Module Handbook
Digital Economics M.Sc.

SPO 2022

Winter term 2023/24

Date: 05/12/2022

KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT

www.kit.edu

Inhaltsverzeichnis

1 General information

Welcome to the new module handbook of your study program! 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! In the following we would like to give you a short introduction to the most important terms and rules that are important in connection with the choice of modules, courses and examinations.

1.1 Structural elements

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).

1.2 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.

1.3 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.

1.4 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.

1.5 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.

Caution: exam type dependent on further pandemic developments

Due to the current situation, online formats are also available for examinations that are typically offered as **presence examinations**, depending on the circumstances.

All assessments that are announced in the modules as a written exam (written exam/sP according to SPO § 4 Abs. 2, Pkt. 1) can therefore also be offered as an alternative exam assessment/PLaA (according to SPO § 4 Abs. 2, Pkt. 3) depending on further pandemic developments. And vice versa. As alternative examination formats, **a) online examinations with video supervision** (sP) and optionally a face-to-face examination in the same examination period are offered. Or **b)** the **Online Open Book exam** (PLaA) format.

This option applies to all modules and assessments listed in the module handbook, regardless of whether or not corresponding references are already made to them there. It is also at the discretion of the responsible examiners whether they allow a 'free shot' for their examination when determining the type of examination.

1.6 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.

1.7 Examiners

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

1.8 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.

1.9 Further information

For current information about studying at the KIT Department of Economics and Management, please visit our website www.wiwi.kit.edu as well as Instagram, LinkedIn, and YouTube. Please also see current notices and announcements for students at: https://www.wiwi.kit.edu/studium.php.

Information around the legal and official framework of the study program can be found in the respective study and examination regulations of your study program. These are available under the Official Announcements of KIT (http://www.sle.kit.edu/amtlicheBekanntmachungen.php).

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).

1.10 Contact

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

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

Editorial responsibility:

Dr. André Wiesner
Telefon: +49 721 608-44061
Email: modul@wiwi.kit.edu \

2 Study plan

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

		Digital Economics (M.Sc.)									
Term	Credits	Economics			Methods			Society	Electives			Master Thesis
1	31,5	Digital Economics 9 CP	Digital Financial Economics 9 CP	Economics & Management 9 CP	Informatics & Machine Learning 9 CP	Statistics & Econometrics 9 CP	Computation & Optimization 9 CP					
2	27							Digitalization & Society 9 CP				
3	31,5								Elective Module 1 9 CP	Elective Module 2 9 CP	Seminar Module 9 CP	
4	30											Master Thesis 30 CP
	120	27			27			9	27			30

Figure 2: Structure of the Master's degree program SPO 2022 (Recommendation)

Figure 2 shows the structure of the subjects and the credits allocated to the subjects.

Figure 3 illustrates the examinations per semester in the Master's degree program Digital Economics based on an exemplary module selection.

Subject	Module	Course	Type	1st sem		2nd sem		3rd sem		4th sem	
				LC	CP	LC	CP	LC	CP	LC	CP
Economics (27 ECTS)	Digital Economics (9 CP)	Advanced Digital Economics	L/E	wE	4,5						
		Innovation Theory and Policy	L/E			wE	4,5				
	Digital Financial Economics (9 CP)	Advanced Financial Machine Learning and Data Science	aL	EaT	9,0						
	Economics & Management (9 CP)	Advanced Management Accounting	L	oE	4,5						
		Energy Market Engineering	L/E			wE	4,5				
Methods (27 ECTS)	Informatics & Machine Learning (9 CP)	Machine Learning 1 - Basic Methods	L/E	wE	4,5						
		Process Mining	L/E			wE	4,5				
	Statistics & Econometrics (9 CP)	Applied Econometrics	L/E	wE	4,5						
		Multivariate Statistical Methods	L/E			wE	4,5				
	Computation & Optimization (9 CP)	Dynamic Macroeconomics	L/E	oE	4,5						
		Global Optimization I	L			wE	4,5				
Society (9 ECTS)	Digitalization & Society (9 CP)	Designing Interactive Systems	L			EaT	4,5				
		Human Factors in Security and Privacy	L/E					wE	4,5		
Electives (27 ECTS)	Mathematical Programming (9 CP)	Nonlinear Optimization I and II	L/E					wE	9,0		
	Microeconomic Theory (9 CP)	Advanced Game Theory	L/E					wE	4,5		
		Auction Theory	L/E					wE	4,5		
	Seminar Module (9 LP)	Seminar in Business Administration A (Master)	S					EaT	4,5		
		Seminar in Economics A (Master)	S					EaT	4,5		
Master Thesis (30 ECTS)											30,0
		Number of exams		6		6		6		0	18
		CP:		31,5		27		31,5		30	120

L = Lecture
E = Excercise
aL = Advanced Lab
S = Seminar
wE = Written Examination
oE = Oral Examination
EaT = Examination of Another Type
CW = Coursework
LC = Learning Control
CP = Credit Points
sem = Semester

Figure 3: examinations per semester based on an exemplary module selection

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

3 Qualification objectives of the Master's program in Digital Economics

Graduates of the master's program in Digital Economics have in-depth and extended knowledge of advancing digitalization and the associated transformation processes in the economy and society. They are able to identify and clarify the effects on competition policy, macroeconomics and sociopolitics. They are able to analyze these processes in a methodologically sound manner from different perspectives, as they have developed competencies in the following areas: Digital Economics, Financial Digital Economics, Economics and Management, Statistics, Econometrics and Optimization Theory, Applied Informatics with Machine Learning and Artificial Intelligence, and Digitalization and Society with ethical and sociological aspects of the digital transformation.

