portal   Lecture (V)

Learning Content

Structure of a compiler

Lexical analysis

Syntactic analysis

Semantic analysis

Code generation

Program Analysis

Security Analysis

Code optimization

Foundations of software security analysis

Specific technologies: LL parsing, LR/LALR parsing, attributed grammars, instruction selection, register allocation, runtime mechanisms, memory management, static single assignment form and its usage in optimization, data flow techniques, information flow control, garbage collection.

Workload

approx. 270 h

T 6.163 Course: Large-scale Optimization [T-WIWI-106549]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101473 - Mathematische Optimierung
M-WIWI-102832 - Operations Research im Supply Chain Management
M-WIWI-103289 - Stochastische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
SS 2019	2550475	Large-Scale Optimization	2 SWS	Lecture (V)	Rebennack
SS 2019	2550476	Übung zu Large-Scale Optimization	1 SWS	Practice (Ü)	Rebennack
Exams					
WS 18/19	7900155	Large-scale 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   6.164 Course: Law of Contracts [T-INFO-101316]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101216 - Recht der Wirtschaftsunternehmen
M-INFO-101242 - Governance, Risk & Compliance
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each term	1

Events					
SS 2019	24671	Law of Contracts	2 SWS	Lecture (V)	Hoff
Exams					
WS 18/19	7500059	Law of Contracts		Prüfung (PR)	Dreier, Matz
SS 2019	7500055	Law of Contracts		Prüfung (PR)	Dreier, Matz

T 6.165 Course: Liberalised Power Markets [T-WIWI-107043]

Responsible:	Prof. Dr. Wolf Fichtner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101451 - Energiewirtschaft und Energiemärkte
	M-WIWI-102808 - Digital Service Systems in Industry

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	2581998	**Liberalised Power Markets**	2 SWS	Lecture (V)	Fichtner
Exams					
WS 18/19	7900193	**Liberalised Power Markets**		Prüfung (PR)	Fichtner

Competence Certificate
The assessment consists of a written exam according to Section 4(2), 1 of the examination regulation.

Prerequisites
See German version.

Recommendation
None

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

V Liberalised Power Markets
2581998, WS 18/19, 2 SWS, **Open in study portal**   **Lecture (V)**

Learning Content
1. The European liberalisation process
1.1 The concept of a competitive market
1.2 The regulated market
1.3 Deregulation in Europe
2. Pricing and investments in a liberalised power market
2.1 Merit order
2.2 Prices and investments
2.3 Market flaws and market failure
2.4 Regulation in liberalised markets
2.5 Additional regulation mechanisms
3. The power market and the corresponding submarkets
3.1 List of submarkets
3.2 Types of submarkets
3.3 Market rules
4. Risk management
4.1 Uncertainties in a liberalised market
4.2 Investment decisions under uncertainty
4.3 Estimating future electricity prices
4.4 Portfolio management
5. Market power
5.1 Defining market power
5.2 Indicators of market power
5.3 Reducing market power
6. Market structures in the value chain of the power sector

Annotation
The course "Basics of Liberalised Energy Markets" [2581998] will be reduced to 3 credits in winter term 2015/2016 and the tutorial [2581999] is no longer offered.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature
Elective literature:

Power System Economics; Steven Stoft, IEEE Press/Wiley-Interscience Press, 0-471-15040-1

T 6.166 Course: Life Cycle Assessment [T-WIWI-103133]

Responsible:	Dr. Heiko Keller
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101412 - Industrielle Produktion III
	M-WIWI-101471 - Industrielle Produktion II

Type Prüfungsleistung schriftlich	**Credits** 3,5	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	2581995	Life Cycle Assessment	2 SWS	Lecture (V)	Keller
Exams					
WS 18/19	7981995	Life Cycle Assessment		Prüfung (PR)	Schultmann

Competence Certificate
The assessment consists of an oral exam (30 min.) or a written exam (60 min.).

Prerequisites
None.

Recommendation
None

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

V Life Cycle Assessment
2581995, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content
Our society has reached a historically unique material prosperity. At the same time, environmental burdens and resource consumption are continuously reaching new peaks - not only regarding greenhouse gas emissions and oil production rates. It is obvious that the material and energy intensity of products and services has to decrease if we want to keep our current level of material prosperity on the long run. Enormous efficiency gains, as they have been reached e.g. for labour productivity, however, require that environmental burdens and resource consumption per unit of product are in the first place known, transparent and can thus be optimised. This data and its calculation are increasingly requested and sooner or later will have to become as essential for management as e.g. unit labour costs.

Life cycle assessment is a methodology in sustainability assessment that provides this information and deduces optimisation potentials and decision support for companies, politics, consumers etc. To this end, material and energy flows are compiled along the whole life cycle of a product from extraction of raw materials, via production and use of a product until its disposal. Subsequently, environmental impacts of these flows are analysed.

This lecture describes structure and individual steps of life cycle assessments in detail. Furthermore, it explains its application in decision support. In interactive phases, participants recapitulate the theoretical basis by own calculations. As an outlook, further instruments in sustainability assessment are introduced that analyse other sustainability aspects.

Workload
Total effort required will account for approximately 105h (3.5 credits).

Literature
will be announced in the course

T 6.167 Course: Machine Learning 1 - Basic Methods [T-WIWI-106340]

Responsible:	Prof. Dr.-Ing. Johann Marius Zöllner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103356 - Maschinelles Lernen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	2511500	Machine Learning 1 - Fundamental Methods	2 SWS	Lecture (V)	Zöllner
WS 18/19	2511501	Exercises for Machine Learning 1 - Fundamental Methods	1 SWS	Practice (Ü)	Zöllner
Exams					
WS 18/19	7900076	Machine Learning 1 - Basic Methods		Prüfung (PR)	Zöllner
SS 2019	7900154	Machine Learning 1 - Basic Methods		Prüfung (PR)	Zöllner

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.
The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

None.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-101354 - Machine Learning 1 - Basic Methods must not have been started.

Annotation

New course starting winter term 2017/2018.

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

V Machine Learning 1 - Fundamental Methods
2511500, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Description

The field of knowledge acquisition and machine learning is a rapidly expanding field of knowledge and the subject of numerous research and development projects. The acquisition of knowledge can take place in different ways. Thus a system can benefit from experiences already made, it can be trained, or it draws conclusions from extensive background knowledge.

The lecture covers symbolic learning methods such as inductive learning (learning from examples, learning by observation), deductive learning (explanation-based learning) and learning from analogies, as well as sub-symbolic techniques such as neural networks, support vector machines and genetic algorithms. The lecture introduces the basic principles and structures of learning systems and examines the algorithms developed so far. The structure and operation of learning systems is presented and explained with some examples, especially from the fields of robotics and image processing.

Learning Content

The field of knowledge acquisition and machine learning is a rapidly expanding field of knowledge and the subject of numerous research and development projects. The acquisition of knowledge can take place in different ways. Thus a system can benefit from experiences already made, it can be trained, or it draws conclusions from extensive background knowledge.

The lecture covers symbolic learning methods such as inductive learning (learning from examples, learning by observation), deductive learning (explanation-based learning) and learning from analogies, as well as sub-symbolic techniques such as neural networks, support vector machines and genetic algorithms. The lecture introduces the basic principles and structures of learning systems and examines the algorithms developed so far. The structure and operation of learning systems is presented and explained with some examples, especially from the fields of robotics and image processing.

Literature

The slides are available as a PDF

Related Literature

- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

Further (specific) literature on individual topics will be given in the lecture.

T	**6.168 Course: Machine Learning 2 – Advanced Methods [T-WIWI-106341]**

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101637 - Analytics und Statistik
M-WIWI-103356 - Maschinelles Lernen

Type Prüfungsleistung schriftlich	**Credits** 5	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	2511502	Machine Learning 2 - Advanced methods	2 SWS	Lecture (V)	Zöllner
SS 2019	2511503	Exercises for Machine Learning 2 - Advanced Methods	1 SWS	Practice (Ü)	Zöllner
Exams					
WS 18/19	7900050	Machine Learning 2 – Advanced Methods		Prüfung (PR)	Zöllner
SS 2019	7900080	Machine Learning 2 – Advanced Methods		Prüfung (PR)	Zöllner

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.
The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites
None.

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-INFO-101392 - Machine Learning 2 - Advanced Methods must not have been started.

Annotation
New course starting summer term 2017.

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

V	**Machine Learning 2 - Advanced methods** 2511502, SS 2019, 2 SWS, Open in study portal	**Lecture (V)**

Description
The field of machine decision-making and inference procedures, taking into account uncertainties and incomplete knowledge, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The focus of this lecture is on the embedding and application of machine-learning methods in decision and inference systems starting with methods of dimension reduction, feature selection/evaluation via semi-supervised learning to methods of probabilistic inference (e.g. Dempster Shafer information fusion, dynamic and object-oriented Bayesian networks, POMDP, etc).

The lecture introduces the basic principles and structures and explains algorithms developed so far. The structure and operation of the procedures and methods are presented and explained using a number of application scenarios, in particular from the field of technical (semi-)autonomous systems.

Learning Content

The subject area of machine intelligence and, in particular, machine learning, taking into account real challenges of complex application domains, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The lecture "Machine Learning 2" deals with advanced methods of machine learning such as semi-supervised and active learning, deep neural networks (deep learning), pulsed networks, hierarchical approaches, e.g. As well as dynamic, probabilistic relational methods. Another focus is the embedding and application of machine learning methods in real systems.

The lecture introduces the latest basic principles as well as extended basic structures and elucidates previously developed algorithms. The structure and the mode of operation of the methods and methods are presented and explained by means of some application scenarios, especially in the field of technical (sub) autonomous systems (robotics, neurorobotics, image processing, etc.).

Literature

The slides are available as a PDF

Related Literature

- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

Further (specific) literature on individual topics will be given in the lecture.

T 6.169 Course: Management Accounting 1 [T-WIWI-102800]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101498 - Controlling (Management Accounting)

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

Events					
SS 2019	2579900	Management Accounting 1	2 SWS	Lecture (V)	Wouters
SS 2019	2579901	Übung zu Management Accounting 1	2 SWS	Practice (Ü)	Riar
Exams					
WS 18/19	79-2579900-00	Management Accounting 1		Prüfung (PR)	Wouters
SS 2019	79-2579900-00	Management Accounting 1		Prüfung (PR)	Wouters

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation) at the end of each semester in combination with a project that runs for several weeks during the semester.

Prerequisites

None

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

V Management Accounting 1
2579900, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content

The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA1 are: short-term planning, investment decisions, budgeting and activity-based costing.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Workload

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

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Publisher: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- In addition, several papers that will be available on ILIAS.

T 6.170 Course: Management Accounting 2 [T-WIWI-102801]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101498 - Controlling (Management Accounting)

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

Events					
WS 18/19	2579902	Management Accounting 2	2 SWS	Lecture (V)	Wouters
WS 18/19	2579903	Übung zu Management Accounting 2	2 SWS	Practice (Ü)	Wouters, Mickovic
Exams					
WS 18/19	79-2579902-00	Management Accounting 2		Prüfung (PR)	Wouters
SS 2019	79-2579902-00	Management Accounting 2		Prüfung (PR)	Wouters

Competence Certificate
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation) at the end of each semester in combination with a project that runs for several weeks during the semester.

Prerequisites
None

Recommendation
It is recommended to take part in the course "Management Accounting 1" before this course.

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

V Management Accounting 2
2579902, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content
The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA2 are: cost estimation, product costing and cost allocation, financial performance measures, transfer pricing, strategic performance measurement systems and customer value propositions.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

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

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Publisher: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- In addition, several papers that will be available on ILIAS.

T 6.171 Course: Management of IT-Projects [T-WIWI-102667]

Responsible: Dr. Roland Schätzle
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101477 - Entwicklung betrieblicher Informationssysteme

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	2

Events					
SS 2019	2511214	Management of IT-Projects	2 SWS	Lecture (V)	Schätzle
SS 2019	2511215	Übungen zu Management von Informatik-Projekten	1 SWS	Practice (Ü)	Schätzle
Exams					
WS 18/19	7900014	Management of IT-Projects		Prüfung (PR)	Oberweis
SS 2019	7900045	Management of IT-Projects		Prüfung (PR)	Oberweis

Competence Certificate

The assessment of this course is a written examination (60 min) in the first week after lecture period according to Section 4(2), 1 of the examination regulation.

Prerequisites

None.

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

V Management of IT-Projects
2511214, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content

The lecture deals with the general framework, impact factors and methods for planning, handling, and controlling of IT projects. Especially following topics are addressed:

- project environment
- project organisation
- project planning including the following items:
  - plan of the project structure
  - flow chart
  - project schedule
  - plan of resources
- effort estimation
- project infrastructur
- project controlling
- risk management
- feasibility studies
- decision processes, conduct of negotiations, time management.

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam &1h

Total: 150h

Literature

- B. Hindel, K. Hörmann, M. Müller, J. Schmied. Basiswissen Software-Projektmanagement. dpunkt.verlag 2004
- Project Management Institute Standards Committee. A Guide to the Project Management Body of Knowledge (PMBoK guide). Project Management Institute. Four Campus Boulevard. Newton Square. PA 190733299. U.S.A.

Further literature is given in each lecture individually.

T 6.172 Course: Managing New Technologies [T-WIWI-102612]

Responsible: Dr. Thomas Reiß
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
                   M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type Prüfungsleistung schriftlich	Credits 3	Recurrence Each summer term	Version 2

Events					
SS 2019	2545003	**Managing New Technologies**	2 SWS	Lecture (V)	Reiß
Exams					
WS 18/19	7900189	**Managing New Technologies**		Prüfung (PR)	Reiß

Competence Certificate
Written exam 100% following §4, Abs. 2.

Prerequisites
None

Recommendation
None

Annotation
The credit points for T-WIWI-102612 "Management of New Technologies" were reduced to 3 credit points in the 2019 summer semester.

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

V Managing New Technologies
2545003, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Learning Content
The course provides an overview of the international development of a selected number of key technologies such as biotechnology, nanotechnology, neurotechnologies, converging technologies. Methods for monitoring new technologies including foresight approaches will be presented and the economic and social impacts of new technologies will be discussed.

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

Literature

- Hausschildt/Salomo: Innovationsmanagement; Borchert et al.: Innovations- und Technologiemanagement;
- Specht/Möhrle; Gabler Lexikon Technologiemanagement

T 6.173 Course: Market Engineering: Information in Institutions [T-WIWI-102640]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101409 - Electronic Markets
M-WIWI-101446 - Market Engineering
M-WIWI-101453 - Angewandte strategische Entscheidungen
M-WIWI-102754 - Service Economics and Management

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

Events					
SS 2019	2540460	Market Engineering: Information in Institutions	2 SWS	Lecture (V)	Weinhardt, Straub
SS 2019	2540461	Übungen zu Market Engineering: Information in Institutions	1 SWS	Practice (Ü)	Weinhardt
Exams					
WS 18/19	7900208	Market Engineering: Information in Institutions		Prüfung (PR)	Weinhardt

Competence Certificate
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) up to 6 bonus points can be obtained. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by max. one grade level (0.3 or 0.4).

Prerequisites
None

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

V Market Engineering: Information in Institutions   Lecture (V)
2540460, SS 2019, 2 SWS, Open in study portal

Description
The ongoing advancements in information technology have revolutionized traditional business processes and given rise to electronic marketplaces. In contrast to physical marketplaces, electronic markets do not just evolve, but must be carefully designed, implemented and monitored and evaluated. Moreover electronic markets demand open and flexible platforms as well as adequate standards and information services. Future Market Engineers must therefore be able to consider the economic, legal and technological dimension of markets simultaneously. The lecture focuses on the discussion of (1) Microstructure, (2) IT Infrastructure, and (3) Business Structure of electronic markets. Hence, students will be taught the economic incentives that a market can impose on market participants, development models for implementing markets, and business models for the application of markets.

Learning Content
The ongoing advancements in information technology have revolutionized traditional business processes and given rise to electronic marketplaces. In contrast to physical marketplaces, electronic markets do not just evolve, but must be carefully designed, implemented and monitored and evaluated. Moreover electronic markets demand open and flexible platforms as well as adequate standards and information services. Future Market Engineers must therefore be able to consider the economic, legal and technological dimension of markets simultaneously. The lecture focuses on the discussion of (1) Microstructure, (2) IT Infrastructure, and (3) Business Structure of electronic markets. Hence, students will be taught the economic incentives that a market can impose on market participants, development models for implementing markets, and business models for the application of markets.

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

Literature

- Roth, A., The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics. Econometrica 70(4): 1341-1378, 2002.
- Weinhardt, C. ,Holtmann, C., Neumann, D., Market Engineering. Wirtschaftsinformatik, 2003.
- Wolfstetter, E., Topics in Microeconomics - Industrial Organization, Auctions, and Incentives. Cambridge, Cambridge University Press, 1999.
- Smith, V. "Theory, Experiments and Economics", The Journal of Economic Perspectives,Vol. 3, No. 1, 151-69 1989

T 6.174 Course: Market Research [T-WIWI-107720]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101487 - Sales Management
	M-WIWI-101490 - Marketing Management
	M-WIWI-101510 - Cross-Functional Management Accounting
	M-WIWI-101647 - Data Science: Evidence-based Marketing

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

Events					
SS 2019	2571150	Market Research	2 SWS	Lecture (V)	Klarmann
SS 2019	2571151	Market Research Tutorial	1 SWS	Practice (Ü)	Honold

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

None

Annotation

Please note that this course has to be completed successfully by students interested in master thesis positions at the Marketing & Sales Research Group.

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

V Market Research

2571150, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content

Within the lecture, essential statistical methods for measuring customer attitudes (e.g. satisfaction measurement), understanding customer behavior and making strategic decisions will be discussed. The practical use as well as the correct handling of different survey methods will be taught, such as experiments and surveys. To analyze the collected data, various analysis methods are presented, including hypothesis tests, factor analyses, cluster analyses, variance and regression analyses. Building on this, the interpretation of the results will be discussed.

Topics addressed in this course are for example:

- Theoretical foundations of market research
- Statistical foundations of market research
- Measuring customer attitudes
- Understanding customer reactions
- Strategical decision making

Annotation

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

Workload

The total workload for this course is approximately 135.0 hours.

Presence time: 30 hours

Preparation and wrap-up of the course: 45.0 hours

Exam and exam preparation: 60.0 hours

Literature

Homburg, Christian (2016), Marketingmanagement, 6th. ed., Wiesbaden.

T 6.175 Course: Marketing Analytics [T-WIWI-103139]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101647 - Data Science: Evidence-based Marketing

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	4

Events					
WS 18/19	2572170	Marketing Analytics	2 SWS	Lecture (V)	Klarmann
WS 18/19	2572171	Übung zu Marketing Analytics	1 SWS	Practice (Ü)	Halbauer
Exams					
WS 18/19	7900082	Marketing Analytics		Prüfung (PR)	Klarmann
WS 18/19	7900127	Marketing Analytics		Prüfung (PR)	Klarmann

Competence Certificate
The assessment consists of a written exam (60 min) (according to Section 4(2), 1 of the examination regulation)

Prerequisites
The prerequisite for taking the course is the successful completion of the course Market Research [2571150].

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-WIWI-107720 - Market Research must have been passed.

Recommendation
It is strongly recommended to complete the course Market Research prior to taking the Marketing Analytics course.

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

Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

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

V Marketing Analytics
2572170, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content
In this course various relevant market research questions are addressed, as for example measuring and understanding customer attitudes, preparing strategic decisions and sales forecasting. In order to analyze these questions, students learn to handle social media data, panel data, nested observations and experimental design. To analyze the data, advanced methods, as for example multilevel modeling, structural equation modeling and return on marketing models are taught. Also, problems of causality are addressed in-depth. The lecture is accompanied by a computer-based exercise, in the course of which the methods are applied practically.

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

Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

Workload
Total workload for 4.5 ECTS: ca. 135 hours

Literature

- Hanssens, Dominique M., Parsons, Leonard J., Schultz, Randall L. (2003), Market response models: Econometric and time series analysis, 2nd ed, Boston.
- Gelman, Andrew, Hill, Jennifer (2006), Data analysis using regression and multilevel/hierarchical models, New York.
- Cameron, A. Colin, Trivedi, Pravin K. (2005), Microeconometrics: methods and applications, New York.
- Chapman, Christopher, Feit, Elea M. (2015), R for Marketing Research and Analytics, Cham.
- Ledolter, Johannes (2013), Data mining and business analytics with R, New York.

T 6.176 Course: Marketing Strategy Business Game [T-WIWI-102835]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101490 - Marketing Management
M-WIWI-101510 - Cross-Functional Management Accounting

Type Prüfungsleistung anderer Art	Credits 1,5	Recurrence Each summer term	Version 1

Events					
SS 2019	2571183	Marketing Strategy Business Game	1 SWS	Block (B)	Klarmann, Assistenten
Exams					
SS 2019	7900022	Marketing Strategy Business Game		Prüfung (PR)	Klarmann

Competence Certificate
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015). The assessment consists of a group presentation and a subsequent round of questions totalling 20 minutes.

Prerequisites
None

Recommendation
None

Annotation
Please note that only one of the following courses can be chosen in the Marketing Management Module: Marketing Strategy Business Game, Strategic Brand Management, Open Innovation – Concepts, Methods and Best Practices or Business Plan Workshop.

Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in summer term starts.

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

V Marketing Strategy Business Game
2571183, SS 2019, 1 SWS, Open in study portal

Block (B)

Learning Content
Using Markstrat, a marketing strategy business game, students work in groups representing a company that competes on a simulated market against the other groups' companies.

Annotation

- Please note that only one of the following courses can be chosen in the Marketing Management Module: Marketing Strategy Business Game, Strategic Brand Management, Open Innovation – Concepts, Methods and Best Practices or Business Plan Workshop. Exception: In summer term 2016 exceptionally two courses can be chosen or, in case one course has already been chosen previously, a second course can be chosen.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.
- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in summer term starts.

Workload

The total workload for this course is approximately 45.0 hours. For further information see German version.

Literature

Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T   6.177 Course: Master Thesis [T-WIWI-103142]

Responsible:	Studiendekan der KIT-Fakultät für Informatik
	Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101656 - Modul Masterarbeit

Type	**Credits**	**Version**
Abschlussarbeit	30	1

Competence Certificate
see module description

Prerequisites
see module description

Final Thesis
This course represents a final thesis. The following periods have been supplied:

Submission deadline	6 months
Maximum extension period	3 months
Correction period	8 weeks

This thesis requires confirmation by the examination office.