In the bilingually designed program, students work on and evaluate the international dimensions and contexts of these subject areas. They are able to work, present and discuss academically in both German and English. With the help of the program's extensive elective and specialization options, students develop their own areas of focus. At least one seminar paper and the master's thesis deepen the profile formation and expand the ability to independently write scientific papers.

Graduates of the master's program in Digital Economics are able to evaluate, select and combine suitable alternative courses of action on research-relevant topics. They can transfer and apply these to specific problems. In doing so, they assess complexity and risks, recognize potential for improvement and develop sustainable and responsible solutions and innovative improvement methods.

Graduates of the master's program in Digital Economics are able to exchange ideas with experts at a scientific level and assume prominent responsibility, also in an international team. They are particularly qualified for strategic fields of activity in all areas of public administration, in non-governmental organizations, in all areas of the private sector characterized by digitalization, in scientific research institutes as well as for a downstream scientific career (doctorate).

4 Key Skills

The master program Digital Economics (M.Sc.) at the KIT Department of Economics and Management distinguishes itself by an exceptionally high level of interdisciplinarity. With the combination of business science, economics, informatics, operations research as well as statistics and law, the integration of knowledge of different disciplines is an inherent element of the programme. As a result, interdisciplinary and connected thinking is encouraged in a natural way. Furthermore, the seminar courses in the master degree programme contribute significantly to the development of key skills by practicing to elaborate and write scientifically sound papers and presentations about special topics. The **integrative** taught key skills, which are acquired throughout the entire programme, can be classified into the following fields:

Soft skills

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

Enabling skills

> Decision making in business context
> Project management competences
> Fundamentals of business science
> English as a foreign language

Orientational knowledge

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

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

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

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

5 Field of study structure

Mandatory	
Master Thesis	30 LP
Economics	27 LP
Methods	27 LP
Society	9 LP
Electives	27 LP

5.1 Master Thesis

Credits 30

Mandatory		
M-WIWI-101659	Master Thesis	30 LP

5.2 Economics

Credits 27

Mandatory		
M-WIWI-DigEcon	Digital Economics	9 LP
M-WIWI-DigFinEcon	Digital Financial Economics	9 LP
M-WIWI-EconMan	Economics & Management	9 LP

5.3 Methods

Credits 27

Mandatory		
M-WIWI-InfoML	Informatics & Machine Learning	9 LP
M-WIWI-StatEcon	Statistics & Econometrics	9 LP
M-WIWI-CompOpt	Computation & Optimization	9 LP

5.4 Society

Credits 9

Mandatory		
M-WIWI-DigSoc	Digitalization & Society	9 LP

5.5 Electives

Credits
27

Mandatory		
M-WIWI-101808	Seminar Module	9 LP
Election block: Elective Modules (2 items)		
Election block: Economics (at least 9 credits)		
M-WIWI-101497	Agglomeration and Innovation	9 LP
M-WIWI-101453	Applied Strategic Decisions	9 LP
M-WIWI-101504	Collective Decision Making	9 LP
M-WIWI-101505	Experimental Economics	9 LP
M-WIWI-101478	Innovation and Growth	9 LP
M-WIWI-101514	Innovation Economics	9 LP
M-WIWI-101500	Microeconomic Theory	9 LP
M-WIWI-101406	Network Economics	9 LP
M-WIWI-101638	Econometrics and Statistics I	9 LP
M-WIWI-101502	Economic Theory and its Application in Finance	9 LP
M-WIWI-101468	Environmental Economics	9 LP
M-WIWI-101485	Transport Infrastructure Policy and Regional Development	9 LP
M-WIWI-101511	Advanced Topics in Public Finance	9 LP
M-WIWI-101496	Growth and Agglomeration	9 LP
Election block: Business Administration (at most 9 credits)		
M-WIWI-105659	Advanced Machine Learning and Data Science	9 LP
M-WIWI-101410	Business & Service Engineering	9 LP
M-WIWI-105714	Consumer Research	9 LP
M-WIWI-101498	Management Accounting	9 LP
M-WIWI-101510	Cross-Functional Management Accounting	9 LP
M-WIWI-103117	Data Science: Data-Driven Information Systems	9 LP
M-WIWI-101647	Data Science: Evidence-based Marketing	9 LP
M-WIWI-105661	Data Science: Intelligent, Adaptive, and Learning Information Services	9 LP
M-WIWI-104080	Designing Interactive Information Systems	9 LP
M-WIWI-102808	Digital Service Systems in Industry	9 LP
M-WIWI-103720	eEnergy: Markets, Services and Systems	9 LP
M-WIWI-101409	Electronic Markets	9 LP
M-WIWI-101451	Energy Economics and Energy Markets	9 LP
M-WIWI-101452	Energy Economics and Technology	9 LP
M-WIWI-101488	Entrepreneurship (EnTechnon)	9 LP
M-WIWI-101482	Finance 1	9 LP
M-WIWI-101483	Finance 2	9 LP
M-WIWI-101480	Finance 3	9 LP
M-WIWI-101471	Industrial Production II	9 LP
M-WIWI-101412	Industrial Production III	9 LP
M-WIWI-101411	Information Engineering	9 LP
M-WIWI-104068	Information Systems in Organizations	9 LP
M-WIWI-101507	Innovation Management	9 LP
M-WIWI-105312	Marketing and Sales Management	9 LP
M-WIWI-101446	Market Engineering	9 LP
M-WIWI-101506	Service Analytics	9 LP
M-WIWI-101503	Service Design Thinking	9 LP
M-WIWI-102754	Service Economics and Management	9 LP
M-WIWI-102806	Service Innovation, Design & Engineering	9 LP
M-WIWI-101448	Service Management	9 LP
M-WIWI-103119	Advanced Topics in Strategy and Management	9 LP

M-WIWI-105010	Student Innovation Lab (SIL) 1	9 LP
M-WIWI-105011	Student Innovation Lab (SIL) 2	9 LP
Election block: Informatics (at most 9 credits)		
M-WIWI-101628	Emphasis in Informatics	9 LP
M-WIWI-101630	Electives in Informatics	9 LP
Election block: Operations Research (at most 9 credits)		
M-WIWI-101473	Mathematical Programming	9 LP
M-WIWI-102832	Operations Research in Supply Chain Management	9 LP
M-WIWI-102805	Service Operations	9 LP
M-WIWI-103289	Stochastic Optimization	9 LP
Election block: Statistics (at most 9 credits)		
M-WIWI-101637	Analytics and Statistics	9 LP
M-WIWI-101638	Econometrics and Statistics I	9 LP
M-WIWI-101639	Econometrics and Statistics II	9 LP
Election block: Law and Sociology (at most 9 credits)		
M-INFO-101217	Public Business Law	9 LP
M-INFO-101216	Private Business Law	9 LP
M-INFO-101215	Intellectual Property Law	9 LP
M-GEISTSOZ-101169	Sociology	9 LP

6 Modules

M 6.1 Module: Digital Financial Economics [M-WIWI-DigFinEcon]

Responsible: Prof. Dr. M. Ruckes
Organisation: KIT Department of Economics and Management
Part of: Economics

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	1

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-111305	Advanced Financial Machine Learning and Data Science	9 LP	Ulrich
T-WIWI-102647	Asset Pricing	4,5 LP	Ruckes
T-WIWI-108880	Blockchain and Cryptofinance	4,5 LP	Schuster
T-WIWI-110995	Bond Markets	4,5 LP	Uhrig-Homburg
T-WIWI-102621	Valuation	4,5 LP	Ruckes

Competence Certificate

The assessment is carried out as partial exams 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 able to explain, analyze and derive answers to advanced economic and methodological issues in finance,
- has the ability to understand novel methods and to identify and evaluate their advantages and disadvantages.

Content

In the module courses, students are taught and discuss advanced economic and methodological knowledge of modern finance on a broad basis. One focus is on current digital methods.

Workload

The total workload for this module is approximately 270 hours.

M   6.2 Module: Advanced Machine Learning and Data Science [M-WIWI-105659]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	1

Mandatory		
T-WIWI-111305	Advanced Machine Learning and Data Science	9 LP	Ulrich

Competence Certificate
The assessment is carried out in form of a written thesis based on the course "Advanced Machine Learning and Data Science".

Competence Goal
Students with good technological knowledge and an affinity for IT applications solve a data science problem using modern machine learning methods. Students learn to organize themselves in a team in a goal-oriented manner and to bring an extensive software project in the field of data science and machine learning to success. In addition, students deepen their data science and machine learning skills. Students of this module are particularly well prepared for management tasks in various data science and machine learning projects.

Prerequisites
see T-WIWI-106193 "Advanced Machine Learning and Data Science".

Content
The course is targeted to students with a major in Data Science and/or Machine Learning. It offers students the opportunity to develop hands-on knowledge on new developments in data science and machine learning.

Recommendation
None

Workload
Total effort for 9 credit points: approx. 270 hours. The total workload for this module is approx. 270 hours (9 credit points). The total number of hours results from the effort for attending the internship events and the independent creation of the software solution, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

M 6.3 Module: Advanced Topics in Public Finance [M-WIWI-101511]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	7

Election block: Electives (between 1 and 2 items)			
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 LP	Gutekunst, Wigger
T-WIWI-102740	Public Management	4,5 LP	Wigger
Election block: Supplementary Courses (between 0 and 1 items)			
T-WIWI-111304	Fundamentals of National and International Group Taxation	4,5 LP	Wigger
T-WIWI-102739	Public Revenues	4,5 LP	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
At least one of the courses "Public Management" or "Basics of German Company Tax Law and Tax Planning" is mandatory in the module and must be successfully 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.