T 6.178 Course: Mechanisms and Applications of Workflow Systems [T-INFO-101257]

Responsible: Jutta Mülle
Organisation: KIT Department of Informatics
Part of: M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each winter term	1

Events					
WS 18/19	24111	Konzepte und Anwendungen von Workflowsystemen	3 SWS	Lecture (V)	Mülle
Exams					
WS 18/19	7500089	Mechanisms and Applications of Workflow Systems		Prüfung (PR)	Böhm, Mülle

T 6.179 Course: Medical Simulation Systems I [T-INFO-101379]

Responsible: Prof. Dr.-Ing. Rüdiger Dillmann
Organisation: KIT Department of Informatics
Part of: M-INFO-101250 - Medizinische Simulationssysteme und Neuromedizin
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	24173	Medizinische Simulationssysteme I	2 SWS	Lecture (V)	Dillmann
Exams					
WS 18/19	7500180	Medical Simulation Systems I		Prüfung (PR)	Dillmann
SS 2019	7500255	Medical Simulation Systems I		Prüfung (PR)	Dillmann

T 6.180 Course: Medical Simulation Systems II [T-INFO-101380]

Responsible:	Prof. Dr.-Ing. Rüdiger Dillmann
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101250 - Medizinische Simulationssysteme und Neuromedizin
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Exams				
WS 18/19	7500127	Medical Simulation Systems II	Prüfung (PR)	Dillmann
SS 2019	7500256	Medical Simulation Systems II	Prüfung (PR)	Dillmann

T 6.181 Course: Meshes and Point Clouds [T-INFO-101349]

Responsible:	Prof. Dr. Hartmut Prautzsch
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100812 - Netze und Punktwolken
	M-INFO-101214 - Algorithmen der Computergrafik
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 3	Recurrence Each term	Version 1

Events					
SS 2019	2400026	Praktikum Unterteilungsalgorithmen	2 SWS	Practical course (P)	Prautzsch, Xu
Exams					
WS 18/19	7500242	Meshes and Point Clouds		Prüfung (PR)	Prautzsch

T 6.182 Course: Methods in Economic Dynamics [T-WIWI-102906]

Responsible:	Prof. Dr. Ingrid Ott
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101514 - Innovationsökonomik

Type Prüfungsleistung anderer Art	Credits 1,5	Recurrence Each summer term	Version 2

Events					
SS 2019	2560240	Methods in Economic Dynamics	SWS	Lecture (V)	Ott, Bälz

Competence Certificate
Non exam assessment according to § 4 paragraph 3 of the examination regulation (SPO 2015).

Prerequisites
None

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

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

V Methods in Economic Dynamics
2560240, SS 2019, SWS, Open in study portal

Lecture (V)

Learning Content
The workshop offers the possibility to deepen the understanding about different aspects of theoretical modelling of innovation-based growth and induced economic effects. This includes the implementation of formal models in computer algebra systems as well as recording, processing and econometric analysis of related data from relational databases (concerning for example patents or trademarks). Moreover, methods of network theory are discussed.

Annotation
The course has been added summer 2015.

Workload
The total workload for this course is approximately 45 hours.

Lecture: 15h
Preparation of lecture/exam: 30h

T 6.183 Course: Mixed Integer Programming I [T-WIWI-102719]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101473 - Mathematische Optimierung
M-WIWI-102832 - Operations Research im Supply Chain Management
M-WIWI-103289 - Stochastische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Exams				
WS 18/19	7900215_WS1819	Mixed Integer Programming I	Prüfung (PR)	Stein

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

The examination can also be combined with the examination of *Mixed Integer Programming II* [25140]. In this case, the duration of the written examination takes 120 minutes.

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-102733 - Mixed Integer Programming I and II must not have been started.

Recommendation

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Annotation

The lecture is offered irregularly. The curriculum of the next three years is available online (kop.ior.kit.edu).

T 6.184 Course: Mixed Integer Programming II [T-WIWI-102720]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung
	M-WIWI-102832 - Operations Research im Supply Chain Management
	M-WIWI-103289 - Stochastische Optimierung

Type	**Credits**	**Recurrence**	**Version**
Prüfungsleistung schriftlich	4,5	Irregular	1

Exams				
WS 18/19	7900150_NK_WS1819	Mixed Integer Programming 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.

The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

The examination can also be combined with the examination of *Mixed Integer Programming I* [2550138]. In this case, the duration of the written examination takes 120 minutes.

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-102733 - Mixed Integer Programming I and II must not have been started.

Recommendation

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Annotation

The lecture is offered irregularly. The curriculum of the next three years is available online (kop.ior.kit.edu).

T 6.185 Course: Mobile Communication [T-INFO-101322]

Responsible:	Prof. Dr. Oliver Waldhorst
	Prof. Dr. Martina Zitterbart
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100785 - Mobilkommunikation
	M-INFO-101203 - Wireless Networking
	M-INFO-101205 - Future Networking
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each winter term	1

Events					
WS 18/19	24643	Mobile Communications	2 SWS	Lecture (V)	Jung, Waldhorst
Exams					
WS 18/19	7500015	Mobile Communication		Prüfung (PR)	Waldhorst, Zitterbart
WS 18/19	7500363	Mobile Communication für Wiederholer		Prüfung (PR)	Waldhorst, Zitterbart

T	**6.186 Course: Model Driven Software Development [T-INFO-101278]**

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: M-INFO-101201 - Software-Systeme
M-INFO-101202 - Software-Methodik
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 3	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	24657	Model-Driven Software Engineering	2 SWS	Lecture (V)	Burger
Exams					
WS 18/19	7500086	Model Driven Software Development		Prüfung (PR)	Reussner
SS 2019	7500016	Model Driven Software Development		Prüfung (PR)	Burger, Reussner

T 6.187 Course: Modeling and Analyzing Consumer Behavior with R [T-WIWI-102899]

Responsible:	Dr. Verena Dorner
	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101448 - Service Management
	M-WIWI-101489 - Strategie, Kommunikation und Datenanalyse
	M-WIWI-101506 - Service Analytics
	M-WIWI-103118 - Data Science: Data-Driven User Modeling

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

Events					
SS 2019	2540470	Modeling and Analyzing Consumer Behavior with R	2 SWS	Lecture (V)	Dorner, Knierim
SS 2019	2540471	Übung zu Modeling and Analyzing Consumer Behaviour with R	1 SWS	Practice (Ü)	Knierim, Greif-Winzrieth

Competence Certificate
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites
None

Recommendation
None

Annotation
Number of participants limited.

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

V Modeling and Analyzing Consumer Behavior with R
2540470, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content
Students learn the fundamental methods, algorithms and concepts for analysing consumer data. The students deepen their knowledge in working on a case study and computer exercises, especially in the areas of e-commerce and behavioural economics. In addition, students learn to write applications in R and to organize and execute larger data mining and general data analytics projects. Furthermore, students learn methods for evaluating and visualizing data.

The event will focus on the following topics:

1. basic programming concepts in R

2. data mining with R using established process models such as CRISP-DM

3. text mining and analysis of online data with R

4. working on a case study from the area of Consumer and User Analytics

5. data visualization and evaluation with R

Annotation
The course has been added summer term 2015.

Workload

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

Literature

Field, A., Miles, J., Field, Z., Discovering Statistics Using R, SAGE 2014

Jones, O., Maillardet, R., Robinson, A., Scientific Programming and Simulation Using R, Chapmann & Hall / CRC Press 2009

Venables, W.N., Smith, D.M. and the R Core Team, "An Introduction to R", 2012 (Version 2.15.2), http://cran.r-project.org/doc/manuals/R-intro.pdf

Wickham, Hadley, ggplot2: Elegant Graphics for Data Analysis (Use R!), Springer 2009 (2nd edition)

T 6.188 Course: Modeling and OR-Software: Advanced Topics [T-WIWI-106200]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102808 - Digital Service Systems in Industry
	M-WIWI-102832 - Operations Research im Supply Chain Management

Type Prüfungsleistung anderer Art	**Credits** 4,5	**Recurrence** Each winter term	**Version** 2

Events					
WS 18/19	2550490	Modellieren und OR-Software: Fortgeschrittene Themen	3 SWS	Practical course (P)	Nickel, Reuter-Oppermann
Exams					
WS 18/19	00019	Modeling and OR-Software: Advanced Topics	Prüfung (PR)		Nickel

Competence Certificate
The assessment is a 120 minutes examination, including a written and a practical part (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the software laboratory and the following term.

Prerequisites
None.

Recommendation
Basic knowledge as conveyed in the module*Introduction toOperations Research*is assumed.

Successful completion of the course*Modeling and OR-Software: Introduction*.

Annotation
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is held in every term. The planned lectures and courses for the next three years are announced online.

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

V Modellieren und OR-Software: Fortgeschrittene Themen
2550490, WS 18/19, 3 SWS, Open in study portal   **Practical course (P)**

Learning Content
After an introduction to general concepts of modelling tools (implementation, data handling, result interpretation, ...), the software IBM ILOG CPLEX Optimization Studio and the corresponding modeling language OPL will be discussed which can be used to solve OR problems on a computer-aided basis.

Subsequently, a broad range of exercises will be discussed. The main goals of the exercises from literature and practical applications are to learn the process of modeling optimization problems as linear or mixed-integer programs, to efficiently utilize the presented tools for solving these optimization problems and to implement heuristic solution procedures for mixed-integer programs.

Annotation
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is offered in every winter term. The planned lectures and courses for the next three years are announced online.

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

T 6.189 Course: Modeling Strategic Decision Making [T-WIWI-102803]

Responsible:	Prof. Dr. Hagen Lindstädt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101510 - Cross-Functional Management Accounting

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

Competence Certificate

The course will not be offered anymore from winter term 2016/2017 on. The examination will be offered latest until summer term 2017 (repeaters only).

Written exam 100% following §4, Abs. 2.

Prerequisites

None

Recommendation

None

T 6.190 Course: Modelling, Measuring and Managing of Extreme Risks [T-WIWI-102841]

Responsible:	Prof. Dr. Ute Werner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101449 - Insurance Management II

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	2,5	Each summer term	1

Competence Certificate

Non exam assessment (following §4(2), 3 of the examination regulation).

T-WIWI-102841 Modelling, Measuring and Managing of Extreme Risks will be offered latest until summer term 2017 (beginners only).

Prerequisites

None

Recommendation

None

T 6.191 Course: Models of Parallel Processing [T-INFO-101365]

Responsible: Thomas Worsch
Organisation: KIT Department of Informatics
Part of: M-INFO-100828 - Modelle der Parallelverarbeitung

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each summer term	1

Events					
SS 2019	24606	Modelle der Parallelverarbeitung	3 SWS	Lecture (V)	Worsch, Vollmar
Exams					
WS 18/19	75400003	Models of Parallel Processing		Prüfung (PR)	Worsch

T 6.192 Course: Multicore Computers and Computer Clusters [T-INFO-101325]

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: M-INFO-101201 - Software-Systeme
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 4	Recurrence Each winter term	Version 1

Events					
WS 18/19	24112	Multikern-Rechner und Rechnerbündel	2 SWS	Lecture (V)	Tichy, Tillmann
Exams					
WS 18/19	7580290235	Multicore Computers and Computer Clusters	Prüfung (PR)		Tichy

T 6.193 Course: Multivariate Statistical Methods [T-WIWI-103124]

Responsible:	Prof. Dr. Oliver Grothe
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung
	M-WIWI-101637 - Analytics und Statistik
	M-WIWI-101639 - Ökonometrie und Statistik II
	M-WIWI-103289 - Stochastische Optimierung

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

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. A bonus program can improve the grade by one grade level (i.e. by 0.3 or 0.4).

The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites

None

Recommendation

The course covers highly advanced statistical methods with a quantitative focus. Hence, participants are necessarily expected to have advanced statistical knowledge, e.g. acquired in the course "Advanced Statistics". Without this, participation in the course is not advised.

Previous attendance of the course Analysis of Multivariate Data is recommended. Alternatively, the script can be provided to interested students.

T **6.194 Course: Natural Language Processing and Software Engineering [T-INFO-101272]**

Responsible:	Prof. Dr. Walter Tichy
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101201 - Software-Systeme
	M-INFO-101202 - Software-Methodik
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 3	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	24187	Sprachverarbeitung in der Softwaretechnik	2 SWS	Lecture (V)	Tichy, Weigelt
Exams					
WS 18/19	7543231	Natural Language Processing and Software Engineering	Prüfung (PR)		Tichy
SS 2019	7500185	Natural Language Processing and Software Engineering	Prüfung (PR)		Tichy

| T | 6.195 Course: Network Security: Architectures and Protocols [T-INFO-101319] |

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: M-INFO-100782 - Netzsicherheit: Architekturen und Protokolle
M-INFO-101203 - Wireless Networking
M-INFO-101204 - Networking Labs
M-INFO-101206 - Networking
M-INFO-101207 - Netzsicherheit - Theorie und Praxis
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	24601	Netzsicherheit: Architekturen und Protokolle	2 SWS	Lecture (V)	Baumgart, Bless, Heseding, Zitterbart
Exams					
WS 18/19	7500014	Network Security: Architectures and Protocols		Prüfung (PR)	Zitterbart

| T | **6.196 Course: Next Generation Internet [T-INFO-101321]** |

Responsible: Dr.-Ing. Roland Bless
Prof. Dr. Martina Zitterbart

Organisation: KIT Department of Informatics

Part of: M-INFO-101205 - Future Networking
M-INFO-101206 - Networking
M-INFO-102233 - Weitere Leistungen

| **Type**
Prüfungsleistung mündlich | **Credits**
4 | **Recurrence**
Each summer term | **Version**
1 |

Events					
SS 2019	24674	**Next Generation Internet**	2 SWS	Lecture (V)	Bless
Exams					
WS 18/19	7500016	**Next Generation Internet**		Prüfung (PR)	Bless, Zitterbart

T 6.197 Course: Non- and Semiparametrics [T-WIWI-103126]

Responsible:	Prof. Dr. Melanie Schienle
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101638 - Ökonometrie und Statistik I
	M-WIWI-101639 - Ökonometrie und Statistik II

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Competence Certificate
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
Knowledge of the contents covered by the course *"Applied Econometrics"* [2520020]

Annotation
The course takes place every second winter semester: 2018/19 then 2020/21

T 6.198 Course: Nonlinear Optimization I [T-WIWI-102724]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101473 - Mathematische Optimierung

Type Prüfungsleistung schriftlich	Credits 4,5	Recurrence Each winter term	Version 3

Events					
WS 18/19	2550111	Nichtlineare Optimierung I	2 SWS	Lecture (V)	Stein
WS 18/19	2550112	Übungen zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550142	Rechnerübung zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
Exams					
WS 18/19	7900002_HK_WS1819	Nonlinear Optimization I		Prüfung (PR)	Stein

Competence Certificate

The assessment 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 Optimization II* [2550113]. In this case, the duration of the written examination takes 120 minutes.

Prerequisites

The module component exam T-WIWI-103637 "Nonlinear Optimization I and II" may not be selected.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-103637 - Nonlinear Optimization I and II must not have been started.

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

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

V Nichtlineare Optimierung I
2550111, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content

The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality 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 6.199 Course: Nonlinear Optimization I and II [T-WIWI-103637]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	9	Each winter term	5

Events					
WS 18/19	2550111	Nichtlineare Optimierung I	2 SWS	Lecture (V)	Stein
WS 18/19	2550112	Übungen zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550113	Nichtlineare Optimierung II	2 SWS	Lecture (V)	Stein
WS 18/19	2550142	Rechnerübung zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
Exams					
WS 18/19	7900151_HK_WS1819	Nonlinear Optimization I and II		Prüfung (PR)	Stein

Competence Certificate

The assessment 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.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-102724 - Nonlinear Optimization I must not have been started.
2. The course T-WIWI-102725 - Nonlinear Optimization II must not have been started.

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

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

V	**Nichtlineare Optimierung I**	Lecture (V)
	2550111, WS 18/19, 2 SWS, Open in study portal	

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** | **Nichtlineare Optimierung II**
 2550113, WS 18/19, 2 SWS, Open in study portal | **Lecture (V)** |

Learning Content

The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. Part I of the lecture treats unconstrained optimization problems. Part II of the lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions for constrained problems
- Optimality conditions for constrained convex problems
- Numerical methods for constrained problems (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T 6.200 Course: Nonlinear Optimization II [T-WIWI-102725]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	2

Events					
WS 18/19	2550112	Übungen zu Nichtlineare Optimierung I + II	SWS	Practice (Ü)	Stein, Mohr
WS 18/19	2550113	Nichtlineare Optimierung II	2 SWS	Lecture (V)	Stein
Exams					
WS 18/19	7900050_HK_WS1819	Nonlinear Optimization II		Prüfung (PR)	Stein

Competence Certificate

The assessment 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.

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-103637 - Nonlinear Optimization I and II must not have been started.

Annotation

Part I and II of the lecture are held consecutively in the same semester.

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

V Nichtlineare Optimierung II
2550113, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content

The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. Part I of the lecture treats unconstrained optimization problems. Part II of the lecture is structured as follows:

• Topology and first order approximations of the feasible set
• Theorems of the alternative, first and second order optimality conditions for constrained problems
• Optimality conditions for constrained convex problems
• Numerical methods for constrained problems (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T   6.201 Course: Operations Research in Health Care Management [T-WIWI-102884]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102805 - Service Operations

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	2

Exams					
WS 18/19	7900124	Operations Research in Health Care Management		Prüfung (PR)	Nickel

Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

T 6.202 Course: Operations Research in Supply Chain Management [T-WIWI-102715]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung
	M-WIWI-102805 - Service Operations
	M-WIWI-102832 - Operations Research im Supply Chain Management
	M-WIWI-103289 - Stochastische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	2

Events					
SS 2019	2550480	Operations Research in Supply Chain Management	2 SWS	Lecture (V)	Nickel
SS 2019	2550481	Übungen zu OR in Supply Chain Management	1 SWS	Practice (Ü)	Dunke

Competence Certificate
The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

Prerequisites
None

Recommendation
Basic knowledge as conveyed in the module Introduction to Operations Research and in the lectures Facility Location and Strategic SCM,Tactical and operational SCMis assumed.

Annotation
The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

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

V Operations Research in Supply Chain Management
2550480, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content
Supply Chain Management constitutes a general tool for logistics process planning in supply networks. To an increasing degree quantitative decision support is provided by methods and models from Operations Research. The lecture "OR in Supply Chain Management" conveys concepts and approaches for solving practical problems and presents an insight to current research topics. The lecture's focus is set on modeling and solution methods for applications originating in different domains of a supply chain. The emphasis is put on mathematical methods like mixed integer programming, valid inequalities or column generation, and the derivation of optimal solution strategies.

In form and content, the lecture addresses all levels of Supply Chain Management: After a short introduction, the tactical and operational level will be discussed with regard to inventory models, scheduling as well as cutting and packing. The strategic level will be discussed in terms of layout planning. Another main focus of the lecture is the application of methods from online optimization. This optimization discipline has gained more and more importance in the optimization of supply chains over the several past years due to an increasing amount of dynamic data flows.

Annotation
The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

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

Literature

- Simchi-Levi, D.; Chen, X.; Bramel, J.: The Logic of Logistics: Theory, Algorithms, and Applications for Logistics and Supply Chain Management, 2nd edition, Springer, 2005
- Simchi-Levi, D.; Kaminsky, P.; Simchi-Levi, E.: Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies, McGraw-Hill, 2000
- Silver, E. A.; Pyke, D. F.; Peterson, R.: Inventory Management and Production Planning and Scheduling, 3rd edition, Wiley, 1998
- Blazewicz, J.: Handbook on Scheduling - From Theory to Applications, Springer, 2007
- Pinedo, M. L.: Scheduling - Theory, Algorithms, and Systems (3rd edition), Springer, 2008
- Dyckhoff, H.; Finke, U.: Cutting and Packing in Production and Distribution - A Typology and Bibliography, Physica-Verlag, 1992
- Borodin, A.; El-Yaniv, R.: Online Computation and Competitive Analysis, Cambridge University Press, 2005
- Francis, R. L.; McGinnis, L. F.; White, A.: Facility Layout and Location: An Analytical Approach, 2nd edition, Prentice-Hall, 1992

T 6.203 Course: Optimization under Uncertainty [T-WIWI-106545]

Responsible:	Prof. Dr. Steffen Rebennack
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103243 - Optimierung unter Unsicherheit in der Informationswirtschaft
	M-WIWI-103289 - Stochastische Optimierung

Type	**Credits**	**Recurrence**	**Version**
Prüfungsleistung schriftlich	5	Irregular	1

Events					
WS 18/19	2550464	Optimierungsansätze unter Unsicherheit	SWS	Lecture (V)	Sinske
WS 18/19	2550465	Übungen zu Optimierungsansätze unter Unsicherheit	SWS	Practice (Ü)	Füllner
WS 18/19	2550466	Rechnerübungen zu Optimierungsansätze unter Unsicherheit	2 SWS	Practice (Ü)	Füllner
Exams					
WS 18/19	7900158	Optimization under uncertainty		Prüfung (PR)	Rebennack

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites

None.

T   6.204 Course: P&C Insurance Simulation Game [T-WIWI-102797]

Responsible:	Prof. Dr. Ute Werner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101449 - Insurance Management II

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	1

Competence Certificate

T-WIWI-102797 P+C Insurance Simulation Game will not be offered anymore from winter term 2016/2017 on.

Prerequisites

None

Recommendation

See German version.

T 6.205 Course: Panel Data [T-WIWI-103127]

Responsible:	Dr. Wolf-Dieter Heller
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101638 - Ökonometrie und Statistik I
	M-WIWI-101639 - Ökonometrie und Statistik II

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

Events					
SS 2019	2520320	**Paneldaten**	2 SWS	Lecture (V)	Heller
SS 2019	2520321	**Übungen zu Paneldaten**	2 SWS	Practice (Ü)	Heller

Prerequisites
None

T 6.206 Course: Parallel Algorithms [T-INFO-101333]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: M-INFO-100796 - Parallele Algorithmen
M-INFO-101199 - Advanced Algorithms: Design and Analysis
M-INFO-101200 - Advanced Algorithms: Engineering and Applications
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each winter term	1

Events					
WS 18/19	2400053	Parallel Algorithms	2/1 SWS	Lecture (V)	Sanders, Bingmann
Exams					
WS 18/19	75489	Parallel Algorithms		Prüfung (PR)	Sanders

T 6.207 Course: Parallel Computer Systems and Parallel Programming [T-INFO-101345]

Responsible:	Prof. Dr. Achim Streit
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101210 - Dynamische IT-Infrastrukturen
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	24617	Parallel computer systems and parallel programming	2 SWS	Lecture (V)	Streit, Häfner

T 6.208 Course: Parametric Optimization [T-WIWI-102855]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101473 - Mathematische Optimierung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Exams				
WS 18/19	7900141_HK_WS1819	Parametric Optimization	Prüfung (PR)	Stein

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.
The examination is held in the semester of the lecture and in the following semester.

Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

Prerequisites

None

Recommendation

It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

Annotation

The lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

T 6.209 Course: Patent Law [T-INFO-101310]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101215 - Recht des Geistigen Eigentums
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each summer term	**Version** 2

Events					
SS 2019	24656	Patent Law	2 SWS	Lecture (V)	Koch
Exams					
WS 18/19	7500001	Patent Law		Prüfung (PR)	Dreier, Matz
SS 2019	7500062	Patent Law		Prüfung (PR)	Dreier, Matz

T 6.210 Course: Pattern Recognition [T-INFO-101362]

Responsible: Prof. Dr.-Ing. Jürgen Beyerer
Organisation: KIT Department of Informatics
Part of: M-INFO-100825 - Mustererkennung
M-INFO-101238 - Automatische Sichtprüfung
M-INFO-101239 - Maschinelle Visuelle Wahrnehmung
M-INFO-101241 - Bildgestützte Detektion und Klassifikation
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	24675	Pattern Recognition	2 SWS	Lecture (V)	Beyerer
Exams					
WS 18/19	7500111	Pattern Recognition		Prüfung (PR)	Beyerer
SS 2019	7500032	Pattern Recognition		Prüfung (PR)	Beyerer

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

V Pattern Recognition
24675, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Description
Features:

- types of features
- exploration of the feature space
- transformation of the features
- distance measures within the feature space
- normalization of features
- selection and construction of features
- reduction of the dimension of the feature space

Classifiers:

- Bayesian decision theory
- parameter estimation
- parameter free methods
- linear classifiers
- support vector machine
- template matching, matched filter
- classification with rejection
- classification with regard to nominal features

General principles:

- Vapnik-Chervonenkis theory
- evaluation of classifiers
- boosting

Learning Content

Features:

- types of features
- exploration of the feature space
- transformation of the features
- distance measures within the feature space
- normalization of features
- selection and construction of features
- reduction of the dimension of the feature space

Classifiers:

- Bayesian decision theory
- parameter estimation
- parameter free methods
- linear classifiers
- support vector machine
- template matching, matched filter
- classification with rejection
- classification with regard to nominal features

General principles:

- Vapnik-Chervonenkis theory
- evaluation of classifiers
- boosting

T 6.211 Course: Personalization and Services [T-WIWI-102848]

Responsible:	Dr.-Ing. Andreas Sonnenbichler
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101470 - Data Science: Advanced CRM

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

Events					
WS 18/19	2540533	Personalization & Services	2 SWS	Lecture (V)	Sonnenbichler
WS 18/19	2540534	Exercise Personalization & Services	1 SWS	Practice (Ü)	Sonnenbichler
Exams					
WS 18/19	7979702	Personalization and Services		Prüfung (PR)	Geyer-Schulz

Competence Certificate

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

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites

None

Recommendation

None

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

V Personalization & Services
2540533, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content

- Personalization of Services and Applications
- User Modeling
- User Profiles
- Authentification
- Authorization
- Applications in e-Commerce and for internet-based Services
- Personalized Web Search
- Privacy

Workload

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

Time of attendance

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

Self-study

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

Sum: 135h 00m

Literature

The course follows latest scientific papers. References to these papers are listed at the end of each course unit.

T 6.212 Course: Planning and Management of Industrial Plants [T-WIWI-102631]

Responsible:	Prof. Dr. Frank Schultmann
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101471 - Industrielle Produktion II

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5,5	Each winter term	1

Events					
WS 18/19	2581952	**Planning and Management of Industrial Plants**	2 SWS	Lecture (V)	Glöser-Chahoud
WS 18/19	2581953	**Übungen Anlagenwirtschaft**	2 SWS	Practice (Ü)	Schiel, Rosenberg
Exams					
WS 18/19	7981952	**Planning and Management of Industrial Plants**		Prüfung (PR)	Schultmann

Competence Certificate
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
None

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

V Planning and Management of Industrial Plants
2581952, WS 18/19, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content
Industrial plant management incorporates a complex set of tasks along the entire life cycle of an industrial plant, starting with the initiation and erection up to operating and dismantling.
During this course students will get to know special characteristics of industrial plant management. Students will learn important methods to plan, realize and supervise the supply, start-up, maintenance, optimisation and shut-down of industrial plants. Alongside, students will have to handle the inherent question of choosing between technologies and evaluating each of them. This course pays special attention to the specific characteristics of plant engineering, commissioning and investment.

Workload
Total effort required will account for approximately 165h (5.5 credits).

Literature
will be announced in the course

T 6.213 Course: Portfolio and Asset Liability Management [T-WIWI-103128]

Responsible: Dr. Mher Safarian
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101639 - Ökonometrie und Statistik II

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

Events					
SS 2019	2520357	Portfolio and Asset Liability Management	2 SWS	Lecture (V)	Safarian
SS 2019	2520358	Übungen zu Portfolio and Asset Liability Management	2 SWS	Practice (Ü)	Safarian

Competence Certificate
The assessment of this course consists of a written examination (following §4(2), 1 SPOs, 180 min.) and of possible additional assignments during the course (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

Prerequisites
None

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

V Portfolio and Asset Liability Management
2520357, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Description
Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment

Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

Learning Content
Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment

Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

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

Literature
To be announced in lecture.

Elective literature:
To be announced in lecture.

T   6.214 Course: Practical Course Computer Vision for Human-Computer Interaction [T-INFO-105943]

Responsible:	Prof. Dr.-Ing. Rainer Stiefelhagen
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101239 - Maschinelle Visuelle Wahrnehmung
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	24893	Practical Course Computer Vision for Human-Computer Interaction	2 SWS	Practical course (P)	Stiefelhagen, Zündorf, Roitberg
Exams					
WS 18/19	7500136	Practical Course Computer Vision for Human-Computer Interaction		Prüfung (PR)	Stiefelhagen
SS 2019	7500080	Practical Course Computer Vision for Human-Computer Interaction		Prüfung (PR)	Stiefelhagen

T   6.215 Course: Practical Course Protocol Engineering [T-INFO-104386]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: M-INFO-101206 - Networking
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung anderer Art	Credits 4	Recurrence Each winter term	Version 1

Events					
WS 18/19	2400086	Protocol Engineering	4 SWS	Practical course (P)	Bauer, Holzmann, Zitterbart
Exams					
WS 18/19	7500002	Practical Course Protocol Engineering		Prüfung (PR)	Zitterbart

T 6.216 Course: Practical Course: Analysis of Complex Data Sets [T-INFO-105796]

Responsible:	Prof. Dr.-Ing. Klemens Böhm
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
	M-INFO-102233 - Weitere Leistungen
	M-INFO-102807 - Praktikum: Analysis of Complex Data Sets

Type	Credits	Recurrence	Version
Studienleistung	4	Irregular	1

Exams				
SS 2019	7500096	Practical Course Analysis of Complex Data Sets	Prüfung (PR)	Böhm

T   6.217 Course: Practical Course: Database Systems [T-INFO-103201]

Responsible:	Prof. Dr.-Ing. Klemens Böhm
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
	M-INFO-101662 - Datenbank-Praktikum
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Studienleistung	4	Each winter term	2

Events					
WS 18/19	24286	Datenbankpraktikum	2 SWS	Practical course (P)	Schäler, Böhm
Exams					
WS 18/19	7500130	Practical Course Database Systems		Prüfung (PR)	Böhm

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-101497 - Database Systems must have been passed.

T 6.218 Course: Practical Course: Geometric Modeling [T-INFO-103207]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: M-INFO-101214 - Algorithmen der Computergrafik
M-INFO-101666 - Praktikum: Geometrisches Modellieren
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung anderer Art	Credits 3	Recurrence Each winter term	Version 1

Events					
WS 18/19	2400024	**Praktikum Geometrisches Modellieren**	SWS	Practical course (P)	Mir-Mohammad-Sadeghi, Prautzsch
SS 2019	2400107	**Praktikum Geometrisches Modellieren**	2 SWS	Practical course (P)	Prautzsch, Xu

6 COURSES

Course: Practical Course: Implementation and Evaluation of Advanced Data
Mining Approaches for Semi-Structured Data [T-INFO-106219]

T 6.219 Course: Practical Course: Implementation and Evaluation of Advanced Data Mining Approaches for Semi-Structured Data [T-INFO-106219]

Responsible:	Prof. Dr.-Ing. Klemens Böhm
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101256 - Analysetechniken für große Datenbestände in Theorie und Praxis
	M-INFO-102233 - Weitere Leistungen
	M-INFO-103128 - Praktikum: Implementierung und Evaluierung von fortgeschrittenen Data Mining Konzepten für semi-strukturierte Daten

Type	Credits	Recurrence	Version
Studienleistung	4	Irregular	1

T | 6.220 Course: Practical Course: Smart Data Analytics [T-INFO-106426]

Responsible:	Prof. Dr.-Ing. Michael Beigl
Organisation:	KIT Department of Informatics
Part of:	M-INFO-102233 - Weitere Leistungen
	M-INFO-103235 - Praktikum: Smart Data Analytics

Type Prüfungsleistung anderer Art	**Credits** 6	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	24895	Practical Course: Smart Data Analytics	4 SWS	Practical course (P)	Beigl, Riedel, Ravivanpong, Pescara
Exams					
SS 2019	7500088	Practical Course: Smart Data Analytics		Prüfung (PR)	Beigl, Riedel

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-103581 - Practical Course: Context Sensitive Ubiquitous Systems must not have been started.

T 6.221 Course: Practical Course: Web Applications and Service-Oriented Architectures (II) [T-INFO-103121]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: M-INFO-104061 - Microservice-basierte Web-Anwendungen

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	5	Each summer term	2

Events					
SS 2019	24873	Practical Course: Web Applications and Service-Oriented Architectures (II)	2 SWS	Practical course (P)	Abeck, Schneider

Modeled Conditions

The following conditions have to be fulfilled:

1. The module M-INFO-100734 - Web Applications and Service-Oriented Architectures (II) must have been started.

T   6.222 Course: Practical Seminar Digital Service Systems [T-WIWI-106563]

Responsible: Prof. Dr. Wolf Fichtner
                   Prof. Dr. Alexander Mädche
                   Prof. Dr. Stefan Nickel
                   Prof. Dr. Gerhard Satzger
                   Prof. Dr. York Sure-Vetter
                   Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: M-INFO-102233 - Weitere Leistungen
                   M-WIWI-102808 - Digital Service Systems in Industry

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Irregular	1

Events					
SS 2019	2540554	Practical Seminar: Information Systems & Service Design	3 SWS	Lecture (V)	Mädche
Exams					
WS 18/19	7900279	Practical Seminar Digital Service Systems		Prüfung (PR)	Satzger

Competence Certificate
The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

Prerequisites
None

Recommendation
None

Annotation
New course title starting summer term 2017: "Practical Seminar Digital Service Systems".
The current range of seminar topics is announced on the KSRI website www.ksri.kit.edu.

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

V   Practical Seminar: Information Systems & Service Design
2540554, SS 2019, 3 SWS, Open in study portal   **Lecture (V)**

Description
Contemporary trends of every increasing digitalization in businesses lead to new challenges and fusion of technologies blurring the lines between the digital, physical and biological spheres, thereby calling for a new approaches for corporate management. Recently, physician Michio Kaku put it like the following: "The destiny of computers – like other mass technologies like electricity, paper, and running water- is to become invisible, that is, to disappear into the fabric of our lives, to be everywhere and nowhere, silently and seamlessly carrying out our wishes." Michio Kaku (2016)

In the Practical Seminar Digital Service Design students address a real-world challenge in businesses and apply digital service design practices and tools. Furthermore, during the time of the seminar the students prototypical implement a running digital service.

Real-world challenges will vary over time. This time, the challenges are from the domain of **Future Corporate Management.** The practical seminar is carried out in close cooperation with SAP SE and leverages state-of-the-art digital platforms for prototyping.

Learning Content

- Foundations
- Digital Service Design Challenges in Future Corporate Management
- Basics of Digital Service Design practices and tools
- Prototyping and development Digital Services
- Delivering digital service prototypes

T   6.223 Course: Practical Seminar Knowledge Discovery [T-WIWI-102670]

Responsible:	Prof. Dr. York Sure-Vetter
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102827 - Service Computing

Type	**Credits**	**Recurrence**	**Version**
Prüfungsleistung anderer Art	4	Each term	1

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of an examination of the written seminar thesis, a presentation and a project. The final mark is based on the examination of the written seminar thesis and the project but can be upgraded or downgraded according to the quality of the presentation.

Prerequisites

None

Recommendation

Knowledge of algorithms in the area of knowledge discovery is assumed. Therefore it is recommended to attend the course [2511302] Knowledge Discovery beforehand.

T 6.224 Course: Practical Seminar Service Innovation [T-WIWI-102799]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-102806 - Service Innovation, Design & Engineering

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Irregular	1

Exams				
WS 18/19	7900152	Team Work in the Area of Service Oriented Architectures	Prüfung (PR)	Satzger

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted pracitcal components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites

None

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-105774 - Practical Seminar: Digital Service Design must not have been started.

Recommendation

Knowledge of Service Innovation Methods is assumed. Therefore it is recommended to attend the course Service Innovation [2540468] beforehand.

Annotation

Due to the project work, the number of participants is limited and participation requires knowledge about models, concepts and approaches that are taught in the Service Innovation lecture. Having taken the Service Innovation lecture or demonstrating equivalent knowledge is a prerequisite for participating in this Practical Seminar. Details for registration will be announced on the web pages for this course.

The seminar is not offered regularly.

T 6.225 Course: Practical Seminar: Advanced Analytics [T-WIWI-108765]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103118 - Data Science: Data-Driven User Modeling

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	1

Exams				
WS 18/19	7900275	Practical Seminar: Advanced Analytics	Prüfung (PR)	Weinhardt

Competence Certificate
The assessment consists of practical work in the field of advanced analytics, 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
At least one module offered by the institute should have been chosen before attending this seminar.

Annotation
The course is held in English. The course is not offered regularly.

T 6.226 Course: Practical Seminar: Data-Driven Information Systems [T-WIWI-106207]

Responsible:	Prof. Dr. Alexander Mädche
	Prof.Dr. Thomas Setzer
	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103117 - Data Science: Data-Driven Information Systems

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each 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

At least one module offered by the institute should have been chosen before attending this seminar.

Annotation

The course is held in english. The course is not offered regularly.

T 6.227 Course: Practical Seminar: Health Care Management (with Case Studies) [T-WIWI-102716]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-102805 - Service Operations

Type Prüfungsleistung anderer Art	Credits 4,5	Recurrence Each term	Version 2

Events					
SS 2019	2550498	Practical seminar: Health Care Management	5 SWS	Event (Veranst.)	Nickel, Reuter-Oppermann
Exams					
WS 18/19	7900105	Practical Seminar: Health Care Management (with Case Studies)	Prüfung (PR)	Nickel	

Competence Certificate
The assessment consists in a case study, the writing of a corresponding paper, and an oral exam (according to §4(2), 2 of the examination regulation).

Prerequisites
None.

Recommendation
Basic knowledge as conveyed in the module *Introduction toOperations Research* is assumed.

Annotation
The credits have been reduced to 4,5 starting summer term 2016.
The lecture is offered every term.

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

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

V Practical seminar: Health Care Management
2550498, SS 2019, 5 SWS, Open in study portal

Event (Veranst.)

Learning Content
Processes in a hospital are often grown historically ("We have always done it this way"), so that there has not been the need to analyze processes until reforms of the health system have put increasing pressure on hospitals. Consequently, nowadays hospitals look for possibilities to improve their processes. The students are confronted with case studies and are asked to develop a solution. Therefore they have to collect and analyze relevant data , processes and structures. When developing the solution the students have to bear in mind that besides the economic efficiency also the quality of care and patient satisfaction (e.g. measured in waiting time) may not be neglected in the health care sector.

Annotation
The lecture is offered every term.

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

Workload
The total workload for this course is approximately135 hours. For further information see German version.

Literature
Elective literature:

- Fleßa: Grundzüge der Krankenhausbetriebslehre, Oldenbourg, 2007
- Fleßa: Grundzüge der Krankenhaussteuerung, Oldenbourg, 2008
- Hall: Patient flow: reducing delay in healthcare delivery, Springer, 2006

T 6.228 Course: Practical Seminar: Information Systems and Service Design [T-WIWI-108437]

Responsible: Prof. Dr. Alexander Mädche

Organisation: KIT Department of Economics and Management

Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-102806 - Service Innovation, Design & Engineering
M-WIWI-104068 - Information Systems in Organizations
M-WIWI-104080 - Designing Interactive Information Systems

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	2

Events					
SS 2019	2540554	Practical Seminar: Information Systems & Service Design	3 SWS	Lecture (V)	Mädche

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites

None.

Recommendation

Attending the course „Digital Service Design" is recommended, but not mandatory.

Annotation

The course is held in English.

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

V Practical Seminar: Information Systems & Service Design
2540554, SS 2019, 3 SWS, Open in study portal

Lecture (V)

Description

Contemporary trends of every increasing digitalization in businesses lead to new challenges and fusion of technologies blurring the lines between the digital, physical and biological spheres, thereby calling for a new approaches for corporate management. Recently, physician Michio Kaku put it like the following: "The destiny of computers – like other mass technologies like electricity, paper, and running water- is to become invisible, that is, to disappear into the fabric of our lives, to be everywhere and nowhere, silently and seamlessly carrying out our wishes." Michio Kaku (2016)

In the Practical Seminar Digital Service Design students address a real-world challenge in businesses and apply digital service design practices and tools. Furthermore, during the time of the seminar the students prototypical implement a running digital service.

Real-world challenges will vary over time. This time, the challenges are from the domain of **Future Corporate Management.** The practical seminar is carried out in close cooperation with SAP SE and leverages state-of-the-art digital platforms for prototyping.

Learning Content

- Foundations
- Digital Service Design Challenges in Future Corporate Management
- Basics of Digital Service Design practices and tools
- Prototyping and development Digital Services
- Delivering digital service prototypes

T 6.229 Course: Predictive Mechanism and Market Design [T-WIWI-102862]

Responsible:	Prof. Dr. Johannes Philipp Reiß
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101453 - Angewandte strategische Entscheidungen
	M-WIWI-101505 - Experimentelle Wirtschaftsforschung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Annotation
The course is given every second fall term, e.g., WS2017/18, WS2019/20, …

The retake exam is given in the summer term subsequent to the fall term where the course (lecture and final exam) is given.

T 6.230 Course: Price Management [T-WIWI-105946]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
	Dr Paul Glenn
Organisation:	KIT Department of Economics and Management
Part of:	**M-INFO-102233 - Weitere Leistungen**
	M-WIWI-101409 - Electronic Markets

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

Exams				
WS 18/19	7900170	**Price Management (Nachklausur SS 2018)**	Prüfung (PR)	Geyer-Schulz

Competence Certificate

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

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites

None

Recommendation

None

Annotation

The lecture is offered for the first time in summer term 2016.

T 6.231 Course: Price Negotiation and Sales Presentations [T-WIWI-102891]

Responsible:	Prof. Dr. Martin Klarmann
	Mark Schröder
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101487 - Sales Management

Type Prüfungsleistung anderer Art	**Credits** 1,5	**Recurrence** Each winter term	**Version** 3

Events					
WS 18/19	2572198	Price Negotiation and Sales Presentations	1 SWS	Block (B)	Klarmann, Schröder
Exams					
WS 18/19	7900148	Price Negotiation and Sales Presentations	Prüfung (PR)	Klarmann	

Competence Certificate
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015). The assessment consists of a presentation with a subsequent discussion totalling 25 minutes. Moreover learning contents are checked by realistic 30-minute price negotiations.

Prerequisites
None

Recommendation
None

Annotation
Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing & Sales (marketing.iism.kit.edu).
Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed.

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

Please note that only one of the following courses can be attended in the Sales Management module: Country Manager Simulation, Case Studies in Sales and Pricing, Price Negotiation and Sales Presentations or Digital Marketing and Sales in B2B.

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

V Price Negotiation and Sales Presentations
2572198, WS 18/19, 1 SWS, Open in study portal   Block (B)

Learning Content
At first, theoretical knowledge about the behavior in selling contexts is discussed. Then, in a practical part, students will apply this knowledge in their own price negotiations.

Annotation

- In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in winter term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in winter term starts.
- Please note that only one of the following courses can be chosen in the Sales Management Module: Country Manager Simulation, Case Studies in Sales and Pricing or Preisverhandlungen und Verkaufspräsentationen.
- Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1,5 ECTS in the respective module to all students. Participation in a specific course cannot be guaranteed.

Workload

The total workload for this course is approximately 45.0 hours. For further information see German version.

Literature

None

T 6.232 Course: Pricing [T-WIWI-102883]

Responsible:	Dr. Sven Feurer
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101487 - Sales Management
	M-WIWI-101489 - Strategie, Kommunikation und Datenanalyse
	M-WIWI-101490 - Marketing Management
	M-WIWI-101510 - Cross-Functional Management Accounting

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

Events					
WS 18/19	2572157	Pricing	2 SWS	Lecture (V)	Feurer
WS 18/19	2572169	Übung zu Pricing	1 SWS	Practice (Ü)	Klingemann
Exams					
WS 18/19	7900138	Pricing		Prüfung (PR)	Feurer
WS 18/19	7900286	Pricing		Prüfung (PR)	Feurer

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
None

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

V Pricing
2572157, WS 18/19, 2 SWS, **Open in study portal**

Lecture (V)

Learning Content
This course addresses central elements and peculiarities of pricing goods and services. The topics are below others:

- Price demand functions
- Concept of the price elasticity of demand
- Key concepts of behavioral pricing
- Decision-making areas in pricing

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

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

T 6.233 Course: Principles of Insurance Management [T-WIWI-102603]

Responsible:	Prof. Dr. Ute Werner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101449 - Insurance Management II

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

Competence Certificate

The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).
The overall grade consists of the assessment of the oral presentations incl. papers (50 percent) and the assessment of the oral exam (50 percent).

The examination will be offered latest until summer term 2017 (beginners only).

Prerequisites

None

Recommendation

None

T 6.234 Course: Product and Innovation Management [T-WIWI-109864]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101490 - Marketing Management
	M-WIWI-101510 - Cross-Functional Management Accounting
	M-WIWI-101514 - Innovationsökonomik

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	2571154	**Product and Innovation Management**	2 SWS	Lecture (V)	Klarmann

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-WIWI-102812 - Product and Innovation Management must not have been started.

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

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

V Product and Innovation Management
2571154, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content
This course addresses topics around the management of new as well as existing products. After the foundations of product management, especially the product choice behavior of customers, students get to know in detail different steps of the innovation process. Another section regards the management of the existing product portfolio.

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

Workload
Total effort for 3 credit points: approx. 90 hours

Presence time: 30 hours

Preparation and wrap-up of LV: 45.0 hours

Exam and exam preparation: 15.0 hours

Literature
Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T   6.235 Course: Production and Logistics Management [T-WIWI-102632]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101412 - Industrielle Produktion III

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

Events					
SS 2019	2581954	Production and Logistics Management	2 SWS	Lecture (V)	Schultmann
SS 2019	2581955	Übung zu Produktions- und Logistikmanagement	2 SWS	Practice (Ü)	Rudi, Zimmer
Exams					
WS 18/19	7981954	Production and Logistics 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. Reexaminations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V   Production and Logistics Management
2581954, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Description

This course covers central tasks and challenges of an operative production and logistics management. Students get to know the set-up and mode of operation of planning systems such as PPS-, ERP- and Advanced Planning Systems to cope with the accompanying planning tasks. Methods to solve these tasks will be explored with respect to manufacturing program planning, material and time. Alongside to MRP II, students will be introduced to integrated supply chain management approaches in PPS. Finally, commercially available PPS-, ERP- and Advanced Planning Systems will be presented and discussed.

Learning Content

This course covers central tasks and challenges of operational production and logistics management. Systems analytically, central planning tasks are discussed. Exemplary solution approaches for these tasks are presented. Further practical approaches are explained. Students get to know the set-up and mode of operation of planning systems such as PPS-, ERP- and Advanced Planning Systems to cope with the accompanying planning tasks. Alongside to MRP II, students will be introduced to integrated supply chain management approaches in Supply Chain Management.

Workload

Total effort required will account for approximately 165h (5.5 credits).

Literature

will be announced in the course

T 6.236 Course: Project Lab Cognitive Automobiles and Robots [T-WIWI-109985]

Responsible:	Prof. Dr.-Ing. Johann Marius Zöllner
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103356 - Maschinelles Lernen

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each winter term	1

Events					
WS 18/19	2512501	Projektpraktikum Kognitive Automobile und Roboter	3 SWS	Practical course (P)	Zöllner

Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

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

Details of the grade formation will be announced at the beginning of the course.

Prerequisites

None

T 6.237 Course: Project Lab Machine Learning [T-WIWI-109983]

Responsible:	Prof. Dr.-Ing. Johann Marius Zöllner
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103356 - Maschinelles Lernen

Type Prüfungsleistung anderer Art	Credits 4	Recurrence Each summer term	Version 1

Events					
SS 2019	2512500	Projektpraktikum Maschinelles Lernen	3 SWS	Practical course (P)	Zöllner
Exams					
SS 2019	7900086	Project Lab Machine Learning		Prüfung (PR)	Zöllner

Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

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

Details of the grade formation will be announced at the beginning of the course.

Prerequisites

None

T 6.238 Course: Project Management [T-WIWI-103134]

Responsible:	Prof. Dr. Frank Schultmann
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101412 - Industrielle Produktion III
	M-WIWI-101471 - Industrielle Produktion II

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581963	Project Management	2 SWS	Lecture (V)	Schultmann, Volk, Wiens, Schiel, Hübner, Schumacher
WS 18/19	2581964	Übung zu Project Management	1 SWS	Practice (Ü)	Volk, Wiens, Hübner, Schumacher, Schiel
Exams					
WS 18/19	7981963	Project Management		Prüfung (PR)	Schultmann

Competence Certificate

The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

Prerequisites

None

Recommendation

None

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

V Project Management

2581963, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content

1. Introduction
2. Principles of Project Management
3. Project Scope Management
4. Time Management and Resource Scheduling
5. Cost Management
6. Quality Management
7. Risk Management
8. Stakeholder
9. Communication, Negotiation and Leadership
10. Project Controlling

Workload

The total workload for this course is approximately 105 hours. For further information see German version.

Literature

will be announced in the course

T 6.239 Course: Project Management in Practice [T-INFO-101976]

Responsible:	Prof. Dr.-Ing. Klemens Böhm
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Studienleistung	1,5	Irregular	1

Events					
SS 2019	2400019	Project Management in Practice	2 SWS	Lecture (V)	Böhm, Schnober

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

V Project Management in Practice
2400019, SS 2019, 2 SWS, 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 | 6.240 Course: Provable Security in Cryptography [T-INFO-101259]

Responsible:	Prof. Dr. Dennis Hofheinz
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101198 - Fortgeschrittene Themen der Kryptographie
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	Credits 3	Recurrence Each winter term	Version 1

Events					
SS 2019	24166	Provable Security in Cryptography	2 SWS	Lecture (V)	Hofheinz
Exams					
WS 18/19	7500093	Provable Security in Cryptography		Prüfung (PR)	Geiselmann, Hofheinz, Müller-Quade

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

V | Provable Security in Cryptography
24166, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content

When is an encryption scheme secure? What type of security is guaranteed by a digital signature scheme? How can secure cryptographic systems be constructed? These and more questions are the topic of this lecture. We put particular emphasis on concrete examples: we will present several cryptographic schemes (such as encryption schemes) and analyze their security properties. In this, the notion of a security proof will play a central role. We endeavour to find mathematical proofs that a given system achieves certain desirable properties under well-defined complexity-theoretic assumptions.

T 6.241 Course: Public Management [T-WIWI-102740]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101504 - Collective Decision Making
M-WIWI-101511 - Vertiefung Finanzwissenschaft

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

Events					
WS 18/19	2561127	Public Management	3 SWS	Lecture / Practice (VÜ)	Wigger
Exams					
WS 18/19	790puma	Public Management		Prüfung (PR)	Wigger
SS 2019	790puma	Public Management		Prüfung (PR)	Wigger

Competence Certificate
The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Prerequisites
None

Recommendation
Basic knowledge of Public Finance is required.

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

V Public Management
2561127, WS 18/19, 3 SWS, Open in study portal   **Lecture / Practice (VÜ)**

Learning Content
The lecture "Public Management" deals with the economic theory of public sector administration. It is divided into four parts. The first section gives an overview of the legal framework of governmental administration in the Federal Republic of Germany and introduces the classical theory of administration as developed by Weber. Part two studies concepts of public decision-making, which have a significant impact on the operation of public sector administrations and where one focus is on consistency problems of collective decision-making. The third chapter deals with efficiency problems arising in conventionally organized public administrations and companies. X-inefficiency, information and control problems, the isolated consideration of income-spending-relations as well as rent-seeking problems will be considered. In section four the concept of New Public Management, which is a new approach to public sector administration that is mainly based in contract theory, is introduced. Its foundations in institutional economics are developed, with a focus on the specific incentive structures in self-administered administrations. Finally, the achievements of New Public Management approaches are discussed.

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

Literature
Elective literature:

- Damkowski, W. and C. Precht (1995): Public Management; Kohlhammer
- Richter, R. and E.G. Furubotn (2003): Neue Institutionenökonomik; 3rd edition; Mohr
- Schedler, K. and I. Proeller (2003): New Public Management; 2nd edition; UTB
- Mueller, D.C. (2009): Public Choice III; Cambridge University Press
- Wigger, B.U. (2006): Grundzüge der Finanzwissenschaft; 2nd edition; Springer

T 6.242 Course: Public Media Law [T-INFO-101311]

Responsible:	Prof. Dr. Thomas Dreier
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101217 - Öffentliches Wirtschaftsrecht
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	24082	**Public Media Law**	2 SWS	Lecture (V)	Kirchberg
Exams					
WS 18/19	7500062	**Public Media Law**		Prüfung (PR)	Dreier, Matz
SS 2019	7500058	**Public Media Law**		Prüfung (PR)	Dreier, Matz

T 6.243 Course: Public Revenues [T-WIWI-102739]

Responsible:	Prof. Dr. Berthold Wigger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101511 - Vertiefung Finanzwissenschaft

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

Events					
SS 2019	2560120	Public Revenues	2 SWS	Lecture (V)	Wigger
SS 2019	2560121	Übung zu Öffentliche Einnahmen	1 SWS	Practice (Ü)	Wigger
Exams					
WS 18/19	790oeff	Public Revenues		Prüfung (PR)	Wigger
SS 2019	790oeff	Public Revenues		Prüfung (PR)	Wigger

Competence Certificate

The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Prerequisites

None

Recommendation

Basic knowledge of Public Finance is required.

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

V Public Revenues

2560120, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Description

The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Learning Content

The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Workload

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

Literature
Elective literature:

- Homburg, S.(2000): *Allgemeine Steuerlehre,* Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4th ed., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* and *Finanzwissenschaft III,* Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2nd ed., Springer

T 6.244 Course: Quantitative Methods in Energy Economics [T-WIWI-107446]

Responsible:	Dr. Dogan Keles Patrick Plötz
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen M-WIWI-101451 - Energiewirtschaft und Energiemärkte

Type Prüfungsleistung schriftlich	Credits 3	Recurrence Each winter term	Version 1

Events					
WS 18/19	2581007	Quantitative Methods in Energy Economics	2 SWS	Lecture (V)	Keles, Plötz
WS 18/19	2581008	Übung zu Quantitative Methods in Energy Economics	1 SWS	Practice (Ü)	Plötz
Exams					
WS 18/19	7981007	Quantitative Methods in Energy Economics		Prüfung (PR)	Fichtner

Competence Certificate
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
None

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

V	**Quantitative Methods in Energy Economics** 2581007, WS 18/19, 2 SWS, Open in study portal	Lecture (V)

Learning Content
Energy economics makes use of many quantitative methods in exploration and analysis of data as well as in simulations and modelling. This lecture course aims at introducing students of energy economics into the application of quantitative methods and techniques as taught in elementary courses to real problems in energy economics. The focus is mainly on regression, simulation, time series analysis and related statistical methods as applied in energy economics.

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

T　6.245 Course: Randomized Algorithms [T-INFO-101331]

Responsible:	Thomas Worsch
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100794 - Randomisierte Algorithmen
	M-INFO-101199 - Advanced Algorithms: Design and Analysis
	M-INFO-101200 - Advanced Algorithms: Engineering and Applications
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each winter term	1

Events					
WS 18/19	24171	Randomized Algorithms	3 SWS	Lecture / Practice (VÜ)	Worsch
Exams					
WS 18/19	75400002	Randomized Algorithms		Prüfung (PR)	Worsch

T 6.246 Course: Recommender Systems [T-WIWI-102847]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101470 - Data Science: Advanced CRM

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

Events					
SS 2019	2540506	Recommender Systems	2 SWS	Lecture (V)	Geyer-Schulz
SS 2019	2540507	Exercise Recommender Systems	1 SWS	Practice (Ü)	Schweizer
Exams					
WS 18/19	7900149	Recommender Systems		Prüfung (PR)	Geyer-Schulz

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

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites
None

Recommendation
None

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

V Recommender Systems
2540506, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content
At first, an overview of general aspects and concepts of recommender systems and its relevance for service providers and customers is given. Next, different categories of recommender systems are discussed. This includes explicit recommendations like customer reviews as well as implicit services based on behavioral data. Furthermore, the course gives a detailed view of the current research on recommender systems at the Chair of Information Services and Electronic Markets.

Workload

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

Time of attendance

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

Self-study

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

Sum: 135h 00m

Literature

Rakesh Agrawal, Tomasz Imielinski, and Arun Swami. Mining association rules between sets of items in large databases. In Sushil Jajodia Peter Buneman, editor, Proceedings of the ACM SIGMOD International Conference on Management of Data, volume 22, Washington, D.C., USA, Jun 1993. ACM, ACM Press.

Rakesh Agrawal and Ramakrishnan Srikant. Fast algorithms for mining association rules. In Proceedings of the 20th Very Large Databases Conference, Santiago, Chile, pages 487 – 499, Sep 1994.

Asim Ansari, Skander Essegaier, and Rajeev Kohli. Internet recommendation systems. Journal of Marketing Research, 37:363 – 375, Aug 2000.

Christopher Avery, Paul Resnick, and Richard Zweckhauser. The market for evaluations. American Economic Review, 89(3):564 – 584, 1999.

Ibrahim Cingil, Asuman Dogac, and Ayca Azgin. A Broader Approach to Personalization. Communications of the ACM, 43(8):136 – 141, Aug 2000.

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

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. A customer purchase incidence model applied to recommender services. In R. Kohavi et al., editor, Proceedings of the WebKDD 2001 – Mining log data across all customer touchpoints, volume 2356 of Lecture Notes in Artificial Intelligence LNAI, pages 25–47, Berlin, 2002. ACM, Springer-Verlag.

Jon M. Kleinberg. Authoritative sources in a hyperlinked environment. JACM, 46(5):604–632, sep 1999.

Joseph Konstan, Bradley Miller, David Maltz, Jonathan Herlocker, Lee Gordon, and John Riedl. Grouplens: Applying Collaborative Filtering to Usernet News. Communications of the ACM, 40(3):77 – 87, Mar 1997.

Paul Resnick, Neophytos Iacovou, Peter Bergstrom, and John Riedl. Grouplens: An open architecture for collaborative filtering of netnews. In Proceedings of the conference on Computer supported cooperative work, pages 175 – 186. ACM Press, 1994.

Elective literature:

Antoinette Alexander. The return of hardware: A necessary evil? Accounting Technology, 15(8):46 – 49, Sep 1999.

Christopher Avery and Richard Zeckhauser. Recommender systems for evaluating computer messages. Communications of the ACM, 40(3):88 – 89, Mar 1997.

Steven Bellman, Gerald Lohse, and Eric Johnson. Predictors of Online Buying Behavior. Communications of the ACM, 42(12):32 – 38, Dec 1999.

Thomas J. Blischok. Every transaction tells a story. Chain Store Age Executive with Shopping Center Age, 71(3):50–56, Mar 1995.

Hans Hermann Bock. Automatische Klassifikation. Vandenhoeck und Ruprecht, Göttingen, 1974.

Andrew S.C. Ehrenberg. Repeat-Buying: Facts, Theory and Applications. Charles Griffin & Company Ltd, London, 2 edition, 1988.

Wolfgang Gaul, Andreas Geyer-Schulz, Michael Hahsler, and Lars Schmidt-Thieme. eMarketing mittels Recommendersystemen. Marketing ZFP, 24:47 – 55, 2002.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. myvu: a next generation recommender system based on observed consumer behavior and interactive evolutionary algorithms. In W. Gaul, O. Opitz, and M. Schader, editors, Data Analysis – Scientific Modeling and Practical Applications, volume 18 of Studies in Classification, Data Analysis and Knowledge Organization, pages 447 – 457, Heidelberg, Germany, 2000. Springer.

Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. Educational and scientific recommender systems: Designing the information channels of the virtual university. International Journal of Engineering Education, 17(2):153 – 163, 2001.

Mark-Edward Grey. Recommendersysteme auf Basis linearer Regression, 2004.

John A. Hartigan. Clustering Algorithms. John Wiley and Sons, New York, 1975.

Kevin Kelly. New Rules for the New Economy: 10 Radical Strategies for a Connected World. Viking, 1998.

Taek-Hun Kim, Young-Suk Ryu, Seok-In Park, and Sung-Bong Yang. An improved recommendation algorithm in collaborative filtering. In K. Bauknecht, A. Min Tjoa, and G. Quirchmayr, editors, E-Commerce and Web Technologies, Third International Conference, Aix-en-Provence, France, volume 2455 of Lecture Notes in Computer Science, pages 254–261, Berlin, Sep 2002. Springer-Verlag.

Ron Kohavi, Brij Masand, Myra Spiliopoulou, and Jaideep Srivastava. Web mining. Data Mining and Knowledge Discovery, 6:5 – 8, 2002.

G. S. Maddala. Introduction to Econometrics. John Wiley, Chichester, 3 edition, 2001.

Andreas Mild and Martin Natter. Collaborative filtering or regression models for Internet recommendation systems? Journal of Targeting, Measurement and Analysis for Marketing, 10(4):304 – 313, Jan 2002.

Andreas Mild and Thomas Reutterer. An improved collaborative filtering approach for predicting cross-category purchases based on binary market basket data. Journal of Retailing & Consumer Services, 10(3):123–133, may 2003.

Paul Resnick and Hal R. Varian. Recommender Systems. Communications of the ACM, 40(3):56 – 58, Mar 1997.

Badrul M. Sarwar, Joseph A. Konstan, Al Borchers, Jon Herlocker, Brad Miller, and John Riedl. Using filtering agents to improve prediction quality in the grouplens research collaborative filtering system. In Proceedings of ACM Conference on Computer-Supported Cooperative Work, Social Filtering, Social Influences, pages 345 – 354, New York, 1998. ACM Press.

J. Ben Schafer, Joseph Konstan, and Jon Riedl. Recommender Systems in E-commerce. In Proceedings of the 1st ACM conference on Electronic commerce, pages 158 – 166, Denver, Colorado, USA, Nov 1999. ACM.

Upendra Shardanand and Patti Maes. Social information filtering: Algorithms for automating "word of mouth". In Proceedings of ACM SIGCHI, volume 1 of Papers: Using the Information of Others, pages 210 – 217. ACM, 1995.

T 6.247 Course: Regulation Theory and Practice [T-WIWI-102712]

Responsible:	Prof. Dr. Kay Mitusch
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101406 - Netzwerkökonomie
	M-WIWI-101451 - Energiewirtschaft und Energiemärkte

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	see Annotations	2

Exams				
WS 18/19	7900272	Regulation Theory and Practice	Prüfung (PR)	Mitusch

Competence Certificate

The lecture is not offered for an indefinite period of time.

Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

Prerequisites

None

Recommendation

Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics and Principal-Agent- or Contract theories. Prior attendance of the lecture*Competition in Networks* [26240] is helpful in any case but not considered a formal precondition.

Annotation

The lecture is not offered for an indefinite period of time.

T 6.248 Course: Requirements Engineering [T-INFO-101300]

Responsible:	Prof. Dr.-Ing. Anne Koziolek
Organisation:	KIT Department of Informatics
Part of:	**M-INFO-101201 - Software-Systeme**
	M-INFO-101202 - Software-Methodik
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2400050	**Requirements Engineering**	2 SWS	Lecture (V)	Koziolek

Recommendation
Das Modul Softwaretechnik II wird empfohlen.

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

V Requirements Engineering
2400050, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Description
Having a good requirements specification is a critical prerequisite for any successful software project. This lecture gives an introduction to processes, methods and representation forms for specifying and managing requirements.

The topics include background and general overview, processes and methods for requirements elicitation, specification with natural language, object-oriented specification, use cases, UML, specification of quality requirements and constraints, as well as requirements validation and management.

Notes
General remarks: The lecture is held in English and all lecture material is in English. The lecture will be recorded and the recordings will be made available on the Ilias platform.

Workload
Two SWS (1.5 hours) of lecture per week in 15 weeks plus ca. 15 hours preparation for the exam = 90h

Literature
The lecture is based on slides and works by Martin Glinz, which is why there is no book that accompanies the lecture. Students are welcome to discuss differences between the lecture and the content of the course in class.

Main suggestion: Pohl, K. (2010). Requirements Engineering: Fundamentals, Principles, and Techniques. Springer Verlag. (will be available in library)

Further reading:

- I. Alexander, R. Stevens (2002). Writing Better Requirements. London: Addison-Wesley.
- A. Davis (2005). Just Enough Requirements Management. New York: Dorset House.
- D.C. Gause, G.M. Weinberg (1989). Exploring Requirements: Quality before Design. New York: Dorset House.
- M. Glinz (2013). A Glossary of Requirements Engineering Terminology, Version 1.5. International Requirements Engineering Board (IREB). Originally published in 2011. Available at http://www.ireb.org (check-out CPRE Glossary)
- E. Gottesdiener (2002). Requirements by Collaboration: Workshops for Defining Needs. Boston: Addison-Wesley.
- M.A. Jackson (1995). Software Requirements and Specifications: A Lexicon of Practice, Principles and Prejudices. Addison-Wesley (ACM Press books): Wokingham, etc.
- A. van Lamsweerde (2009). Requirements Engineering: From System Goals to UML Models to Software Specifications. Chichester: John Wiley & Sons.
- S. Robertson, J. Robertson (2006). Mastering the Requirements Process. 2nd edition. Boston: Addison-Wesley.
- K. Wiegers (2006). More About Software Requirements: Thorny Issues and Practical Advice. Redmond: Microsoft Press.

T   6.249 Course: Risk Communication [T-WIWI-102649]

Responsible:	Prof. Dr. Ute Werner
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101449 - Insurance Management II

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4,5	Each winter term	1

Competence Certificate

The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (30 min.) according to Section 4 (2), 2 of the examination regulation.

The overall grade consists of the assessment of the oral presentations incl. papers (50 percent) and the assessment of the oral exam (50 percent).

Prerequisites

None

Recommendation

None

T 6.250 Course: Risk Management in Industrial Supply Networks [T-WIWI-102826]

Responsible: Dr. Marcus Wiens
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101412 - Industrielle Produktion III
M-WIWI-101471 - Industrielle Produktion II

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3,5	Each winter term	1

Events					
WS 18/19	2581992	Risk Management in Industrial Supply Networks	2 SWS	Lecture (V)	Wiens
WS 18/19	2581993	Übung zu Risk Management in Industrial Supply Networks	1 SWS	Practice (Ü)	Klein, Wiens
Exams					
WS 18/19	7981992	Risk Management in Industrial Supply Networks		Prüfung (PR)	Schultmann

Competence Certificate
The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following § 4(2), 1 of the examination regulation). The exam takes place in every semester. Reexaminations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
None

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

V Risk Management in Industrial Supply Networks
2581992, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content

- supply chain management: introduction, aims and trends
- industrial risk management
- definition und characterization of risks: sourcing and procurement, demand, production and infrastructure
- identification of risks
- risk controlling
- risk assessment and decision support tools
- risk prevention and mitigation strategies
- robust design of supply chain networks
- supplier selection
- capacity management
- business continuity management

Workload
The total workload for this course is approximately 105 hours. For further information see German version.

Literature
will be announced in the course

T 6.251 Course: Roadmapping [T-WIWI-102853]

Responsible:	Dr. Daniel Jeffrey Koch
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovationsmanagement
	M-WIWI-101507 - Innovationsmanagement

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each summer term	1

Events					
SS 2019	2545102	Roadmapping	2 SWS	Seminar (S)	Koch
Exams					
SS 2019	7900055	Roadmapping		Prüfung (PR)	Weissenberger-Eibl

Competence Certificate
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

Prerequisites
None

Recommendation
Prior attendance of the course *Innovation Management* [2545015] is recommended.

Annotation
See German version.

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

V	**Roadmapping** 2545102, SS 2019, 2 SWS, Open in study portal	**Seminar (S)**

Learning Content
Roadmapping is a method used to support innovation decisions in the early phase of innovation management. The roadmapping process addresses the procedure of constructing roadmaps which can then be assessed. Roadmapping provides structured and graphical visualizations of preferably future-oriented topics which have innovation potentials. The benefits of the roadmapping method lie in the structured bundling of both technology- and market-driven individual topics and the joint setting of priorities and processes to achieve predetermined corporate targets. As a rule, roadmaps represent a consensus reached by the people involved in their compilation. For this reason, roadmaps are suited to the designation and initial prioritization of emerging technologies and corresponding development projects.

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

T 6.252 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 - Robotik I - Einführung in die Robotik

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each winter term	1

Events					
WS 18/19	2424152	Robotics I - Introduction to Robotics	3/1 SWS	Lecture (V)	Asfour, Kaiser, Paus, Beil
Exams					
WS 18/19	7500106	Robotics I - Introduction to Robotics		Prüfung (PR)	Asfour

T 6.253 Course: Robotics II: Humanoid Robotics [T-INFO-105723]

Responsible:	Prof. Dr.-Ing. Tamim Asfour
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101251 - Autonome Robotik

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	2

Events					
SS 2019	2400074	Robotics II: Humanoid Robotics	2 SWS	Lecture (V)	Asfour, Kaiser, Ottenhaus, Wächter, Paus, Peller-Konrad, Hitzler
Exams					
WS 18/19	7500211	Robotics II: Humanoid Robotics		Prüfung (PR)	Asfour

Modeled Conditions
The following conditions have to be fulfilled:

1. You have to fulfill one of 2 conditions:
    1. The course T-INFO-108014 - Robotics I - Introduction to Robotics must have been passed.
    2. The course T-INFO-101465 - Robotics I - Introduction to Robotics must have been passed.
2. The course T-INFO-101391 - Anthropomatics: Humanoid Robotics must not have been started.

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

V Robotics II: Humanoid Robotics
2400074, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Learning Content
The lecture presents current work in the field of humanoid robotics that deals with the implementation of complex sensorimotor and cognitive abilities. In the individual topics different methods and algorithms, their advantages and disadvantages, as well as the current state of research are discussed.

The topics addressed are: biomechanical models of the human body, biologically inspired and data-driven methods of grasping, active perception, imitation learning and programming by demonstration as well as semantic representations of sensorimotor experience

Workload
90 h

T 6.254 Course: Robotics III - Sensors and Perception in Robotics [T-INFO-109931]

Responsible:	Prof. Dr.-Ing. Tamim Asfour
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101251 - Autonome Robotik

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Modeled Conditions

The following conditions have to be fulfilled:

1. You have to fulfill one of 2 conditions:
    1. The course T-INFO-101465 - Robotics I - Introduction to Robotics must have been passed.
    2. The course T-INFO-108014 - Robotics I - Introduction to Robotics must have been passed.
2. The course T-INFO-101352 - Robotics III - Sensors in Robotics must not have been started.

T 6.255 Course: Sales Management and Retailing [T-WIWI-102890]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101487 - Sales Management

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	2572156	Sales Management and Retailing	2 SWS	Lecture (V)	Klarmann
Exams					
WS 18/19	7900080	Sales Management and Retailing		Prüfung (PR)	Klarmann
WS 18/19	7900125	Sales Management and Retailing		Prüfung (PR)	Klarmann

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
None

Annotation
The lecture is compulsory for the module Sales Management. It is taught in English.
For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu).