M 6.4 Module: Advanced Topics in Strategy and Management [M-WIWI-103119]

Responsible:	Prof. Dr. Hagen Lindstädt
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	1

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

M   6.5 Module: Agglomeration and Innovation [M-WIWI-101497]

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

Credits	Grading scale	Recurrence	Duration	Level	Version
9	Grade to a tenth	Each term	1 term	4	2

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 LP	Mitusch
T-WIWI-109194	Dynamic Macroeconomics	4,5 LP	Brumm
T-WIWI-102840	Innovation Theory and Policy	4,5 LP	Ott
T-WIWI-103107	Spatial Economics	4,5 LP	Ott

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must add up to at least 9.

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

Competence Goal

The student

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

Prerequisites

None

Content

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

Recommendation

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

Workload

The total workload for this module is approximately 270 hours.

M   6.6 Module: Analytics and Statistics [M-WIWI-101637]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	3

Mandatory		
T-WIWI-103123 Advanced Statistics	4,5 LP	Grothe
Election block: Supplementary Courses (between 4,5 and 5 credits)		
T-WIWI-106341 Machine Learning 2 – Advanced Methods	4,5 LP	Zöllner
T-WIWI-111247 Mathematics for High Dimensional Statistics	4,5 LP	Grothe
T-WIWI-103124 Multivariate Statistical Methods	4,5 LP	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 6.7 Module: Applied Strategic Decisions [M-WIWI-101453]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	4

Mandatory			
T-WIWI-102861	Advanced Game Theory	4,5 LP	Ehrhart, Puppe, Reiß
Election block: Supplementary Courses (between 4,5 and 5 credits)			
T-WIWI-102613	Auction Theory	4,5 LP	Ehrhart
T-WIWI-102614	Experimental Economics	4,5 LP	Weinhardt
T-WIWI-102622	Corporate Financial Policy	4,5 LP	Ruckes
T-WIWI-102623	Financial Intermediation	4,5 LP	Ruckes
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 LP	Weinhardt
T-WIWI-102862	Predictive Mechanism and Market Design	4,5 LP	Reiß
T-WIWI-105781	Incentives in Organizations	4,5 LP	Nieken

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" was completed. Even those who have already successfully proven "Advanced Game Theory" in another master module can take the module. In this case you can choose freely from the rest of the offer. However, this choice can only be made by the examination office of the Department of Economics and Management.

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.

Workload
The total workload for this module is approximately 270 hours. The exact distribution is made according to the credit points of the courses of the module.

M 6.8 Module: Business & Service Engineering [M-WIWI-101410]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Methods
                   Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	5

Election block: Compulsory Elective Courses (9 credits)		
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 LP	Weinhardt
T-WIWI-102848	Personalization and Services	4,5 LP	Sonnenbichler
T-WIWI-110887	Practical Seminar: Service Innovation	4,5 LP	Satzger
T-WIWI-102847	Recommender Systems	4,5 LP	Geyer-Schulz
T-WIWI-102641	Service Innovation	4,5 LP	Satzger
T-WIWI-109940	Special Topics in Information Systems	4,5 LP	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.

M 6.9 Module: Collective Decision Making [M-WIWI-101504]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	English	4	4

Election block: Compulsory Elective Courses ()		
T-WIWI-102740	Public Management	4,5 LP	Wigger
T-WIWI-102859	Social Choice Theory	4,5 LP	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.

M 6.10 Module: Computation & Optimization [M-WIWI-CompOpt]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: Methods

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	1

Election block: Compulsory Elective Courses (at most 2 items)		
T-WIWI-109194	Dynamic Macroeconomics	4,5 LP	Brumm
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 LP	Nickel
T-WIWI-102726	Global Optimization I	4,5 LP	Stein
T-WIWI-106549	Large-scale Optimization	4,5 LP	Rebennack
T-WIWI-102719	Mixed Integer Programming I	4,5 LP	Stein
T-WIWI-102679	Nature-Inspired Optimization Methods	4,5 LP	Shukla
T-WIWI-106545	Optimization Under Uncertainty	4,5 LP	Rebennack

Competence Certificate

The assessment is carried out as partial exams 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 and describes the basic concepts of advanced optimization methods, especially from dynamic optimization in macroeconomics, mixed-integer, global, high-dimensional, nature-inspired and stochastic optimization as well as from location planning and supply chain management
- Knows the methods and models essential for quantitative analysis,
- models and classifies optimization problems and selects appropriate solution procedures to solve even challenging optimization problems independently and, if necessary, with computer assistance,
- validates, illustrates and interprets obtained solutions,
- recognizes disadvantages of solution methods and, if necessary, is able to make suggestions for their adaptation to practical problems.

Prerequisites

None

Content

The module focuses on teaching both theoretical foundations and solution methods for optimization problems relevant in the field of Digital Economics.

Workload

The total workload for this module is approximately 270 hours.