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

V Sales Management and Retailing
2572156, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Learning Content
The aim of the course "Sales Management and Retailing" is on the one hand to give insights into the challenging realization of a successful sales management and on the other hand to discuss peculiarities of retailing contexts. The contents are below others:

- Customer relationship management (word-of-mouth-analysis, key account management, loyalty programs, complain management etc.)
- Retail marketing (trends, point of sale design etc.)
- Retailer-producer relationships

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

This course is held in English.

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

Literature
Homburg, Christian (2016), Marketingmanagement, 6. ed., Wiesbaden.

T   6.256 Course: Secure Multiparty Computation [T-INFO-108540]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: M-INFO-104119 - Sichere Mehrparteienberechnung

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each term	1

T   6.257 Course: Security [T-INFO-101371]

Responsible: Prof. Dr. Dennis Hofheinz
                   Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: M-INFO-101197 - Computersicherheit
                   M-INFO-101207 - Netzsicherheit - Theorie und Praxis
                   M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each summer term	1

Events

SS 2019	24941	Security	3 SWS	Lecture (V)	Müller-Quade

T 6.258 Course: Selected Issues in Critical Information Infrastructures [T-WIWI-109251]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-104403 - Critical Digital Infrastructures

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4	Each summer term	1

Exams				
SS 2019	7900114	Selected Issues in Critical Information Infrastructures	Prüfung (PR)	Sunyaev

Competence Certificate

non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015). Details will be announced in the respective course.

Prerequisites

None.

T   6.259 Course: Selected legal issues of Internet law [T-INFO-108462]

Responsible:	Prof. Dr. Thomas Dreier
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101215 - Recht des Geistigen Eigentums

Type Prüfungsleistung anderer Art	Credits 3	Recurrence Each summer term	Version 1

Events					
SS 2019	24821	Selected legal issues of Internet law	2 SWS	Colloquium (KOL)	Dreier
Exams					
SS 2019	7500226	Selected legal issues of Internet law		Prüfung (PR)	Dreier

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-101307 - Internet Law must not have been started.

T 6.260 Course: Selected Topics in Cryptography [T-INFO-101373]

Responsible:	Prof. Dr. Jörn Müller-Quade
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101198 - Fortgeschrittene Themen der Kryptographie
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	24623	Selected topics in Cryptography	2 SWS	Lecture (V)	Müller-Quade, Klooß, Mechler
Exams					
WS 18/19	7500222	Selected Topics in Cryptography		Prüfung (PR)	Geiselmann, Müller-Quade, Hofheinz

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

V **Selected topics in Cryptography** 24623, SS 2019, 2 SWS, Open in study portal	**Lecture (V)**

Learning Content

- Basic security protocols such as fair coin toss over the phone, Byzantine Agreement, Dutch Flower Auctions, Zero Knowledge
- Threat models and security definitions
- Modular design and protocol composition
- Security definitions of simulatability
- Universal Composability
- Deniability as an additional safety feature
- Electronic Voting

T   6.261 Course: Selling IT-Solutions Professionally [T-INFO-101977]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: M-INFO-101208 - Innovative Konzepte des Daten- und Informationsmanagements
                   M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Studienleistung	1,5	Irregular	1

T 6.262 Course: Semantic Web Technologies [T-WIWI-102874]

Responsible:	Prof. Dr. York Sure-Vetter
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101455 - Web Data Management
	M-WIWI-101457 - Semantische Technologien
	M-WIWI-102827 - Service Computing

Type	**Credits**	**Recurrence**	**Version**
Prüfungsleistung schriftlich	5	Each summer term	1

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					
WS 18/19	7900022	Semantic Web Technologies		Prüfung (PR)	Sure-Vetter
SS 2019	7900028	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, 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, 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 **6.263 Course: Seminar in Business Administration A (Master) [T-WIWI-103474]**

Responsible: Professorenschaft des Fachbereichs Betriebswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-102736 - Seminarmodul Wirtschaftswissenschaften

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2500002	Automated Financial Advisory	2 SWS	Seminar (S)	Ulrich
WS 18/19	2530293	Seminar in Finance (Master)	2 SWS	Seminar (S)	Ruckes, Hoang, Luedecke, Strych, Benz, Scholz-Daneshgari, Schubert
WS 18/19	2530374	Applied Risk and Asset Management	2 SWS	Seminar (S)	Ulrich
WS 18/19	2540510	Master Seminar in Information Engineering and Management	2 SWS	Seminar (S)	Geyer-Schulz, Ball, Schweigert, Schweizer
WS 18/19	2540557	Literature Review Seminar: Information Systems and Service Design	SWS	Seminar (S)	Mädche, Augenstein
WS 18/19	2540559	Digital Service Design Seminar	3 SWS	Seminar (S)	Mädche
WS 18/19	2572181	Seminar in Marketing und Vertrieb (Master)	SWS	Seminar (S)	Klarmann
WS 18/19	2573010	Seminar Human Resources and Organizations	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 18/19	2573011	Seminar Human Resource Management	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 18/19	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar (S)	Glöser-Chahoud, Schultmann
WS 18/19	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar (S)	Volk, Schultmann
WS 18/19	2581978	Seminar in Production and Operations Management III	2 SWS	Seminar (S)	Wiens, Schultmann
WS 18/19	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar (S)	Keles
WS 18/19	2581981	Seminar Energiewirtschaft III	2 SWS	Seminar (S)	Ardone
SS 2019	2400121	Interactive Analytics Seminar	2 SWS	Proseminar (PS)	Beigl, Mädche, Pescara, Toreini
SS 2019	2500006	Seminar Human Resource Management (Master)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2500007	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2019	2530372	Automated Financial Advisory	2 SWS	Seminar (S)	Ulrich
SS 2019	2530374	Applied Risk and Asset Management	2 SWS	Seminar (S)	Ulrich
SS 2019	2530580	Seminar in Finance (Master, Prof. Uhrig-Homburg)	2 SWS	Seminar (S)	Uhrig-Homburg, Hofmann, Reichenbacher, Eska
SS 2019	2540510	Masterseminar Big Data Mining in Finance	2 SWS	Seminar (S)	Geyer-Schulz
SS 2019	2550493	Hospital Management	2 SWS	Block (B)	Hansis
SS 2019	2577915	Strategische Unternehmensführung	2 SWS	Seminar (S)	Klopfer

SS 2019	2579904	**Seminar Management Accounting**	2 SWS	Seminar (S)	Hammann, Disch
SS 2019	2579905	**Special Topics in Management Accounting**	2 SWS	Seminar (S)	Mickovic, Riar
SS 2019	2581977	**Seminar Produktionswirtschaft und Logistik II**	2 SWS	Seminar (S)	Schultmann

Exams					
WS 18/19	7900008	**Applied Risk and Asset Management**		Prüfung (PR)	Ulrich
WS 18/19	7900009	**Alternative and Big Data in Finance**		Prüfung (PR)	Ulrich
WS 18/19	7900017	**Seminar Smart Grid and Energy Markets**		Prüfung (PR)	Weinhardt
WS 18/19	7900037	**Analyzing and Evaluating Innovation Processes**		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900041	**Current Issues in Innovation Management**		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900106	**Hospital Management**		Prüfung (PR)	Nickel
WS 18/19	7900133	**Digital Service Design Seminar**		Prüfung (PR)	Mädche
WS 18/19	7900159	**Seminar in Marketing and Sales**		Prüfung (PR)	Klarmann
WS 18/19	7900163	**Seminar Human Resource Management (Master)**		Prüfung (PR)	Nieken
WS 18/19	7900164	**Seminar Human Resources and Organizations (Master)**		Prüfung (PR)	Nieken
WS 18/19	7900165	**Seminar Digital Experience and Participation**		Prüfung (PR)	Weinhardt
WS 18/19	7900184	**Seminar in Finance (Master)**		Prüfung (PR)	Ruckes
WS 18/19	7900203	**Seminar in Finance**		Prüfung (PR)	Uhrig-Homburg
WS 18/19	7900233	**Literature Review Seminar: Information Systems and Service Design (Seminar)**		Prüfung (PR)	Mädche
WS 18/19	7900237	**Case Studies Seminar: Innovation Management**		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900239	**Technologies for Innovation Management**		Prüfung (PR)	Weissenberger-Eibl
WS 18/19	7900252	**Seminar in Business Administration A (Master)**		Prüfung (PR)	Satzger
WS 18/19	7900267	**Seminar in Business Administration A (Master)**		Prüfung (PR)	Satzger
WS 18/19	7900283	**Seminar Electronic Markets and User Behavior**		Prüfung (PR)	Weinhardt
WS 18/19	79-2579905-02	**Special Topics in Management Accounting (Master)**		Prüfung (PR)	Wouters
WS 18/19	7981976	**Seminar in Production and Operations Management I**		Prüfung (PR)	Schultmann
WS 18/19	7981977	**Seminar in Production and Operations Management II**		Prüfung (PR)	Schultmann
WS 18/19	7981978	**Seminar in Production and Operations Management III**		Prüfung (PR)	Schultmann
WS 18/19	7981979	**Seminar in Business Administration A (Master)**		Prüfung (PR)	Fichtner
WS 18/19	7981980	**Seminar in Business Administration A (Master)**		Prüfung (PR)	Fichtner
WS 18/19	7981981	**Seminar in Business Administration (Bachelor)**		Prüfung (PR)	Fichtner
SS 2019	7900008	**Hospital Management**		Prüfung (PR)	Nickel
SS 2019	7900017	**Soziale Innovationen unter die Lupe genommen**		Prüfung (PR)	Weissenberger-Eibl
SS 2019	7900055	**Roadmapping**		Prüfung (PR)	Weissenberger-Eibl
SS 2019	7900093	**Seminar in Business Administration A**		Prüfung (PR)	Weinhardt
SS 2019	7900127	**Seminar in Business Administration A (Master)**		Prüfung (PR)	Uhrig-Homburg
SS 2019	7900242	**Applied Risk and Asset Management**		Prüfung (PR)	Ulrich

SS 2019	7900284	**Digital Transformation and Business Models**	Prüfung (PR)	Weissenberger-Eibl
SS 2019	79-2579904-02	**Seminar Management Accounting (Master)**	Prüfung (PR)	Wouters
SS 2019	79-2579905-02	**Seminar Special Topics in Management Accounting (Master)**	Prüfung (PR)	Wouters

Competence Certificate

The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015)consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.
The available places are listed on the internet: https://portal.wiwi.kit.edu.

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

| **V** | **Automated Financial Advisory**
2500002, WS 18/19, 2 SWS, Open in study portal | **Seminar (S)** |

Learning Content

At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

Workload

The total workload for this course is approximately 90 hours.

Literature

Literature will be distributed during the first lecture.

| **V** | **Master Seminar in Information Engineering and Management**
2540510, WS 18/19, 2 SWS, Open in study portal | **Seminar (S)** |

Learning Content

The seminar servers on one hand to improve the scientific working skills. On the other hand, the student should work intensively on a given topic and develop a scientific work, that is based on a profound literature research.

The seminar can also be a implementation of software for a scientific problem (e.g. Business Games/dynamic systems) according to the individual focus in the current semester. The software has to be well documented. The written elaboration covers a description and explanation of the software as well as a discussion about limits and extensibility. Furthermore the software must be deployable und shall be presented on the infrastructure stack of the chair. An implementation of a software has to examine the scientific state of the art in a critical way, too.

A concrete description of the current topics is announced in time for the begin of the application stage.

Workload

The total workload for this course is approximately 90 hours (3 ECTS). Depending on the realization of the work, the times may vary. The main focus is always on working independently.

| V | **Digital Service Design Seminar**
2540559, WS 18/19, 3 SWS, Open in study portal | **Seminar (S)** |

Description

Contemporary trends of every increasing digitalization in businesses lead to new challenges and fusion of technologies blurring the lines between the digital, physical and biological spheres, thereby calling for a new approaches for corporate management. Recently, physician Michio Kaku put it like the following: "The destiny of computers – like other mass technologies like electricity, paper, and running water- is to become invisible, that is, to disappear into the fabric of our lives, to be everywhere and nowhere, silently and seamlessly carrying out our wishes." Michio Kaku (2016)

In the Practical Seminar Digital Service Design students address a real-world challenge in businesses and apply digital service design practices and tools. Furthermore, during the time of the seminar the students prototypical implement a running digital service.

Real-world challenges will vary over time. This time, the challenges are from the domain of **Future Corporate Management.** The practical seminar is carried out in close cooperation with SAP SE and leverages state-of-the-art digital platforms for prototyping.

Learning Content

- Foundations
- Digital Service Design Challenges in Future Corporate Management
- Basics of Digital Service Design practices and tools
- Prototyping and development Digital Services
- Delivering digital service prototypes

| V | **Seminar in Marketing und Vertrieb (Master)**
2572181, WS 18/19, SWS, Open in study portal | **Seminar (S)** |

Learning Content

The seminary teaches students to gain a systematic overview of a field of literature in Marketing - an important prerequisite for a successful master thesis. Central aspects are identification of relevant literature sources, systematization of the field, working out central insights, writing comprehensively, and identification of research gaps.

Annotation

Students interested in master thesis positions at the chair of marketing should participate in the marketing seminar. For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu)

Workload

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

Literature

will be announced in the seminary.

| V | **Seminar Human Resources and Organizations**
2573010, WS 18/19, 2 SWS, Open in study portal | **Seminar (S)** |

Learning Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

Workload

The total workload for this course is approximately 90 hours.

Lecture 30h
Preparation of lecture 45h
Exam preparation 15h

| V | **Seminar Human Resource Management**
2573011, WS 18/19, 2 SWS, Open in study portal | **Seminar (S)** |

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

Lecture 30h
Preparation of lecture 45h
Exam preparation 15h

V	**Seminar Human Resource Management (Master)**	Seminar (S)
	2500006, SS 2019, 2 SWS, Open in study portal	

Learning Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

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

Lecture 30h
Preparation of lecture 45h
Exam preparation 15h

Literature
Selected journal articles and books.

V	**Seminar Human Resources and Organizations (Master)**	Seminar (S)
	2500007, SS 2019, 2 SWS, Open in study portal	

Learning Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

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

Lecture 30h
Preparation of lecture 45h
Exam preparation 15h

V	**Automated Financial Advisory**	Seminar (S)
	2530372, SS 2019, 2 SWS, Open in study portal	

Learning Content
At the beginning of the semester, a selection of seminar topics will be discussed with each student of the seminar.

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

Literature
Literature will be distributed during the first lecture.

V	**Seminar in Finance (Master, Prof. Uhrig-Homburg)**	Seminar (S)
	2530580, SS 2019, 2 SWS, 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	**Masterseminar Big Data Mining in Finance**	**Seminar (S)**
	2540510, SS 2019, 2 SWS, Open in study portal	

Literature
Literature:

- Goodfellow, I., Bengio, Y., & Courville, A. (2017). Deep Learning. MIT Press.
- Jean, N., Burke, M., Xie, M., Davis, W. M., Lobell, D. B., & Ermon, S. (2016). Combining satellite imagery and machine learning to predict poverty. *Science*, *353*(6301), 790-794.
- LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. N*ature*, *521*(7553), 436-444.
- Leskovec, J., Rajaraman, A., & Ullman, J. D. (2014). Mining of Massive Datasets. Cambridge University Press.
- Lopez De Prado, M. (2018). Advances in Financial Machine Learning. John Wiley & Sons

V	**Hospital Management**	**Block (B)**
	2550493, SS 2019, 2 SWS, Open in study portal	

Description
The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

Learning Content
The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

Annotation
It is planned to offer the course every semester.

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

V	**Seminar Management Accounting**	**Seminar (S)**
	2579904, SS 2019, 2 SWS, Open in study portal	

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, Open in study portal

Seminar (S)

Learning Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively 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.

T 6.264 Course: Seminar in Economic Policy [T-WIWI-102789]

Responsible:	Prof. Dr. Ingrid Ott
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101514 - Innovationsökonomik

Type Prüfungsleistung anderer Art	**Credits** 3	**Recurrence** Each term	**Version** 1

Events					
WS 18/19	2512312	Cooperation seminar: Innovative applications on single board computers as well as their economic relevance	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Ott, Weller, Bälz
Exams					
WS 18/19	7900094	Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON	Prüfung (PR)		Sure-Vetter, Ott

Competence Certificate

The assessment is carried out through a term paper within the range of 12 to 15 pages, a presentation of the results of the work in a seminar meeting, and active participation in the discussions of the seminar meeting (§ 4 (2), 3 SPO).

The final grade is composed of the weighted graded examinations. (Essay 50%, 40% oral presentation, active participation 10%).

Prerequisites

None

Recommendation

At least one of the lectures "Theory of Endogenous Growth" or "Innovation Theory and Policy" should be attended in advance, if possible.

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

V	**Cooperation seminar: Innovative applications on single board computers as well as their economic relevance** 2512312, WS 18/19, 3 SWS, Open in study portal	**Seminar / Practical course (S/P)**

Description

This seminar is offered cooperatively by the Chair of Web Science (AIFB) and the Chair of Economic Policy (ECON).

The cooperation seminar deals with the technical realization of innovative applications using single board computers such as Arduino (https://www.arduino.cc) or Raspberry Pi (https://www.raspberrypi.org). These single board computers can be extended by various sensors and modules, thus fulfilling a wide range of tasks. Thus, the addition of a camera allows for example gesture and face detection, or the equipment with different sensors enables the measurement of temperature and perception of moving objects.

At the same time, the implications of cost-effective availability of these basic technologies are analyzed from an economic-scientific perspective. The spread and use of these single-board computers, as well as the concepts associated with their success, can have a decisive impact on innovation processes. The reasons and obstacles as well as their relevance to innovation are therefore also addressed from an economic perspective.

Microcomputers such as the Raspberry Pi, for example, are increasingly being used and expanded in the private environment, with numerous applications being possible in the household sector. They can be used as a monitoring system, as a home server or as an electronic func- tion opener. Likewise, due to their low cost, size and ease of use, they can also significantly support the development of innovative processes, for example in the development of prototypes.

Within the scope of this seminar, the possibilities of a single board computer are investigated using the Raspberry Pi. The students are to conceive, realize and present innovative applications in two-teams. Each team is provided with a Raspberry Pi. In addition to the realization of an innovative application, each team has to deal with and discuss an economic science issue. The use of the Raspberry Pi or the underlying concepts from an innovation-economic perspective are to be analyzed.

In addition to the Raspberry Pis, various sensors and expansion modules are also provided and can be purchased after consultation with the supervisors. Furthermore, it may be necessary to develop extensions in Python during the seminar. Previous knowledge in Python and Semantic Web technologies are therefore an advantage but not an imperative requirement.

Notes

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

Learning Content

Topics of interest include, but are not limited to:

- Smart Home Applications
- Environmental measurements
- Gesture control
- Security systems

T 6.265 Course: Seminar in Economics A (Master) [T-WIWI-103478]

Responsible: Professorenschaft des Fachbereichs Volkswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-102736 - Seminarmodul Wirtschaftswissenschaften

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events

WS 18/19	2512312	Cooperation seminar: Innovative applications on single board computers as well as their economic relevance	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Ott, Weller, Bälz
WS 18/19	2520405	Topics in Experimental Economics	SWS	Seminar (S)	Reiß, Hofmann, Mitarbeiter
WS 18/19	2560140	Topics on Political Economics	2 SWS	Seminar (S)	Szech, Engel
WS 18/19	2560141	Morals & Social Behavior	2 SWS	Seminar (S)	Szech, Huber
WS 18/19	2560400	Seminar in Macroeconomics	2 SWS	Seminar (S)	Brumm, Krause, Pegorari
WS 18/19	2561208	Ausgewählte Aspekte der europäischen Verkehrsplanung und -modellierung	1 SWS	Seminar (S)	Szimba
SS 2019	2521310	Advanced Topics in Econometrics	2 SWS	Seminar (S)	Schienle, Chen, Görgen
SS 2019	2560282	Wirtschaftspolitisches Seminar	2 SWS	Seminar (S)	Ott, Assistenten
SS 2019	2560552	Topics in Political Economics (Master)	2 SWS	Seminar (S)	Szech, Maus
SS 2019	2560554	Morals and Social Behavior (Master)	2 SWS	Seminar (S)	Szech, Huber

Exams

WS 18/19	7900094	Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON	Prüfung (PR)	Sure-Vetter, Ott
WS 18/19	7900132	Seminar in Economics A (Master)	Prüfung (PR)	Fuchs-Seliger
WS 18/19	7900139	Seminar in Economics (Bachelor/Master)	Prüfung (PR)	Mitusch
WS 18/19	7900257	Date Mining	Prüfung (PR)	Nakhaeizadeh
WS 18/19	7900260	Big Data Mining in Finance. Seminar in Economics A (Master)	Prüfung (PR)	Schienle
WS 18/19	7900278	Seminar on Morals and Social Behavior	Prüfung (PR)	Szech
WS 18/19	7900282	Seminar in Political Economics (Bachelor)	Prüfung (PR)	Szech
WS 18/19	79191ee	Seminar Topics in Experimental Economics	Prüfung (PR)	Reiß
WS 18/19	79sefi2	Seminar in Economics A (Master)	Prüfung (PR)	Wigger
SS 2019	7900059	Seminar in Economics B (Master)	Prüfung (PR)	Szech
SS 2019	7900060	Seminar in Economics B (Master)	Prüfung (PR)	Szech
SS 2019	79sefi2	Seminar in Economics A (Master)	Prüfung (PR)	Wigger

Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.
The available places are listed on the internet: https://portal.wiwi.kit.edu.

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

V	**Cooperation seminar: Innovative applications on single board computers as well as their economic relevance** 2512312, WS 18/19, 3 SWS, Open in study portal	**Seminar / Practical course (S/P)**

Description
This seminar is offered cooperatively by the Chair of Web Science (AIFB) and the Chair of Economic Policy (ECON).

The cooperation seminar deals with the technical realization of innovative applications using single board computers such as Arduino (https://www.arduino.cc) or Raspberry Pi (https://www.raspberrypi.org). These single board computers can be extended by various sensors and modules, thus fulfilling a wide range of tasks. Thus, the addition of a camera allows for example gesture and face detection, or the equipment with different sensors enables the measurement of temperature and perception of moving objects.

At the same time, the implications of cost-effective availability of these basic technologies are analyzed from an economic-scientific perspective. The spread and use of these single-board computers, as well as the concepts associated with their success, can have a decisive impact on innovation processes. The reasons and obstacles as well as their relevance to innovation are therefore also addressed from an economic perspective.

Microcomputers such as the Raspberry Pi, for example, are increasingly being used and expanded in the private environment, with numerous applications being possible in the household sector. They can be used as a monitoring system, as a home server or as an electronic func- tion opener. Likewise, due to their low cost, size and ease of use, they can also significantly support the development of innovative processes, for example in the development of prototypes.

Within the scope of this seminar, the possibilities of a single board computer are investigated using the Raspberry Pi. The students are to conceive, realize and present innovative applications in two-teams. Each team is provided with a Raspberry Pi. In addition to the realization of an innovative application, each team has to deal with and discuss an economic science issue. The use of the Raspberry Pi or the underlying concepts from an innovation-economic perspective are to be analyzed.

In addition to the Raspberry Pis, various sensors and expansion modules are also provided and can be purchased after consultation with the supervisors. Furthermore, it may be necessary to develop extensions in Python during the seminar. Previous knowledge in Python and Semantic Web technologies are therefore an advantage but not an imperative requirement.