M 6.11 Module: Consumer Research [M-WIWI-105714]

Responsible:	Prof. Dr. Benjamin Scheibehenne
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	**Grading scale**	**Recurrence**	**Duration**	**Language**	**Level**	**Version**
9	Grade to a tenth	Each term	2 terms	German/English	4	1

Election block: Compulsory Elective Courses ()			
T-WIWI-111393	Behavioral Experiments in Action	4,5 LP	Scheibehenne
T-WIWI-111392	Cognitive Modeling	4,5 LP	Scheibehenne
T-WIWI-111100	Current Directions in Consumer Psychology	3 LP	Scheibehenne
T-WIWI-111395	Experimental Design	4,5 LP	Scheibehenne
T-WIWI-111099	Judgment and Decision Making	4,5 LP	Scheibehenne
T-WIWI-107720	Market Research	4,5 LP	Klarmann
T-WIWI-111394	Open Science & Reproducibility	4,5 LP	Scheibehenne

Competence Certificate

The assessment is based on partial exams within the classes offered in this module. Please check the descriptions of the classes for details.

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

Competence Goal

- Understand human judgment and decision making in an economic context
- Learn how to plan, program, conduct, statistically analyze, visualize, model, and report behavioral experiments
- Critically evaluate scientific findings in the aftermath of the replication crisis

Prerequisites

Willingness to actively engage with the topic.

Content

This module provides students with in-depth knowledge about consumer research at the intersection between Marketing, Psychology, and Cognitive Science. The module consists of classes that look into how individuals and groups make judgments and decisions and what factors influences their behavior (e.g. the lecture on judgment and decision making). Because most findings in this area of research rely on behavioral experiments, this module also focuses on methodological skills. This includes classes on how to plan and design behavioral experiments, conduct and report meaningful statistical analyses, and develop computational cognitive models. The module also includes classes about reproducibility and transparency in the behavioral sciences. The module is a pre-requisite for writing a Master thesis at the KIT Cognition and Consumer Behavior lab.

Recommendation

Interest in behavioral research.

Workload

The total workload for this module is approximately 270 hours.

M 6.12 Module: Cross-Functional Management Accounting [M-WIWI-101510]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: Methods
                   Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	9

Mandatory			
T-WIWI-102885	Advanced Management Accounting	4,5 LP	Wouters
Election block: Supplementary Courses (4,5 credits)			
T-WIWI-110179	Advanced Management Accounting 2	4,5 LP	Wouters
T-WIWI-105777	Business Intelligence Systems	4,5 LP	Mädche, Nadj, Toreini
T-WIWI-105781	Incentives in Organizations	4,5 LP	Nieken
T-WIWI-102835	Marketing Strategy Business Game	1,5 LP	Klarmann
T-WIWI-107720	Market Research	4,5 LP	Klarmann
T-WIWI-109864	Product and Innovation Management	3 LP	Klarmann
T-WIWI-102621	Valuation	4,5 LP	Ruckes
T-WIWI-108651	Extraordinary additional course in the module Cross-Functional Management Accounting	4,5 LP	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.

M 6.13 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:	Methods Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	9

Election block: Compulsory Elective Courses ()		
T-WIWI-108715	Artificial Intelligence in Service Systems	4,5 LP	Satzger
T-WIWI-111219	Artificial Intelligence in Service Systems - Applications in Computer Vision	4,5 LP	Satzger
T-WIWI-109863	Business Data Analytics: Application and Tools	4,5 LP	Weinhardt
T-WIWI-106187	Business Data Strategy	4,5 LP	Weinhardt
T-WIWI-105777	Business Intelligence Systems	4,5 LP	Mädche, Nadj, Toreini
T-WIWI-110918	Introduction to Bayesian Statistics for Analyzing Data	3 LP	Scheibehenne
T-WIWI-111385	Responsible Artificial Intelligence	4,5 LP	Weinhardt
T-WIWI-106207	Practical Seminar: Data-Driven Information Systems	4,5 LP	Mädche, Satzger, Setzer, 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.

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

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: Methods
                   Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	5

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-103139	Marketing Analytics	4,5 LP	Klarmann
T-WIWI-107720	Market Research	4,5 LP	Klarmann

Competence Certificate

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

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

Competence Goal

Students

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

Prerequisites

Keine.

Content

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

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

Recommendation

None

Workload

The total workload for this module is approximately 270 hours.

M   6.15 Module: Data Science: Intelligent, Adaptive, and Learning Information Services [M-WIWI-105661]

Responsible: Prof. Dr. Andreas Geyer-Schulz
Organisation: KIT Department of Economics and Management
Part of: Methods
                Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	4	1

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-109921	Advanced Machine Learning	4,5 LP	Geyer-Schulz, Nazemi
T-WIWI-111219	Artificial Intelligence in Service Systems - Applications in Computer Vision	4,5 LP	Satzger
T-WIWI-102762	Business Dynamics	4,5 LP	Geyer-Schulz, Glenn
T-WIWI-111267	Intelligent Agent Architectures	4,5 LP	Geyer-Schulz
T-WIWI-110915	Intelligent Agents and Decision Theory	4,5 LP	Geyer-Schulz
T-WIWI-102848	Personalization and Services	4,5 LP	Sonnenbichler
T-WIWI-102847	Recommender Systems	4,5 LP	Geyer-Schulz

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

- models, analyzes and optimizes the structure and dynamics of complex economic changes.
- designs and develops intelligent, adaptive or learning agents as essential elements of information services.
- knows the essential learning methods for this and can apply them (also on modern architectures) in a targeted manner.
- develops and implements personalized services, especially in the area of recommender systems.
- develops solutions in teams.

Prerequisites

None

Content

The Intelligent Architectures course addresses how to design modern agent-based systems. The focus here is on software architecture and design patterns relevant to learning systems. In addition, important machine learning methods that complete the intelligent system are discussed. Examples of systems presented include key-map architectures and genetic methods.

The impact of management decisions in complex systems is considered in Business Dynamics. Understanding, modeling, and simulating complex systems enables analysis, purposeful design, and optimization of markets, business processes, regulations, and entire enterprises.

Special problems of intelligent systems are covered in Personalization and Services and Recommendersystems. The content includes approaches and methods to design user-oriented services. The measurement and monitoring of service systems is discussed, the design of personalized offers is discussed and the generation of recommendations based on collected data from products and customers is shown. The importance of user modeling and recognition is addressed, as well as data security and privacy.

Recommendation

None

Annotation

The module replaces from summer semester 2021 M-WIWI-101470 "Data Science: Advanced CRM".

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

M 6.16 Module: Designing Interactive Information Systems [M-WIWI-104080]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	3

Mandatory			
T-WIWI-110851	Designing Interactive Systems	4,5 LP	Mädche
Election block: Supplementary Courses (at most 4,5 credits)			
T-WIWI-110877	Engineering Interactive Systems	4,5 LP	
T-WIWI-111109	KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics	4,5 LP	Weinhardt
T-WIWI-108437	Practical Seminar: Information Systems and Service Design	4,5 LP	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.

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   6.17 Module: Digitalization & Society [M-WIWI-DigSoc]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Society

Credits 9	Grading scale Grade to a tenth	Recurrence Each term	Duration 2 terms	Language German/English	Level 4	Version 1

Election block: Supplementary Courses (at most 9 credits)			
T-WIWI-110851	Designing Interactive Systems	4,5 LP	Mädche
T-GEISTSOZ-TBA1	Einführung in die praktische Philosophie	4,5 LP	N.N.
T-WIWI-109270	Human Factors in Security and Privacy	4,5 LP	Volkamer
T-WIWI-TBA2	Platform and Market Engineering	4,5 LP	Weinhardt
T-GEISTSOZ-TBA2	Soziologie der Digitalisierung	3 LP	
T-WIWI-TBA1	The Future of Work	4,5 LP	Nieken, Mädche, Weinhardt

Competence Certificate
The assessment is described for each course of this module. The overall grade of the module is formed from the ECTS-weighted grades of the partial examinations and truncated after the first decimal place.

Competence Goal
The student

- learns aspects of sociology and philosophy as they relate to aspects of digitization.
- understands humans as an influence/"disruptive" factor on security aspects in digitization.
- learns measures for user-friendly security, privacy protection, awareness and education training.
- learns the most important aspects of "future of work", from individual workplaces to teams, to workforces of large often distributed global companies. Incentive structures, collaboration platforms, and the coordination and integration of work in the home office.
- learns how to design digital platforms and markets in an engineering fashion; issues of network effects, mechanism design, and trust in these systems play a central role.
- learns how to apply artificial intelligence techniques to service systems for prediction, predictive maintenance, and optimization.

Prerequisites
None. Please check the individual courses for any prerequisites and recommendations.

Content
The module "Digitalization and Society" deals with individual and societal aspects of digitalization. The courses present various aspects of sociology, information security, workplace design, the design of digital platforms, and the application of artificial intelligence. The main topics covered vary depending on the course. In principle, all courses can be freely combined with each other.

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

M 6.18 Module: Digital Economics [M-WIWI-DigEcon]

Responsible: Prof. Dr. Clemens Puppe, Dr. Frank Rosar
Organisation: KIT Department of Economics and Management
Part of: Economics

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	4

Mandatory			
T-WIWI-[ADE]	Advanced Digital Economics	4,5 LP	Rosar
Election block: Supplementary Courses (between 4,5 and 5 credits)			
T-WIWI-102861	Advanced Game Theory	4,5 LP	Ehrhart, Puppe, Reiß
T-WIWI-102613	Auction Theory	4,5 LP	Ehrhart
T-WIWI-102840	Innovation Theory and Policy	4,5 LP	Ott
T-WIWI-102862	Predictive Mechanism and Market Design	4,5 LP	Reiß
T-WIWI-[SemDE]	Seminar in Digital Economics	4,5 LP	Szech
T-WIWI-102859	Social Choice Theory	4,5 LP	Puppe
T-WIWI-102713	Telecommunication and Internet Economics	4,5 LP	Mitusch

Competence Certificate
The module examination takes the form of partial examinations on the core course and other courses of the module totaling at least 9 ECTS. The course assessment is described for each course of this module. The overall grade of the module is formed from the ECTS weighted grades of the partial examinations and truncated after the first decimal place.

Competence Goal
The student

- has comprehensive knowledge of the substantive problems and economic issues raised by digitization, e.g. in the areas of game theory, mechanism design, in the analysis of networks, innovation, as well as internet economics,
- acquires comprehensive knowledge of advanced methods of economic modeling,
- validates, illustrates, and interprets models developed in economic research.

Prerequisites
The course "Advanced Digital Economics" is obligatory.