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

Learning Content
Topics of interest include, but are not limited to:

- Smart Home Applications
- Environmental measurements
- Gesture control
- Security systems

V	**Topics in Experimental Economics** 2520405, WS 18/19, SWS, Open in study portal	**Seminar (S)**

Learning Content
The course covers selected topics in experimental economics and deepens the understanding of the experimental method. In particular, topics of current research into experimental and behavioral economics are discussed, along with a treatment of advanced methodic issues.

Annotation

The course is offered in summer 2016 for the first time. The course is not offered in every academic year.

Workload

The total workload for this course is approximately 90.0 hours. For further information see German version.

Literature

A selection of published papers is compulsory reading for the course. The course syllabus provides references and is announced at the beginning of the course.

V	**Topics on Political Economics** 2560140, WS 18/19, 2 SWS, Open in study portal	**Seminar (S)**

Workload

About 90 hours.

V	**Advanced Topics in Econometrics** 2521310, SS 2019, 2 SWS, Open in study portal	**Seminar (S)**

Annotation

The course will be offered in English.

V	**Topics in Political Economics (Master)** 2560552, SS 2019, 2 SWS, Open in study portal	**Seminar (S)**

Description

In many companies relative reward schemes are used whereby employees earn a bonus if they perform better than their colleagues. Moreover, hierarchical structures mean that in many organizations, employees find themselves in constant competition for promotions. This is meant to provide incentives for higher performance. However, competitive remuneration schemes could also have detrimental effects such that individual workers may view their colleagues as direct competitors generating more selfish and/or less helpful behavior in the workplace. Furthermore, age, gender and culture seem to have impacts on willingness to compete. For example, in western cultures, adult men sometimes enter competition even though their performance level is way too low for success, i.e., they harm themselves by over-competitiveness. In contrast, adult females sometimes compete less than they could do successfully.

Another challenge in contest design, e.g. in sports, is that when competition takes place among workers with mixed abilities it may lead to a discouragement effect, which establishes that lower ability individuals often reduce effort competing against an individual they do not feel up to (e.g. it has been found that average golf players performed significantly worse when competing against a superstar like Tiger Woods). One solution suggested by the economic literature is to level the playing field between advantaged and disadvantaged individuals by favoring weaker individuals through bid-caps, asymmetric tie-breaking rules, or advances. In sports, asymmetric tie-breaking is already common, for instance, in the Champions League soccer playoffs "away goals" become the decisive factor in determining the winning team in case of a tie.

Contests are not only a well-established mechanism for incentivizing workers but also for encouraging innovation and advancing R&D. Elements of research and innovation contests can be found in the procurement of various goods and services. For instance, the construction of new buildings, proposals in a venture capital firm or TV shows for entertainment companies all flow through a similar innovation process that involves the solicitation of bids from multiple potential suppliers and the preparation of a pilot or a proposal. In other cases, e.g., in lobbying contests, it is often discussed whether investments are beneficial or not. Some authors have argued that investments into lobbying should be capped in order to soften competition among asymmetrically strong interest groups (e.g. the lobbying industry versus consumers' interest groups). Of course, then the question arises whether such caps achieve the respective design goal or not.

In this seminar, we discuss questions like: How can we design workplaces and labor contracts to increase motivation and productivity? How can contests be used to foster innovation? Which role should social preferences play and how could they inspire specific contest designs? How should sport contests be engineered depending on the respective goals? How should we design lobbying contests?

Also related topics are very welcome!

Notes

Participation will be limited to 12 students.

Annotation

For further questions, please contact Patrick Maus (Patrick.Maus@kit.edu).

Workload

About 90 hours

Literature

Charness, G., Kuhn, P. (2011) Lab labor: What can labor economists learn from the lab? Handbook of labor economics, 4, 229-330.

Cassar, A., Friedman, D. (2004) Economics lab: an intensive course in experimental economics. Routledge.

Croson, R., Gneezy, U. (2009). Gender differences in preferences. Journal of Economic literature, 47(2), 448-474.

Dechenaux, Emmanuel, Dan Kovenock, and Roman M. Sheremeta. "A survey of experimental research on contests, all-pay auctions and tournaments." Experimental Economics 18.4 (2015): 609-669.

V	**Morals and Social Behavior (Master)** 2560554, SS 2019, 2 SWS, Open in study portal	**Seminar (S)**

Description

For a long time, economists studied given markets and mechanisms to predict outcomes, future developments or generally the participants' behavior. In contrast, Market Design uses theory, empirical and experimental work to design markets which incentivize their participants in a way that leads to a "desirable" outcome. In this, the designer can have different objectives, for example: Maximizing efficiency, welfare or minimizing negative externalities.

Prominent applications of Market Design include, quite topical, Germany's auction of 5G mobile licenses and matching markets, where there are two large populations that need to be matched to one another (think of hospitals and interns, students and dorm rooms or kidney donors and receivers). In this seminar, we think about ways to either design new markets or how we could alter existing ones in a socially beneficial way. Alternatively, research ideas could focus on finding failures or shortcomings of ineffectively designed markets.

Notes

Participation will be limited to 12 students.

Annotation

For further questions, please contact David Huber (david.huber@kit.edu).

Workload

About 90 hours.

T	6.266 Course: Seminar in Informatics B (Master) [T-WIWI-103480]

Responsible: Professorenschaft des Fachbereichs Informatik
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-INFO-102822 - Seminarmodul Informatik
M-WIWI-101457 - Semantische Technologien

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events

WS 18/19	2400125	Seminar "Privacy Awareness"	2 SWS	Seminar (S)	Boehm, Volkamer, Gerber
WS 18/19	2512301	Linked Data and the Semantic Web	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Acosta Deibe, Käfer, Heling, Weller
WS 18/19	2512311	Real-World Challenges in Data Science and Analytics	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Nickel, Weinhardt, Zehnder, Brandt
WS 18/19	2512312	Cooperation seminar: Innovative applications on single board computers as well as their economic relevance	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Ott, Weller, Bälz
WS 18/19	2513400	Emerging Trends in Critical Information Infrastructures	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
WS 18/19	2595470	Seminar Service Science, Management & Engineering	2 SWS	Seminar (S)	Weinhardt, Satzger, Nickel, Fromm, Fichtner, Sure-Vetter
SS 2019	2512300	Knowledge Discovery and Data Mining	3 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Färber, Nguyen, Weller
SS 2019	2513306	Data Science & Real-time Big Data Analytics	2 SWS	Seminar / Practical course (S/P)	Sure-Vetter, Riemer, Zehnder
SS 2019	2513400	Emerging Trends in Critical Information Infrastructures	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
SS 2019	2595470	Seminar Service Science, Management & Engineering	2 SWS	Seminar (S)	Weinhardt, Nickel, Fichtner, Satzger, Sure-Vetter, Fromm

Exams

WS 18/19	7500175	Seminar: Energy Informatics	Prüfung (PR)	Wagner
WS 18/19	7900038	Linked Data and the Semantic Web	Prüfung (PR)	Sure-Vetter
WS 18/19	7900044	Seminar Service Science, Management & Engineering	Prüfung (PR)	Sure-Vetter
WS 18/19	7900094	Selected Topics in Text Mining - Cooperation Seminar AIFB and ECON	Prüfung (PR)	Sure-Vetter, Ott
WS 18/19	7900114	Emerging Trends in Critical Information Infrastructures	Prüfung (PR)	Sunyaev
WS 18/19	7900121	Seminar "Privacy Awareness"	Prüfung (PR)	Volkamer
WS 18/19	7900192	Data Science with Open Data	Prüfung (PR)	Sure-Vetter
SS 2019	7900090	Data Science & Real-time Big Data Analytics	Prüfung (PR)	Sure-Vetter
SS 2019	7900092	Seminar Service Science, Management & Engineering	Prüfung (PR)	Sure-Vetter
SS 2019	7900094	Knowledge Discovery and Data Mining	Prüfung (PR)	Sure-Vetter

Competence Certificate
The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation
Placeholder for seminars offered by the Institute AIFB.

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

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

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

V	**Linked Data and the Semantic Web** 2512301, WS 18/19, 3 SWS, Open in study portal	**Seminar / Practical course (S/P)**

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

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

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

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

Learning Content
Topics of interest include, but are not limited to:

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

V	**Real-World Challenges in Data Science and Analytics** 2512311, WS 18/19, 3 SWS, Open in study portal	**Seminar / Practical course (S/P)**

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

V **Cooperation seminar: Innovative applications on single board computers as well as their economic relevance**
2512312, WS 18/19, 3 SWS, Open in study portal

Seminar / Practical course (S/P)

Description

This seminar is offered cooperatively by the Chair of Web Science (AIFB) and the Chair of Economic Policy (ECON).

The cooperation seminar deals with the technical realization of innovative applications using single board computers such as Arduino (https://www.arduino.cc) or Raspberry Pi (https://www.raspberrypi.org). These single board computers can be extended by various sensors and modules, thus fulfilling a wide range of tasks. Thus, the addition of a camera allows for example gesture and face detection, or the equipment with different sensors enables the measurement of temperature and perception of moving objects.

At the same time, the implications of cost-effective availability of these basic technologies are analyzed from an economic-scientific perspective. The spread and use of these single-board computers, as well as the concepts associated with their success, can have a decisive impact on innovation processes. The reasons and obstacles as well as their relevance to innovation are therefore also addressed from an economic perspective.

Microcomputers such as the Raspberry Pi, for example, are increasingly being used and expanded in the private environment, with numerous applications being possible in the household sector. They can be used as a monitoring system, as a home server or as an electronic func- tion opener. Likewise, due to their low cost, size and ease of use, they can also significantly support the development of innovative processes, for example in the development of prototypes.

Within the scope of this seminar, the possibilities of a single board computer are investigated using the Raspberry Pi. The students are to conceive, realize and present innovative applications in two-teams. Each team is provided with a Raspberry Pi. In addition to the realization of an innovative application, each team has to deal with and discuss an economic science issue. The use of the Raspberry Pi or the underlying concepts from an innovation-economic perspective are to be analyzed.

In addition to the Raspberry Pis, various sensors and expansion modules are also provided and can be purchased after consultation with the supervisors. Furthermore, it may be necessary to develop extensions in Python during the seminar. Previous knowledge in Python and Semantic Web technologies are therefore an advantage but not an imperative requirement.

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

Learning Content
Topics of interest include, but are not limited to:

- Smart Home Applications
- Environmental measurements
- Gesture control
- Security systems

V **Emerging Trends in Critical Information Infrastructures**
2513400, WS 18/19, 2 SWS, Open in study portal

Seminar (S)

Description
The block seminar Emerging Trends in Critical Information Infrastructures aims to provide insights into emerging topics in the field of information systems and to offer students an opportunity to write their first academic paper alone or in a group of students. Each semester, different topics are offered around the lectures and research domains of Prof. Sunyaev's chair, especially Trusted Engineering, Digital Health, Internet Technologies as well as Auditing and Certifications. Students can also submit their own topic suggestions within the framework of the main topics specified in the respective semester.

V **Seminar Service Science, Management & Engineering**
2595470, WS 18/19, 2 SWS, Open in study portal

Seminar (S)

Learning Content
Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.

See the KSRI website for more information about this seminar: www.ksri.kit.edu

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

Literature
The student will receive the necessary literature for his research topic.

V	**Knowledge Discovery and Data Mining** 2512300, SS 2019, 3 SWS, Open in study portal	Seminar / Practical course (S/P)

Description
The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

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

Learning Content
Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

Literature
Detailed references are indicated together with the respective subjects. For general background information look up the following textbooks:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

V	**Data Science & Real-time Big Data Analytics** 2513306, SS 2019, 2 SWS, Open in study portal	Seminar / Practical course (S/P)

Description
Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

V	**Seminar Service Science, Management & Engineering** 2595470, SS 2019, 2 SWS, Open in study portal	Seminar (S)

Learning Content
Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.

See the KSRI website for more information about this seminar: www.ksri.kit.edu

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

Literature
The student will receive the necessary literature for his research topic.

T 6.267 Course: Seminar in Operations Research A (Master) [T-WIWI-103481]

Responsible:	Prof. Dr. Stefan Nickel
	Prof. Dr. Steffen Rebennack
	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102736 - Seminarmodul Wirtschaftswissenschaften

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	2550491	Seminar: Recent Topics in OR	SWS	Seminar (S)	Nickel, Mitarbeiter
SS 2019	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar (S)	Stein, Mohr, Neumann
SS 2019	2550473	Seminar on Power Systems Optimization (Master)	2 SWS	Seminar (S)	Rebennack, Assistenten
SS 2019	2550491	Seminar zur diskreten Optimierung	SWS	Block (B)	Nickel, Mitarbeiter
Exams					
WS 18/19	7900217_WS1819	Seminar in Operations Research A (Master)	Prüfung (PR)		Stein
WS 18/19	7900263	Seminar in Operations Research A (Master)	Prüfung (PR)		Nickel
SS 2019	7900018_SS2019	Seminar in Operations Research A (Master)	Prüfung (PR)		Stein

Competence Certificate
The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.
The available places are listed on the internet: https://portal.wiwi.kit.edu.

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

V Seminar: Recent Topics in OR
2550491, WS 18/19, SWS, Open in study portal   **Seminar (S)**

Learning Content
The topics of the seminar will be announced at the beginning of the term in a 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 zur diskreten Optimierung**
2550491, SS 2019, SWS, Open in study portal | **Block (B)** |

Learning Content

The topics of the seminar will be announced at the beginning of the term in a 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 6.268 Course: Seminar in Statistics A (Master) [T-WIWI-103483]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-102736 - Seminarmodul Wirtschaftswissenschaften

Type Prüfungsleistung anderer Art	Credits 3	Recurrence Each term	Version 1

Events					
SS 2019	2521310	Advanced Topics in Econometrics	2 SWS	Seminar (S)	Schienle, Chen, Görgen
Exams					
WS 18/19	7900257	Date Mining		Prüfung (PR)	Nakhaeizadeh

Competence Certificate
The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015)consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.
The available places are listed on the internet: https://portal.wiwi.kit.edu.

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

V Advanced Topics in Econometrics
2521310, SS 2019, 2 SWS, Open in study portal
Seminar (S)

Annotation
The course will be offered in English.

T 6.269 Course: Seminar Informatics A [T-INFO-104336]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: M-INFO-102233 - Weitere Leistungen
M-INFO-102822 - Seminarmodul Informatik

Type Prüfungsleistung anderer Art	Credits 3	Version 1

Events					
WS 18/19	2400091	Seminar: Designing and Conducting Experimental Studies	2 SWS	Seminar (S)	Exler, Schankin, Beigl, Pescara
WS 18/19	24844	Seminar: Ubiquitous Systems	2 SWS	Seminar (S)	Beigl, Pescara
Exams					
WS 18/19	7500096	Seminar in Cryptography		Prüfung (PR)	Geiselmann, Müller-Quade, Hofheinz
WS 18/19	7500097	Seminar in Security		Prüfung (PR)	Geiselmann, Müller-Quade, Hofheinz
WS 18/19	7500220	Seminar Ubiquitous Computing		Prüfung (PR)	Beigl
SS 2019	7500149	Seminar: Designing and Conducting Experimental Studies		Prüfung (PR)	Beigl

T 6.270 Course: Seminar: Governance, Risk & Compliance [T-INFO-102047]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101242 - Governance, Risk & Compliance

Type	Credits	Version
Prüfungsleistung anderer Art	3	1

Events					
SS 2019	2400041	Governance, Risk & Compliance	2 SWS	Seminar (S)	Herzig

T 6.271 Course: Seminar: Legal Studies I [T-INFO-101997]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101218 - Seminarmodul Recht
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each term	1

Events					
WS 18/19	24389	IT-Sicherheit und Recht	2 SWS	Seminar (S)	Schallbruch
SS 2019	2400041	Governance, Risk & Compliance	2 SWS	Seminar (S)	Herzig
SS 2019	2400061	Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung	2 SWS	Seminar (S)	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart
SS 2019	24820	Current Issues in Patent Law	2 SWS	Seminar (S)	Melullis
Exams					
WS 18/19	7500035	Seminar: Legal Studies II		Prüfung (PR)	Marsch
WS 18/19	7500182	Seminar: Legal Studies II		Prüfung (PR)	Raabe, Dreier, Boehm
SS 2019	7500159	Seminar: Legal Studies I		Prüfung (PR)	Marsch

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

V Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung
2400061, SS 2019, 2 SWS, Open in study portal
Seminar (S)

Notes
Registration via https://portal.wiwi.kit.edu/ys/2708

T 6.272 Course: Service Analytics A [T-WIWI-105778]

Responsible:	Prof. Dr. Hansjörg Fromm
	Prof.Dr. Thomas Setzer
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101448 - Service Management
	M-WIWI-101470 - Data Science: Advanced CRM
	M-WIWI-101506 - Service Analytics
	M-WIWI-103117 - Data Science: Data-Driven Information Systems

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

Events					
SS 2019	2595501	Service Analytics A	2 SWS	Lecture (V)	Fromm, Setzer
SS 2019	2595502	Übung zu Service Analytics A	1 SWS	Practice (Ü)	Baier, Kühl
Exams					
WS 18/19	00104	Service Analytics A		Prüfung (PR)	Fromm, Setzer

Competence Certificate
The assessment consists of a written exam (60 min) according to §4(2), 1 of the examination regulations.

Prerequisites
None

Recommendation
The lecture is addresed to students with interests and basic knowledge in the topics of Operations Research, decritptive and inductive statistics.

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

V Service Analytics A
2595501, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content
Today's service-oriented companies are starting to optimize the way services are planned, operated, and personalized by analyzing vast amounts of data from customers, IT-systems, or sensors. As the statistical learning and business optimization world continues to progress, skills and expertise in advanced data analytics and data and fact-based optimization become vital for companies to be competitive. In this lecture, relevant methods and tools will be considered as a package, with a strong focus on their inter-relations. Students will learn to analyze and structure large amounts of potentially incomplete and unreliable data, to apply multivariate statistics to filter data and to extract key features, to predict future behavior and system dynamics, and finally to formulate data and fact-based service planning and decision models.

More specifically, the lessons of this lecture will include:

- Co-Creation of Value Across Enterprises
- Instrumentation, Measurement, Monitoring of Service Systems
- Descriptive, predictive, and prescriptive Analytics
- Usage Characteristics and Customer Dynamics
- Big Data, Dimensionality Reduction, and Real-Time Analytics
- System Models and What-If-Analysis
- Robust Mechanisms for Service Management
- Industry Applications of Service Analytics

Tutorials
Students will conduct lecture accompanying, guided exercises throughout the semester.

Workload

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

Literature

- Business Forecasting, Wilson, J. H., Keating, B., McGraw-Hill, 2002
- Multivariate Data Analysis, Hair, J. F., Black, B., Babin, B., Anderson, R. E., 2008
- Analytics at Work, Davenport, T. H., Harris, J. G., Morion, R., Harward Business Press, 2010
- Business Analytics for Managers, Jank, W., Springer, 2011

Online Sources:

- The data deluge, The Economist, Feb. 2010
- Competing on Analytics, T. Davenport in Harward Business Review, Feb. 2007
- Mit Advanced Analytics können Händler Kundendaten optimal nutzen, McKinsey Handelsmarketing, Feb. 2011

Further readings will be provided in the lecture.

T 6.273 Course: Service Design Thinking [T-WIWI-102849]

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

Organisation: KIT Department of Economics and Management

Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101503 - Service Design Thinking

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	9	Irregular	2

Competence Certificate
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

Prerequisites
The course is compulsory and must be examined.

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

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

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

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

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

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

This module is part of the KSRI Teaching Program „Digital Service Systems". For more information see the KSRI Teaching website: www.ksri.kit.edu/teaching.

T 6.274 Course: Service Innovation [T-WIWI-102641]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101448 - Service Management
	M-WIWI-102806 - Service Innovation, Design & Engineering

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

Events					
SS 2019	2595468	Service Innovation	2 SWS	Lecture (V)	Satzger
Exams					
WS 18/19	7900186	Service Innovation		Prüfung (PR)	Satzger

Competence Certificate
The assessment consists of an 1h written exam (following §4(2) 1 of the examination regulations) and of assignments during the course as an non exam assessment (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

Prerequisites
None

Recommendation
None

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

V Service Innovation
2595468, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Description
While innovation in manufacturing or agriculture can leverage a considerable body of research, experience and best practice, innovation in services has not reached the same level of maturity. In practice - while many organizations have a well-understood process for innovating in the product business - innovating in services is often still a fuzzy and complex undertaking.

In this lecture we will

- discuss the state of research
- compare product and service innovation
- understand how innovation diffusion works
- examine case studies of service innovation
- compare open vs. closed innovation
- learn how to leverage user communities to drive innovation and
- understand obstacles, and enablers and how to manage, incentivize and foster service innovation

Learning Content
While innovation in manufacturing can leverage a considerable body of research, experience and best practice, innovation in services has not reached the same level of maturity. In practice, while many organizations have a well-understood process for innovating in the product business, innovating in services is often still a fuzzy and complex undertaking. In this lecture we will discuss the state of research, compare product and service innovation and understand how innovation diffusion works. We examine case studies on service innovation, compare open vs. closed innovation and learn how to apply different innovation tools, methods and strategies (e.g. service design thinking as a human-centered approach to innovation or technology and strategic foresight, as methods supporting the generation of assumptions on the impact of technology).

Annotation

The credits have been changed from 5 to 4,5.

Workload

Total workload: approximately 136 hours

Attendance time: 30 hours

Self-study: 105 hours

Literature

- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.). (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Lusch, R. F., & Nambisan, S. (2015). Service innovation: A service-dominant logic perspective. MIS quarterly, 39(1).
- Christensen, Clayton M. (2003).The Innovator's Dilemma - when new technologies cause great firms to fail. Boston, Massachusetts:Harvard Business Review Press.
- Rogers, S. (2003). Diffusion of innovations. 5. ed. New York: Free Press.
- Chesbrough, H. W. (2011). Open services innovation - rethinking your business to grow and compete in a new era. 1. ed. San Francisco: Jossey-Bass.
- Uebernickel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). Design Thinking: Das Handbuch. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Runco, M.A. (2014). Creativity – Theories and Themes: Research, Development, and Practice. 2. ed. Amsterdam: Academic Press

T 6.275 Course: Service Oriented Computing [T-WIWI-105801]

Responsible:	Prof. Dr. York Sure-Vetter
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101456 - Intelligente Systeme und Services
	M-WIWI-102827 - Service Computing

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	5	Each summer term	2

Exams				
WS 18/19	7900024	Service Oriented Computing	Prüfung (PR)	Sure-Vetter
SS 2019	7900038	Service Oriented Computing	Prüfung (PR)	Sure-Vetter

Competence Certificate

Please note that the exam will be offered to first-time applicants in the winter semester 2018/2019. A last examination possibility exists in the summer semester 2019 (only for repeaters).

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation or of an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

Prerequisites

None

T 6.276 Course: Signals and Codes [T-INFO-101360]

Responsible:	Prof. Dr. Jörn Müller-Quade
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101197 - Computersicherheit
	M-INFO-101198 - Fortgeschrittene Themen der Kryptographie
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	24137	Signals and Codes	2 SWS	Lecture (V)	Geiselmann, Müller-Quade
Exams					
WS 18/19	7500090	Signals and Codes		Prüfung (PR)	Geiselmann, Müller-Quade

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

V	**Signals and Codes** 24137, WS 18/19, 2 SWS, Open in study portal	Lecture (V)

Learning Content

The course covers essentially the question of how the exchange of information can be realized reliably and efficiently. The lecture gives an overview of how to secure signals against random errors. In signal theory, source coding and the Theorem of Shannon will be covered. In the coding theory part, bounds for codes (Hamming, Gilbert-Varshamov, Singleton) are presented. Coding and decoding for classical algebraic codes (linear, cyclic, Reed Solomon-, Goppa- und Reed Muller-codes) will be presented as well as concatanated codes.