Content
The module offers a comprehensive portfolio of economic models and methods for analyzing a wide range of economic issues, especially in the context of digitalization.

Workload
The total workload for this module is approximately 270 hours. The exact distribution is made according to the credit points of the courses of the module.

M 6.19 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:	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	6

Election block: Compulsory Elective Courses (9 credits)		
T-WIWI-102872	Challenges in Supply Chain Management	4,5 LP	Mohr
T-WIWI-110280	Digital Services: Business Models and Transformation	4,5 LP	Satzger
T-WIWI-107043	Liberalised Power Markets	3 LP	Fichtner
T-WIWI-106200	Modeling and OR-Software: Advanced Topics	4,5 LP	Nickel
T-WIWI-106563	Practical Seminar Digital Service Systems	4,5 LP	Mädche, 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

- 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.

M   6.20 Module: Econometrics and Statistics I [M-WIWI-101638]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	4	5

Mandatory			
T-WIWI-111388	Applied Econometrics	4,5 LP	Schienle
Election block: Supplementary Courses (between 4,5 and 5 credits)			
T-WIWI-103064	Financial Econometrics	4,5 LP	Schienle
T-WIWI-103126	Non- and Semiparametrics	4,5 LP	Schienle
T-WIWI-103127	Panel Data	4,5 LP	Heller
T-WIWI-110868	Predictive Modeling	4,5 LP	Krüger
T-WIWI-111387	Probabilistic Time Series Forecasting Challenge	4,5 LP	Krüger
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 LP	Heller
T-WIWI-110939	Financial Econometrics II	4,5 LP	Schienle

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 6.21 Module: Economics & Management [M-WIWI-EconMan]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	1

Election block: Supplementary Courses (at most 9 credits)			
T-WIWI-102885	Advanced Management Accounting	4,5 LP	Wouters
T-WIWI-110851	Designing Interactive Systems	4,5 LP	Mädche
T-WIWI-107501	Energy Market Engineering	4,5 LP	Weinhardt
T-WIWI-105781	Incentives in Organizations	4,5 LP	Nieken
T-WIWI-111099	Judgement and Decision Making	4,5 LP	Scheibehenne
T-WIWI-107043	Liberalised Power Markets	3 LP	Fichtner
T-WIWI-107720	Market Research	4,5 LP	Klarmann
T-WIWI-107464	Smart Energy Infrastructure	3 LP	Ardone, Pustisek

Competence Certificate
The assessment is described for each course of this module. The overall grade of the module is formed from the ECTS-weighted grades of the partial examinations and truncated after the first decimal place.

Competence Goal
The student

- understands strategic and operational decisions in management.
- analyzes problems in companies and applies economic models and methods for their modeling and analysis.
- analyzes strategic and operational management decisions.
- applies empirical methods for the evaluation of management decisions.

Prerequisites
None. Please check the individual courses for any prerequisites and recommendations.

Content
The module "Economics and Management" deals with issues in the field of management. In the courses, various aspects of management are presented, analyzed and discussed. The focal points covered vary depending on the course. In principle, all courses can be freely combined with each other. Recommended combinations are:

- Incentives in Organizations & Advanced Management Accounting
- Market Research & Judgement and Decision Making
- Judgement and Decision Making & Incentives in Organizations
- Designing Interactive Systems & Incentives in Organizations
- Designing Interactive Systems & Judgement and Decision Making
- Liberalized Power Markets & Quantitative Methods in Energy Economics & Energy Market Engineering
- Liberalized Power Markets & Quantitative Methods in Energy Economics & (Smart) Energy Infrastructure

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

M   6.22 Module: Econometrics and Statistics II [M-WIWI-101639]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	4	4

Election block: Compulsory Elective Courses (between 9 and 10 credits)			
T-WIWI-103064	Financial Econometrics	4,5 LP	Schienle
T-WIWI-103124	Multivariate Statistical Methods	4,5 LP	Grothe
T-WIWI-103126	Non- and Semiparametrics	4,5 LP	Schienle
T-WIWI-103127	Panel Data	4,5 LP	Heller
T-WIWI-103128	Portfolio and Asset Liability Management	4,5 LP	Safarian
T-WIWI-110868	Predictive Modeling	4,5 LP	Krüger
T-WIWI-111387	Probabilistic Time Series Forecasting Challenge	4,5 LP	Krüger
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 LP	Heller
T-WIWI-103129	Stochastic Calculus and Finance	4,5 LP	Safarian
T-WIWI-110939	Financial Econometrics II	4,5 LP	Schienle

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.

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 6.23 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
Electives (Economics)

Credits 9	Grading scale Grade to a tenth	Recurrence Each term	Duration 1 term	Language German/English	Level 4	Version 4

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

M 6.24 Module: eEnergy: Markets, Services and Systems [M-WIWI-103720]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	4	1

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-107501	Energy Market Engineering	4,5 LP	Weinhardt
T-WIWI-107503	Energy Networks and Regulation	4,5 LP	Weinhardt
T-WIWI-107504	Smart Grid Applications	4,5 LP	Weinhardt
T-WIWI-109940	Special Topics in Information Systems	4,5 LP	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.