T 6.277 Course: Simulation Game in Energy Economics [T-WIWI-108016]

Responsible:	Dr. Massimo Genoese
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101451 - Energiewirtschaft und Energiemärkte

Type Prüfungsleistung anderer Art	Credits 3	Recurrence Each summer term	Version 1

Events					
SS 2019	2581025	Simulation Game in Energy Economics	2 SWS	Lecture / Practice (VÜ)	Genoese

Competence Certificate
Examination as written assignment and oral presentation (§4 (2), 1 SPO).

Prerequisites
None

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-WIWI-102693 - Simulation Game in Energy Economics must not have been started.

Recommendation
Visiting the course "Introduction to Energy Economics"

Annotation
See German version.

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

V Simulation Game in Energy Economics
2581025, SS 2019, 2 SWS, Open in study portal   **Lecture / Practice (VÜ)**

Learning Content

- Introduction
- Agents and market places in the electricity industry
- Selected planning tasks of energy service companies
- Methods of modelling in the energy sector
- Agent-based simulation: The PowerACE model
- Simulation game: Simulation in energy economics (electricity and emission trading, investment decisions)

The lecture is structured in a theoretical and a practical part. In the theoretical part, the students are taught the basics to carry out simulations themselves in the practical part which comprises amongst others the simulation of the power exchange. The participants of the simulation game take a role as a power trader in the power market. Based on various sources of information (e.g. prognosis of power prices, available power plants, fuel prices), they can launch bids in the power exchange.

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

Literature
Elective literature:

Möst, D. und Genoese, M. (2009): Market power in the German wholesale electricity market. The Journal of Energy Markets (47–74). Volume 2/Number 2, Summer 2009

T   6.278 Course: Simulation of Stochastic Systems [T-WIWI-106552]

Responsible:	Prof. Dr. Oliver Grothe
	Prof. Dr. Steffen Rebennack
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-103289 - Stochastische Optimierung

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

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites

None.

T	**6.279 Course: Smart Energy Infrastructure [T-WIWI-107464]**

Responsible: Dr. Armin Ardone
Dr. Dr. Andrej Marko Pustisek

Organisation: KIT Department of Economics and Management

Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101452 - Energiewirtschaft und Technologie

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	2581023	(Smart) Energy Infrastructure	2 SWS	Lecture (V)	Ardone, Pustisek
Exams					
WS 18/19	7981023	Smart Energy Infrastructure		Prüfung (PR)	Fichtner

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None.

Annotation

New course starting winter term 2017/2018.

T 6.280 Course: Smart Grid Applications [T-WIWI-107504]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103720 - eEnergy: Markets, Services and Systems

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

Events					
WS 18/19	2540452	Smart Grid Applications	2 SWS	Lecture (V)	Staudt, van Dinther
WS 18/19	2540453	Übung zu Smart Grid Applications	2 SWS	Lecture (V)	Staudt, Mengelkamp
Exams					
WS 18/19	7900235	Smart Grid Applications		Prüfung (PR)	Weinhardt
WS 18/19	7900288	Smart Grid Applications		Prüfung (PR)	Weinhardt

Competence Certificate

The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites

None

Recommendation

None

Annotation

The lecture will be read for the first time in winter term 2018/19.

T 6.281 Course: Social Choice Theory [T-WIWI-102859]

Responsible:	Prof. Dr. Clemens Puppe
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101500 - Microeconomic Theory
	M-WIWI-101504 - Collective Decision Making

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

Events					
SS 2019	2520537	Social Choice Theory	2 SWS	Lecture (V)	Puppe, Müller
SS 2019	2520539	Übung zu Social Choice Theory	1 SWS	Practice (Ü)	Puppe, Müller

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

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

V Social Choice Theory
2520537, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content

The course provides a comprehensive treatment of preference and judgement aggregation, including proofs of general results that have Arrow's famous impossibility theorem and Gibbard's oligarchy theorem as corollaries. The second part of the course is devoted to voting theory. Among other things, we prove the Gibbard-Satterthwaite theorem.

Workload

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

Literature

Main texts:

- Hervé Moulin: Axioms of Cooperative Decision Making, Cambridge University Press, 1988
- Christian List and Clemens Puppe: Judgement Aggregation. A survey, in: Handbook of rational & social choice, P.Anand, P.Pattanaik, C.Puppe (Eds.), Oxford University Press 2009.

Secondary texts:

- Amartya Sen: Collective Choice and Social Welfare, Holden-Day, 1970
- Wulf Gaertner: A Primer in Social Choice Theory, revised edition, Oxford University Press, 2009
- Wulf Gaertner: Domain Conditions in Social Choice Theory, Oxford University Press, 2001

T 6.282 Course: Sociotechnical Information Systems Development [T-WIWI-109249]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-104403 - Critical Digital Infrastructures

Type Prüfungsleistung anderer Art	Credits 4	Recurrence Each term	Version 1

Events					
WS 18/19	2512400	Entwicklung Soziotechnischer Informationssysteme	SWS	Practical course (P)	Sunyaev, Kromat
Exams					
SS 2019	7900016	Sociotechnical Information Systems Development		Prüfung (PR)	Sunyaev

Competence Certificate

The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of an implementation and a final thesis documenting the development and use of the application.

Prerequisites

None.

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

V Entwicklung Soziotechnischer Informationssysteme
2512400, WS 18/19, SWS, Open in study portal

Practical course (P)

Description

The aim of this course is to provide a practical introduction into developing socio-technical information systems, such as web platforms, mobile apps, or desktop applications. Course participants will create (individually or in groups) software solutions for specific problems from various practical domains. The course tasks comprise requirements assessment, system design, and software implementation. Furthermore, course participants will gain insights into software quality assurance methods and software documentation.

Workload

4 ECTS = approx. 120 h

T 6.283 Course: Software Architecture and Quality [T-INFO-101381]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: M-INFO-101201 - Software-Systeme
M-INFO-101202 - Software-Methodik
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	24667	Software Architecture and Quality	2 SWS	Lecture (V)	Reussner
Exams					
WS 18/19	7500032	Software Architecture and Quality		Prüfung (PR)	Reussner

| **T** | **6.284 Course: Software Development for Modern, Parallel Platforms [T-INFO-101339]** |

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: M-INFO-101201 - Software-Systeme
M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung mündlich	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	24660	Softwareentwicklung für moderne, parallele Plattformen	2 SWS	Lecture (V)	Tichy, Tillmann

T   6.285 Course: Software Quality Management [T-WIWI-102895]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
                     M-WIWI-101477 - Entwicklung betrieblicher Informationssysteme

Type Prüfungsleistung schriftlich	Credits 5	Recurrence Each summer term	Version 1

Events					
SS 2019	2511208	Software Quality Management	2 SWS	Lecture (V)	Oberweis
SS 2019	2511209	Übungen zu Software-Qualitätsmanagement	1 SWS	Practice (Ü)	Oberweis, N.N.
Exams					
WS 18/19	7900027	Software Quality Management		Prüfung (PR)	Oberweis
SS 2019	7900031	Software Quality Management		Prüfung (PR)	Oberweis

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites
None

Annotation
This course was formely named "Software Technology: Quality Management".

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

V   Software Quality Management
2511208, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Learning Content
This lecture imparts fundamentals of active software quality management (quality planning, quality testing, quality control, quality assurance) and illustrates them with concrete examples, as currently applied in industrial software development. Keywords of the lecture content are: software and software quality, process models, software process quality, ISO 9000-3, CMM(I), BOOTSTRAP, SPICE, software tests.

Annotation
This course was formely named "Software Technology: Quality Management".

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam 1h

Total: 150h

Literature

- Helmut Balzert: Lehrbuch der Software-Technik. Spektrum-Verlag 2008
- Peter Liggesmeyer: Software-Qualität, Testen, Analysieren und Verifizieren von Software. Spektrum Akademischer Verlag 2002
- Mauro Pezzè, Michal Young: Software testen und analysieren. Oldenbourg Verlag 2009

Further literature is given in lectures.

T 6.286 Course: Software-Evolution [T-INFO-101256]

Responsible: Prof. Dr. Ralf Reussner
Organisation: KIT Department of Informatics
Part of: M-INFO-101201 - Software-Systeme
M-INFO-101202 - Software-Methodik
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each winter term	1

Events					
WS 18/19	24164	**Software Evolution**	2 SWS	Lecture (V)	Heinrich
Exams					
WS 18/19	7500004	**Software-Evolution**		Prüfung (PR)	Reussner

T 6.287 Course: Spatial Economics [T-WIWI-103107]

Responsible:	Prof. Dr. Ingrid Ott
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101485 - Verkehrsinfrastrukturpolitik und regionale Entwicklung
	M-WIWI-101496 - Wachstum und Agglomeration

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

Exams				
WS 18/19	7900075	Spatial Economics	Prüfung (PR)	Ott

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required. The attendance of the course Introduction to economic policy [2560280] is recommended.

Annotation
Due to the research semester of Prof. Dr. Ingrid Ott, the course is not offered in the winter term 2018/19.

T 6.288 Course: Special Topics in Information Systems [T-WIWI-109940]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101506 - Service Analytics

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	4,5	Each term	1

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted pracital components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites

see below

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-WIWI-102706 - Special Topics in Information Engineering & Management must not have been started.

Recommendation

None

Annotation

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: www.iism.kit.edu/im/lehre

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Management and Engineering" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.

The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.

T **6.289 Course: Special Topics of Enterprise Information Systems [T-WIWI-102676]**

Responsible:	Prof. Dr. Andreas Oberweis
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101477 - Entwicklung betrieblicher Informationssysteme

Type Prüfungsleistung schriftlich	**Credits** 5	**Recurrence** Each term	**Version** 1

Events					
WS 18/19	2511228	Spezialvorlesung Betriebliche Informationssysteme: Industrie 4.0	2 SWS	Lecture (V)	Koschmider
Exams					
WS 18/19	7900029	Special Topics of Enterprise Information Systems: Industry 4.0		Prüfung (PR)	Oberweis

Competence Certificate

The assessment of this course is a written examination (60 min.) or (if necessary) oral examination (30 min.) according to §4(2) of the examination regulation.

Please note that the exam "Special Lecture on Business Information Systems: Industry 4.0" will be offered for the last time in summer semester 2019 (only for repeaters).

Prerequisites

None

T 6.290 Course: Statistical Modeling of Generalized Regression Models [T-WIWI-103065]

Responsible:	Dr. Wolf-Dieter Heller
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101638 - Ökonometrie und Statistik I
	M-WIWI-101639 - Ökonometrie und Statistik II

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

Events					
WS 18/19	2521350	Statistische Modellierung von Allgemeinen Regressionsmodellen	2 SWS	Lecture (V)	Heller
Exams					
WS 18/19	7900146	Statistical Modeling of generalized regression models		Prüfung (PR)	Heller

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

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

V Statistische Modellierung von Allgemeinen Regressionsmodellen
2521350, WS 18/19, 2 SWS, Open in study portal
Lecture (V)

Annotation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

Workload

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

regular attendance: 30 hours

self-study: 65 hours

exam preparation: 40 hours

T   6.291 Course: Stochastic Calculus and Finance [T-WIWI-103129]

Responsible:	Dr. Mher Safarian
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101639 - Ökonometrie und Statistik II

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

Events					
WS 18/19	2521331	Stochastic Calculus and Finance	2 SWS	Lecture (V)	Safarian
Exams					
WS 18/19	7900225	Stochastic Calculus and Finance		Prüfung (PR)	Safarian

Competence Certificate

The assessment of this course consists of a written examination (§4(2), 1 SPOs, 180 min.) and of possibble additional assignments during the course (§4 (3) SPO).

Prerequisites

None

Annotation

For more information see http://statistik.econ.kit.edu/

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

V   Stochastic Calculus and Finance
2521331, WS 18/19, 2 SWS, Open in study portal

Lecture (V)

Description

The course will provide rigorous yet focused training in stochastic calculus and finance. The program will cover modern approaches in stochastic calculus and mathematical finance. Topics to be covered:

1. Stochastic Calculus. Stochastic Processes, Brownian Motion and Martingales, Stopping Times, Local martingales, Doob-Meyer Decomposition, Quadratic Variation, Stochastic Integration, Ito Formula, Girsanov Theorem, Jump-diffusion Processes. Stable and tempered stable processes. Levy processes.
2. Mathematical Finance: Pricing Models. The Black-Scholes Model, State prices and Equivalent Martingale Measure, Complete Markets and Redundant Security Prices, Arbitrage Pricing with Dividends, Term-Structure Models (One Factor Models, Cox-Ingersoll-Ross Model, Affine Models), Term-Structure Derivatives and Hedging, Mortgage-Backed Securities, Derivative Assets (Forward Prices, Future Contracts, American Options, Look-back Options), Option pricing with tempered stable and Levy-Processes and volatility clustering, Optimal Portfolio and Consumption Choice (Stochastic Control and Merton continuous time optimization problem), Equilibrium models, Consumption-Based CAPM, Numerical Methods.

Learning Content

The course will provide rigorous yet focused training in stochastic calculus and finance. The program will cover modern approaches in stochastic calculus and mathematical finance. Topics to be covered:

1. Stochastic Calculus. Stochastic Processes, Brownian Motion and Martingales, Stopping Times, Local martingales, Doob-Meyer Decomposition, Quadratic Variation, Stochastic Integration, Ito Formula, Girsanov Theorem, Jump-diffusion Processes. Stable and tempered stable processes. Levy processes.
2. Mathematical Finance: Pricing Models. The Black-Scholes Model, State prices and Equivalent Martingale Measure, Complete Markets and Redundant Security Prices, Arbitrage Pricing with Dividends, Term-Structure Models (One Factor Models, Cox-Ingersoll-Ross Model, Affine Models), Term-Structure Derivatives and Hedging, Mortgage-Backed Securities, Derivative Assets (Forward Prices, Future Contracts, American Options, Look-back Options), Option pricing with tempered stable and Levy-Processes and volatility clustering, Optimal Portfolio and Consumption Choice (Stochastic Control and Merton continuous time optimization problem), Equilibrium models, Consumption-Based CAPM, Numerical Methods.

Stochastic processes (Poisson-process, Brownian motion, martingales), stochastic Integral (Integral, quadratic und co-variation, Ito-formula), stochastic differential equation for price-processes, trading strategies, option pricing(Feynman-Kac), neutral risk rating(equivalent martingale measure, Girsanov theorem), term structure models

Workload

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

Literature

To be announced in lecture.

Elective literature:

- Dynamic Asset Pricing Theory, Third Edition. by Darrell Duffie, Princeton University Press, 1996
- Stochastic Calculus for Finance II: Continuous-Time Models, by Steven E. Shreve , Springer, 2003
- An Introduction to Stochastic Integration (Probability and its Applications) by Kai L. Chung , Ruth J. Williams , Birkhaueser,
- Methods of Mathematical Finance by Ioannis Karatzas , Steven E. Shreve , Springer 1998
- Kim Y.S. ,Rachev S.T. ,Bianchi M-L, Fabozzi F. Financial market models with Levy processes and time-varying volatility, Journal of Banking and Finance, 32/7,1363-1378, 2008.
- Hull, J., Options, Futures, & Other Derivatives, Prentice Hall, Sixth Edition, (2005).

T 6.292 Course: Strategic Management of Information Technology [T-WIWI-102669]

Responsible:	Thomas Wolf
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101477 - Entwicklung betrieblicher Informationssysteme

Type Prüfungsleistung schriftlich	Credits 5	Recurrence Each summer term	Version 1

Events					
SS 2019	2511602	**Strategic Management of Information Technology**	2 SWS	Lecture (V)	Wolf
SS 2019	2511603	**Übungen zu Strategisches Management der betrieblichen Informationsverarbeitung**	1 SWS	Practice (Ü)	Wolf
Exams					
WS 18/19	7900030	**Strategic Management of Information Technology**		Prüfung (PR)	
SS 2019	7900034	**Strategic Management of Information Technology**		Prüfung (PR)	Wolf

Competence Certificate
The assessment of this course is a written (60 min.) or (if necessary) oral examination according (30 min.) to §4(2) of the examination regulation.

Prerequisites
None

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

V Strategic Management of Information Technology
2511602, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Learning Content
The following topics will be covered: strategic planing of ICT, architecture of ICT, overall planning of ICT, outsourcing, operation and controlling of ICT.

Literature

- Nolan, R., Croson, D.: Creative Destruction: A Six-Stage Process for Transforming the Organization. Harvard Business School Press, Boston Mass. 1995
- Heinrich, L. J., Burgholzer, P.: Informationsmanagement, Planung, Überwachung, Steuerung d. Inform.-Infrastruktur. Oldenbourg, München 1990
- Nolan, R.: Managing the crises in data processing. Harvard Business Review, Vol. 57, Nr. 2 1979
- Österle, H. et al.: Unternehmensführung und Informationssystem. Teubner, Stuttgart 1992
- Thome, R.: Wirtschaftliche Informationsverarbeitung. Verlag Franz Vahlen, München 1990

T   6.293 Course: Strategy and Management Theory: Developments and "Classics" [T-WIWI-106190]

Responsible:	Prof. Dr. Hagen Lindstädt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103119 - Strategie und Management: Fortgeschrittene Themen

Type Prüfungsleistung anderer Art	Credits 3	Recurrence Irregular	Version 1

Events					
WS 18/19	2577922	**Strategy and Management Theory: Developments and "Classics"**	2 SWS	Seminar (S)	Lindstädt, Klopfer, Graf
SS 2019	2577923	**Workshop aktuelle Themen Strategie und Management (Master)**	2 SWS	Seminar (S)	Lindstädt
Exams					
WS 18/19	7900120	**Strategy and Management Theory: Developments and "Classics"**		Prüfung (PR)	Lindstädt

Competence Certificate
Non exam assessment (following §4(2) 3 of the examination regulation).

Prerequisites
None

Recommendation
Basic knowledge as conveyed in the bachelor module „Strategy and Organization" is recommended.

Annotation
This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed.

The course is planned to be held for the first time in the winter term 2017/18.

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

V   Strategy and Management Theory: Developments and "Classics"
2577922, WS 18/19, 2 SWS, Open in study portal   **Seminar (S)**

Notes
This course is admission restricted. If you werealready admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed.

Learning Content
In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

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

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

| **V** | **Workshop aktuelle Themen Strategie und Management (Master)**
2577923, SS 2019, 2 SWS, Open in study portal | **Seminar (S)** |

Notes

This course is admission restricted. If you werealready admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed.

Learning Content

In this lecture, students discuss and evaluate models in the field of strategic management with a focus on applicability and theory based limitations. Critical examination of current research results will be a substantial part of this course.

Workload

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

T 6.294 Course: Subdivision Algorithms [T-INFO-103550]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: M-INFO-101214 - Algorithmen der Computergrafik
M-INFO-101864 - Unterteilungsalgorithmen
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Irregular	1

T   6.295 Course: Supply Chain Management in the Automotive Industry [T-WIWI-102828]

Responsible:	Tilman Heupel
	Hendrik Lang
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101412 - Industrielle Produktion III
	M-WIWI-101471 - Industrielle Produktion II

Type Prüfungsleistung schriftlich	**Credits** 3,5	**Recurrence** Each winter term	**Version** 1

Events					
WS 18/19	2581957	Supply Chain Management in the automotive industry	2 SWS	Lecture (V)	Lang, Heupel
Exams					
WS 18/19	7981957	Supply Chain Management in the Automotive Industry		Prüfung (PR)	Schultmann

Competence Certificate
The examination will be in form of a written exam acc. to §4(2), 1 ER. Exams are offered in every semester and can be re-examined at every ordinary examination date.

Prerequisites
None

Recommendation
None

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

V   Supply Chain Management in the automotive industry
2581957, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content

- Automotive industry significance
- The automotive supply chain
- Adding value structures of the automotive supply chain and mastering of the production systems as factors of success in the SCM
- Strategic procurement logistics
- Risk management
- Quality engineering and management in the automotive supply chain
- Cost engineering and management in the automotive supply chain
- Purchasing (Supplier selection, contract management)
- Performance measurement of the supply chain / organization

Annotation
None.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature
Will be announced in the course.

T 6.296 Course: Supply Chain Management in the Process Industry [T-WIWI-102860]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-102805 - Service Operations

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

Events					
WS 18/19	2550494	Supply Chain Management in the Process Industry	3 SWS	Lecture / Practice (VÜ)	Blackburn
Exams					
WS 18/19	7900266	Supply Chain Management in the Process Industry		Prüfung (PR)	Nickel

Competence Certificate
The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation) (individual grading), case study presentation by student teams (team grading) and classroom participation (individual grading). The examination is held in the term of the lecture.

Prerequisites
None

Recommendation
Basic knowledge as conveyed in the module Introduction to Operations Research is assumed.
Advanced knowledge of Operations Research (e.g., as conveyed in the lectures Facility Location and Strategic SCM, Tactical and operational SCM) is recommended.

Annotation
The number of participants is restricted due to the execution of interactive case studies and the resulting examination effort. Due to these capacity restrictions, registration before course start is required according to the information on the course website. The course is planned to be held every winter term. The planned lectures and courses for the next three years are announced online.

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

V Supply Chain Management in the Process Industry
2550494, WS 18/19, 3 SWS, Open in study portal   Lecture / Practice (VÜ)

Learning Content
The course "Supply Chain Management in the Process Industry" covers fundamental concepts in the field of supply chain management with special focus on process industry. Strategic, planning and operational topics within the end-to-end supply chain are examined, covering relevant approaches in design, processes and performance measurement. Additional focus within the course is on showing the interdisciplinary linkages SCM has with information systems, performance management, project management, risk management and sustainability management. The course is enriched by various insights from the world´s leading chemical company BASF, provided by executive management as real life examples and cases.

Annotation
The number of participants is restricted due to the execution of interactive case studies and the resulting examination effort. Due to these capacity restrictions, registration before course start is required according to the information on the course website. The course is planned to be held every winter term. The planned lectures and courses for the next three years are announced online.

Workload

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

Literature

- Chopra, S./Meindl, P.: Supply Chain Management – Strategy, Planning, & Operations, 4th edition, Upper Saddle River, 2009.
- Various case studies, which will be provided during the course

T 6.297 Course: Supply Chain Management with Advanced Planning Systems [T-WIWI-102763]

Responsible:	Claus J. Bosch Dr. Mathias Göbelt
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen M-WIWI-101412 - Industrielle Produktion III M-WIWI-101471 - Industrielle Produktion II

Type Prüfungsleistung schriftlich	Credits 3,5	Recurrence Each summer term	Version 1

Events					
SS 2019	2581961	Supply Chain Management with Advanced Planning Systems	2 SWS	Lecture (V)	Göbelt, Bosch
Exams					
WS 18/19	7981961	Supply Chain Management with Advanced Planning Systems		Prüfung (PR)	Schultmann

Competence Certificate
The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites
None

Recommendation
None

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

V Supply Chain Management with Advanced Planning Systems
2581961, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content
1. **Introduction to Supply Chain Management**

1.1. Supply Chain Management Fundamentals

1.2. Supply Chain Management Analytics

2. **Structure of Advanced Planning Systems**

3. **SAP SCM**

3.1. Introduction / SCM Solution Map

3.2. Demand Planning

3.3. Supply Network Planning

3.4. Production Planning and Detailed Scheduling

3.5. Deployment

3.6. Transportation Planning and Vehicle Scheduling

3.7. [Optional] Global Available to Promise

4. **SAP SCM in Practice**

4.1. Success Stories

4.2. SAP Implementation Methodology

Annotation
This lecture has 3,5 Credits since summer term 2014.

Workload
The total workload for this course is approximately 105 hours. For further information see German version.

Literature
will be announced in the course

T 6.298 Course: Symmetric Encryption [T-INFO-101390]

Responsible:	Prof. Dr. Jörn Müller-Quade
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101197 - Computersicherheit
	M-INFO-101198 - Fortgeschrittene Themen der Kryptographie
	M-INFO-101207 - Netzsicherheit - Theorie und Praxis
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	3	Each summer term	1

Events					
SS 2019	24629	Symmetric encryption	2 SWS	Lecture (V)	Müller-Quade, Geiselmann
Exams					
WS 18/19	7500178	Symmetric Encryption		Prüfung (PR)	Geiselmann, Müller-Quade

Competence Certificate
Es wird empfohlen, das Modul Sicherheit zu belegen.

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

V Symmetric encryption
24629, SS 2019, 2 SWS, Open in study portal

Lecture (V)

Learning Content
This lecture provides the theoretical and practical aspects of symmetric cryptography. The most important topics are:

- Historical ciphers, if they are useful for assessing the security of current ciphers,
- block ciphers and the most important types of attacks (differential and linear cryptanalysis, meet-in-the-middle attacks, slide attacks),
- hash functions - the focus is on attacks and techniques to forge meaningful messages through the use of "meaningless collisions",
- security definitions for symmetric encryption schemes and their modes of operation.

T 6.299 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-INFO-102233 - Weitere Leistungen
	M-WIWI-102832 - Operations Research im Supply Chain Management

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each summer term	3

Events					
SS 2019	2550486	Taktisches und operatives SCM	2 SWS	Lecture (V)	Nickel
SS 2019	2550487	Übungen zu Taktisches und operatives SCM	1 SWS	Practice (Ü)	Pomes
Exams					
WS 18/19	7900220	Tactical and Operational Supply Chain Management		Prüfung (PR)	Nickel

Competence Certificate
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation.

The exam takes place in every the semester.

Prerequisite for admission to examination is the succesful completion of the online assessments.

Prerequisites
Prerequisite for admission to examination is the succesful completion of the online assessments.

Recommendation
None

Annotation
The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online.

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

V Taktisches und operatives SCM
2550486, SS 2019, 2 SWS, Open in study portal   Lecture (V)

Description
Since the classical work 'Theory of the Location of Industries' of Weber from 1909, the determination of an optimal location of a new facility with respect to existing customers is strongly 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 6.300 Course: Tax Law I [T-INFO-101315]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101216 - Recht der Wirtschaftsunternehmen
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each winter term	1

Events					
WS 18/19	24168	Tax Law I	2 SWS	Lecture (V)	Dietrich
Exams					
WS 18/19	7500066	Tax Law I		Prüfung (PR)	Dreier, Matz
SS 2019	7500052	Tax Law I		Prüfung (PR)	Dreier, Matz

T   6.301 Course: Tax Law II [T-INFO-101314]

Responsible:	Detlef Dietrich Prof. Dr. Thomas Dreier
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101216 - Recht der Wirtschaftsunternehmen M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	24646	Tax Law II	2 SWS	Lecture (V)	Dietrich
Exams					
WS 18/19	7500067	Tax Law II		Prüfung (PR)	Dreier, Matz
SS 2019	7500053	Tax Law II		Prüfung (PR)	Dreier, Matz

T 6.302 Course: Technical Conditions Met [T-WIWI-106623]

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101453 - Angewandte strategische Entscheidungen

Type	Credits	Recurrence	Version
Studienleistung	0	Each term	1

Competence Certificate

This module element is intended to record the Bachelor-examination "Introduction to Game Theory". In the master module M-WIWI-101453 "Applied Strategic Decisions", this means that the obligatory course "Advanced Game Theory" is not required.

Prerequisites

None

T	6.303 Course: Technologies for Innovation Management [T-WIWI-102854]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101507 - Innovationsmanagement
M-WIWI-101507 - Innovationsmanagement

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Each winter term	2

Events					
WS 18/19	2545106	Technologien für das Innovationsmanagement	2 SWS	Block (B)	Koch
Exams					
WS 18/19	7900239	Technologies for Innovation Management	Prüfung (PR)		Weissenberger-Eibl

Competence Certificate
Presentation and individual paper (ca. 15 pages) as Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

Prerequisites
None

Recommendation
Prior attendance of the course Innovationsmanagement: Konzepte, Strategien und Methoden [2545015] is recommended.

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

V	Technologien für das Innovationsmanagement	Block (B)
	2545106, WS 18/19, 2 SWS, Open in study portal	

Learning Content
The seminar "Technologies for Innovation Management" will focus on the early phase or fuzzy front end in innovation management. Technologies can be of great importance here, above all in the supply of information. In globally distributed R & D organizations, it is necessary to collect as much information as possible on new technological developments in the early phase of the innovation process. Information and communication technologies can be supported.

Literature
Will be announced in the first session.

T 6.304 Course: Technology Assessment [T-WIWI-102858]

Responsible:	Dr. Daniel Jeffrey Koch
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101507 - Innovationsmanagement
	M-WIWI-101507 - Innovationsmanagement

Type	**Credits**	**Recurrence**	**Version**
Prüfungsleistung anderer Art	3	Each summer term	1

Competence Certificate
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO 2015).

Prerequisites
None

Recommendation
Prior attendance of the course *Innovation Management* [2545015] is recommended.

Annotation
See German version.

T   6.305 Course: Telecommunication and Internet Economics [T-WIWI-102713]

Responsible:	Prof. Dr. Kay Mitusch
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101406 - Netzwerkökonomie
	M-WIWI-101409 - Electronic Markets

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

Events					
WS 18/19	2561232	Telecommunication and Internet Economics	2 SWS	Lecture (V)	Mitusch
WS 18/19	2561233	Übung zu Telekommunikations- und Internetökonomie	1 SWS	Practice (Ü)	Mitusch
Exams					
WS 18/19	7900270	Telecommunication and Internet Economics		Prüfung (PR)	Mitusch

Competence Certificate
Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

Prerequisites
None

Recommendation
Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics. Prior attendance of the lecture „Competition in Networks" [26240] or "Industrial Organisation" is helpful in any case but not considered a formal precondition. The english taught course "Communications Economics" is complementary and recommendet for anyone interested in the sector.

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

V   Telecommunication and Internet Economics
2561232, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Learning Content
Among the network sectors the telecommunication and internet sector is the most dynamic one and the one with and highest variety of phenomena. Problems of natural monopoly still exist in some parts. But there is also competition, not only at the service level but also at the infrastructural level. Both levels are characterized by (vertical) quality differentiations and by high technology dynamics. What should the regulation of this sector look like? How should the mutual network access prices of two telecommunication providers be regulated and how can regulators set incentives for infrastructure investments?

The internet is a free market par excellence, because everybody can open internet businesses without high entry costs. Why then can a company like ebay dominate the market for internet-auction platforms so strongly? The causes of market concentration on the internet will be analyzed. So will be the economic implications of the Next Generations Networks.

Workload
The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature
J.-J. Laffont, J. Tirole (2000): Competition in Telecommunications, MIT Press.

Zarnekow, Wulf, Bronstaedt (2013): Internetwirtschaft: Das Geschäft des Datentransports im Internet.

Further literature will be provided during the lecture

T   6.306 Course: Telecommunications Law [T-INFO-101309]

Responsible: Prof. Dr. Nikolaus Marsch
Organisation: KIT Department of Informatics
Part of: M-INFO-101217 - Öffentliches Wirtschaftsrecht
M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	3	Each summer term	1

Events					
SS 2019	24632	Telekommunikationsrecht	2 SWS	Lecture (V)	Hermstrüwer
Exams					
WS 18/19	7500049	Telecommunications Law		Prüfung (PR)	Marsch
SS 2019	7500085	Telecommunications Law		Prüfung (PR)	Marsch

T 6.307 Course: Telematics [T-INFO-101338]

Responsible:	Prof. Dr. Martina Zitterbart
Organisation:	KIT Department of Informatics
Part of:	M-INFO-100801 - Telematik
	M-INFO-101205 - Future Networking
	M-INFO-101206 - Networking
	M-INFO-102233 - Weitere Leistungen

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	6	Each winter term	1

Events					
WS 18/19	24128	Telematics	3 SWS	Lecture (V)	Bauer, Friebe, Heseding, Hock, Zitterbart
Exams					
WS 18/19	7500166	Telematics		Prüfung (PR)	Zitterbart

Below you will find excerpts from events related to this course:

V Telematics
24128, WS 18/19, 3 SWS, 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 6.308 Course: Theory of Endogenous Growth [T-WIWI-102785]

Responsible:	Prof. Dr. Ingrid Ott
Organisation:	KIT Department of Economics and Management
Part of:	M-INFO-102233 - Weitere Leistungen
	M-WIWI-101478 - Innovation und Wachstum
	M-WIWI-101496 - Wachstum und Agglomeration

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Exams				
WS 18/19	7900078	Theory of Endogenous Growth	Prüfung (PR)	Ott

Competence Certificate

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

Prerequisites

None

Recommendation

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

Annotation

Due to the research semester of Prof. Dr. Ingrid Ott, the course is not offered in the winter term 2018/19.

T 6.309 Course: Topics in Experimental Economics [T-WIWI-102863]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101505 - Experimentelle Wirtschaftsforschung

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Irregular	1

Events					
WS 18/19	2520405	Topics in Experimental Economics	SWS	Seminar (S)	Reiß, Hofmann, Mitarbeiter
Exams					
WS 18/19	79191ee	Seminar Topics in Experimental Economics	Prüfung (PR)	Reiß	

Competence Certificate
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
Basic knowledge of Experimental Economics is assumed. Therefore, it is strongly recommended to attend the course Experimental Economics beforehand.

Annotation
The course is offered in summer 2020 for the next time, not in summer 2018.

Below you will find excerpts from events related to this course:

V Topics in Experimental Economics
2520405, WS 18/19, SWS, Open in study portal

Seminar (S)

Learning Content
The course covers selected topics in experimental economics and deepens the understanding of the experimental method. In particular, topics of current research into experimental and behavioral economics are discussed, along with a treatment of advanced methodic issues.

Annotation
The course is offered in summer 2016 for the first time. The course is not offered in every academic year.

Workload
The total workload for this course is approximately 90.0 hours. For further information see German version.

Literature
A selection of published papers is compulsory reading for the course. The course syllabus provides references and is announced at the beginning of the course.

T   6.310 Course: Trademark and Unfair Competition Law [T-INFO-101313]

Responsible:	Dr. Yvonne Matz
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101215 - Recht des Geistigen Eigentums
	M-INFO-102233 - Weitere Leistungen

Type Prüfungsleistung schriftlich	**Credits** 3	**Recurrence** Each term	**Version** 1

Events					
WS 18/19	24136	Trademark and Unfair Competition Law	2 SWS	Lecture (V)	Matz
Exams					
WS 18/19	7500061	Trademark and Unfair Competition Law		Prüfung (PR)	Dreier, Matz
SS 2019	7500051	Trademark and Unfair Competition Law		Prüfung (PR)	Dreier, Matz

T 6.311 Course: Transport Economics [T-WIWI-100007]

Responsible:	Prof. Dr. Kay Mitusch Dr. Eckhard Szimba
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101406 - Netzwerkökonomie M-WIWI-101468 - Umwelt- und Ressourcenökonomie M-WIWI-101485 - Verkehrsinfrastrukturpolitik und regionale Entwicklung

Type Prüfungsleistung schriftlich	**Credits** 4,5	**Recurrence** Each summer term	**Version** 1

Events					
SS 2019	2560230	Transport Economics	SWS	Lecture (V)	Mitusch, Szimba
SS 2019	2560231	Übung zu Transportökonomie	SWS	Practice (Ü)	Mitusch, Wisotzky, Szimba
Exams					
WS 18/19	7900269	Transport Economics		Prüfung (PR)	Mitusch

Competence Certificate

The assessment is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

Below you will find excerpts from events related to this course:

V Transport Economics
2560230, SS 2019, SWS, Open in study portal

Lecture (V)

Learning Content

The course shall provide an overview of transport economics. It will be demonstrated, using new microeconomic models, which impacts regulation and pricing in transport have on the economic actions of individuals and logisticans and which benefits and costs apply. The following topics will be discussed:

- demand and supply in transport
- empirical analysis of transport demand
- assessment of transport infrastructure projects
- external effects in transport
- transport policy
- cost structures of transport infrastructure
- Project evaluation from the perspective of the public sector

Workload

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature
Will be announced in the lecture.
(for literature to prepare the lecture - see additional literature)

Literature:

Aberle, G: Transportwirtschaft: einzelwirtschaftliche und gesamtwirtschaftliche Grundlagen München; Wien: Oldenbourg, 2003.

Blauwens, G., De Baere, P. and Van der Voorde, E. (2006): Transport Economics.

Frerich, J; Müller, G: Europäische Verkehrspolitik, Landverkehrspolitik München; Wien: Oldenbourg, 2004.

Dasgupta, A, Pearce, D (1972): Cost-Benefit Analysis, MacMillan, London.

Europäische Kommission (2008): Guide to Cost Benefit Analysis of Investment Projects, online unter http://ec.europa.eu/regional_policy/sources/Ben-Akiva, M., Meerseman, H., and Van de Voorde, E. (2008): Recent developments in transport modelling: Lessons for the freight sector.

Ortúzar, J. d. D. and Willumsen, L. (1990): Modelling Transport.

T   6.312 Course: Ubiquitous Computing [T-INFO-101326]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: M-INFO-100789 - Ubiquitäre Informationstechnologien
M-INFO-101203 - Wireless Networking
M-INFO-101210 - Dynamische IT-Infrastrukturen
M-INFO-102233 - Weitere Leistungen
M-WIWI-101458 - Ubiquitous Computing

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	5	Each winter term	1

Events					
WS 18/19	24146	Ubiquitäre Informationstechnologien	2+1 SWS	Lecture / Practice (VÜ)	Beigl
Exams					
WS 18/19	7500185	Ubiquitous Computing		Prüfung (PR)	Beigl
SS 2019	7500122	Ubiquitous Computing		Prüfung (PR)	Beigl

T 6.313 Course: Valuation [T-WIWI-102621]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101480 - Finance 3
M-WIWI-101482 - Finance 1
M-WIWI-101483 - Finance 2
M-WIWI-101510 - Cross-Functional Management Accounting

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4,5	Each winter term	1

Events					
WS 18/19	2530212	Valuation	2 SWS	Lecture (V)	Ruckes
WS 18/19	2530213	Übungen zu Valuation	1 SWS	Practice (Ü)	Ruckes, Scholz-Daneshgari
Exams					
WS 18/19	7900057	Valuation		Prüfung (PR)	Ruckes
SS 2019	7900072	Valuation		Prüfung (PR)	Ruckes

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

Below you will find excerpts from events related to this course:

V Valuation
2530212, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Description
Firms prosper when they create value for their shareholders and stakeholders. This is achieved by investing in projects that yield higher returns than their according cost of capital. Students are told the basic tools for firm and project valuation as well as ways to implement these tools in order to enhance a firm's value and improve its investment decisions. Among other things, the course will deal with the valuation of firms and individual projects using discounted cash flow and relative valuation approaches and the valuation of flexibility deploying real options.

Learning Content
Topics:

- Projections of cash flows
- Estimation of the cost of capital
- Valuation of the firm
- Mergers and acquisitions
- Real options

Literature
Elective Literature

Titman/Martin (2013): *Valuation - The Art and Science of Corporate Investment Decisions*, 2nd. ed. Pearson International.

T 6.314 Course: Wearable Robotic Technologies [T-INFO-106557]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Prof. Dr.-Ing. Michael Beigl

Organisation: KIT Department of Informatics

Part of: M-INFO-103294 - Anziehbare Robotertechnologien

Type	Credits	Recurrence	Version
Prüfungsleistung schriftlich	4	Each summer term	2

Events					
SS 2019	2400062	Wearable Robotic Technologies	2 SWS	Lecture (V)	Asfour, Beigl, Beil, Starke
Exams					
WS 18/19	7500073	Wearable Robotic Technologies		Prüfung (PR)	Asfour

Modeled Conditions

The following conditions have to be fulfilled:

1. The course T-INFO-101294 - Mechano-Informatics and Robotics must have been passed.

Below you will find excerpts from events related to this course:

V Wearable Robotic Technologies
2400062, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Learning Content

The lecture starts with an overview of wearable robot technologies (exoskeletons, prostheses and ortheses) and its potentials, followed by the basics of wearable robotics. In addition to different approaches to the design of wearable robots and their related actuator and sensor technology, the lecture focuses on modeling the neuromusculoskeletal system of the human body and the physical and cognitive human-robot interaction for tightly coupled hybrid human-robot systems. Examples of current research and various applications of lower, upper and full body exoskeletons as well as prostheses are presented.

Workload

120h

T 6.315 Course: Web Applications and Service-Oriented Architectures (II) [T-INFO-101271]

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: M-INFO-104061 - Microservice-basierte Web-Anwendungen

Type	Credits	Recurrence	Version
Prüfungsleistung mündlich	4	Each summer term	1

Events					
SS 2019	24677	Web Applications and Service oriented Architectures (II)	2 SWS	Lecture (V)	Abeck

Below you will find excerpts from events related to this course:

V Web Applications and Service oriented Architectures (II)
24677, SS 2019, 2 SWS, Open in study portal   **Lecture (V)**

Notes
Students, who want to take the oral exam of Prof. Abeck, must be present in the first lecture appointment on Wednesday, 26.04.2017 at 9:45 in seminar room 301.

T 6.316 Course: Web Science [T-WIWI-103112]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: M-INFO-102233 - Weitere Leistungen
M-WIWI-101455 - Web Data Management
M-WIWI-101457 - Semantische Technologien
M-WIWI-102827 - Service Computing

Type Prüfungsleistung schriftlich	Credits 5	Recurrence Each winter term	Version 1

Events					
WS 18/19	2511312	Web Science	2 SWS	Lecture (V)	Sure-Vetter
WS 18/19	2511313	Exercises to Web Science	1 SWS	Practice (Ü)	Sure-Vetter, Heling
Exams					
WS 18/19	7900031	Web Science		Prüfung (PR)	Sure-Vetter
SS 2019	7900032	Web Science		Prüfung (PR)	Sure-Vetter

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.
The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites
None

Annotation
New course starting winter term 2015/2016.

Below you will find excerpts from events related to this course:

V Web Science
2511312, WS 18/19, 2 SWS, Open in study portal   Lecture (V)

Description
Web Science is the emergent study of the people and technologies, applications, processes and practices that shape and are shaped by the World Wide Web. Web Science aims to draw together theories, methods and findings from across academic disciplines, and to collaborate with industry, business, government and civil society, to develop our knowledge and understanding of the Web: the largest socio-technical infrastructure in human history.

The lecture provides an introduction to basic concepts of Web Science. Essential theoretical foundations, phenomena and approaches are presented and explained.

Learning Content
This course aims to provide students with a basic knowledge and understanding about the structure and analysis of selected web phenomena and technologies. Topics include the small world problem, network theory, social network analysis, graph search and technologies/standards/architectures.

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature

- Networks, Crowds, and Markets: Reasoning About a Highly Connected World, by David Easley and Jon Kleinberg, 2010 (free online book: http://www.cs.cornell.edu/home/kleinber/networks-book/)
- Thelwall, M. (2009). Social network sites: Users and uses. In: M. Zelkowitz (Ed.), Advances in Computers 76. Amsterdam: Elsevier (pp. 19-73)

V	**Exercises to Web Science** 2511313, WS 18/19, 1 SWS, Open in study portal	**Practice (Ü)**

Description

Multiple exercises are held that capture the topics, held in the lecture Web Scienceand discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

Learning Content

This course aims to provide students with a basic knowledge and understanding about the structure and analysis of selected web phenomena and technologies. Topics include the small world problem, network theory, social network analysis, graph search and technologies/standards/architectures.

Workload

The total workload for the lecture Web Science is given out on the description of the lecture.

Literature

- Networks, Crowds, and Markets: Reasoning About a Highly Connected World, by David Easley and Jon Kleinberg, 2010 (free online book: http://www.cs.cornell.edu/home/kleinber/networks-book/)
- Thelwall, M. (2009). Social network sites: Users and uses. In: M. Zelkowitz (Ed.), Advances in Computers 76. Amsterdam: Elsevier (pp. 19-73)

T 6.317 Course: Workshop Business Wargaming – Analyzing Strategic Interactions [T-WIWI-106189]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-103119 - Strategie und Management: Fortgeschrittene Themen

Type Prüfungsleistung anderer Art	Credits 3	Recurrence Each summer term	Version 1

Events					
SS 2019	2577912	Workshop Business Wargaming - Analyzinig Strategic Interactions	2 SWS	Seminar (S)	Lindstädt

Competence Certificate
Non exam assessment (following §4(2) 3 of the examination regulation).

Prerequisites
None

Recommendation
Basic knowledge as conveyed in the bachelor module „Strategy and Organization" is recommended.

Annotation
This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed.

The course is planned to be held for the first time in the summer term 2018.

Below you will find excerpts from events related to this course:

V Workshop Business Wargaming - Analyzinig Strategic Interactions
2577912, SS 2019, 2 SWS, Open in study portal   Seminar (S)

Notes
This course is admission restricted. If you werealready admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed.

Learning Content
In this course, students simulate and analyze real-life conflict situations using Business Wargaming methods. The students will be able to understand the underlying structure and dynamics of various conflicts, this includes making own conclusions as well as deriving strategic recommendations.

Workload
The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

T 6.318 Course: Workshop Current Topics in Strategy and Management [T-WIWI-106188]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-103119 - Strategie und Management: Fortgeschrittene Themen

Type	Credits	Recurrence	Version
Prüfungsleistung anderer Art	3	Irregular	1

Events					
WS 18/19	2577921	Workshop Current Topics in Strategy and Management	2 SWS	Seminar (S)	Lindstädt, Burkardt, Müller
Exams					
WS 18/19	7900171	Workshop Current Topics in Strategy and Management		Prüfung (PR)	Lindstädt

Competence Certificate
Non exam assessment (following §4(2) 3 of the examination regulation).

Prerequisites
None

Recommendation
Basic knowledge as conveyed in the bachelor module „Strategy and Organization" is recommended.

Annotation
This course is admission restricted. If you were already admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed.
The course is planned to be held for the first time in the winter term 2017/18.

Below you will find excerpts from events related to this course:

V Workshop Current Topics in Strategy and Management
2577921, WS 18/19, 2 SWS, Open in study portal   **Seminar (S)**

Learning Content
In this lecture, current economic trends will be discussed from a perspective of competition analysis and corporate strategies. Using appropriate frameworks, the students will be able to analyze collectively selected case studies and derive business strategies.

Annotation
This course is admission restricted. If you werealready admitted to another course in the module "Advanced Topics in Strategy and Management" the participation at this course will be guaranteed.

Workload
The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a