M 6.25 Module: Electives in Informatics [M-WIWI-101630]

Responsible: Michael Färber
Prof. Dr. Andreas Oberweis
Prof. Dr. Harald Sack
Prof. Dr. Ali Sunyaev
Prof. Dr. Melanie Volkamer
Prof. Dr.-Ing. Johann Marius Zöllner

Organisation: KIT Department of Economics and Management

Part of: Electives (Informatics)

Credits	Grading scale	Recurrence	Duration	Level	Version
9	Grade to a tenth	Each term	1 term	4	14

Election block: Compulsory Elective Area ()			
T-WIWI-110339	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	4,5 LP	Sunyaev
T-WIWI-102680	Computational Economics	4,5 LP	Shukla
T-WIWI-109248	Critical Information Infrastructures	4,5 LP	Sunyaev
T-WIWI-109246	Digital Health	4,5 LP	Sunyaev
T-WIWI-109270	Human Factors in Security and Privacy	4,5 LP	Volkamer
T-WIWI-102661	Database Systems and XML	4,5 LP	Oberweis
T-WIWI-110346	Supplement Enterprise Information Systems	4,5 LP	Oberweis
T-WIWI-110372	Supplement Software- and Systemsengineering	4,5 LP	Oberweis
T-WIWI-106423	Information Service Engineering	4,5 LP	Sack
T-WIWI-102666	Knowledge Discovery	4,5 LP	Färber
T-WIWI-102667	Management of IT-Projects	4,5 LP	Schätzle
T-WIWI-106340	Machine Learning 1 - Basic Methods	4,5 LP	Zöllner
T-WIWI-106341	Machine Learning 2 – Advanced Methods	4,5 LP	Zöllner
T-WIWI-102697	Business Process Modelling	4,5 LP	Oberweis
T-WIWI-102679	Nature-Inspired Optimization Methods	4,5 LP	Shukla
T-WIWI-109799	Process Mining	4,5 LP	Oberweis
T-WIWI-110848	Semantic Web Technologies	4,5 LP	Käfer
T-WIWI-102895	Software Quality Management	4,5 LP	Oberweis
T-WIWI-103112	Web Science	4,5 LP	Färber
Election block: Seminars and Advanced Labs ()			
T-WIWI-110144	Emerging Trends in Digital Health	4,5 LP	Sunyaev
T-WIWI-110143	Emerging Trends in Internet Technologies	4,5 LP	Sunyaev
T-WIWI-109249	Sociotechnical Information Systems Development	4,5 LP	Sunyaev
T-WIWI-111126	Advanced Lab Blockchain Hackathon (Master)	4,5 LP	Sunyaev
T-WIWI-111125	Advanced Lab Sociotechnical Information Systems Development (Master)	4,5 LP	Sunyaev
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 LP	Professorenschaft des Instituts AIFB
T-WIWI-108439	Advanced Lab Security, Usability and Society	4,5 LP	Volkamer
T-WIWI-109786	Advanced Lab Security	4,5 LP	Volkamer
T-WIWI-109985	Project Lab Cognitive Automobiles and Robots	4,5 LP	Zöllner
T-WIWI-109983	Project Lab Machine Learning	4,5 LP	Zöllner
T-WIWI-109251	Selected Issues in Critical Information Infrastructures	4,5 LP	Sunyaev

Competence Certificate

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

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

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

Competence Goal

The student

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

Prerequisites

None.

Content

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

Annotation

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

Workload

The total workload for this module is approximately 270 hours.

M   6.26 Module: Electronic Markets [M-WIWI-101409]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	6

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

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

M 6.27 Module: Emphasis in Informatics [M-WIWI-101628]

Responsible:	Michael Färber
	Prof. Dr. Andreas Oberweis
	Prof. Dr. Harald Sack
	Prof. Dr. Ali Sunyaev
	Prof. Dr. Melanie Volkamer
	Prof. Dr.-Ing. Johann Marius Zöllner
Organisation:	KIT Department of Economics and Management
Part of:	Electives (Informatics)

Credits	Grading scale	Recurrence	Duration	Level	Version
9	Grade to a tenth	Each term	1 term	4	14

Election block: Compulsory Elective Area (between 1 and 3 items)			
T-WIWI-110339	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	4,5 LP	Sunyaev
T-WIWI-102680	Computational Economics	4,5 LP	Shukla
T-WIWI-109248	Critical Information Infrastructures	4,5 LP	Sunyaev
T-WIWI-109246	Digital Health	4,5 LP	Sunyaev
T-WIWI-109270	Human Factors in Security and Privacy	4,5 LP	Volkamer
T-WIWI-102661	Database Systems and XML	4,5 LP	Oberweis
T-WIWI-110346	Supplement Enterprise Information Systems	4,5 LP	Oberweis
T-WIWI-110372	Supplement Software- and Systemsengineering	4,5 LP	Oberweis
T-WIWI-106423	Information Service Engineering	4,5 LP	Sack
T-WIWI-102666	Knowledge Discovery	4,5 LP	Färber
T-WIWI-102667	Management of IT-Projects	4,5 LP	Schätzle
T-WIWI-106340	Machine Learning 1 - Basic Methods	4,5 LP	Zöllner
T-WIWI-106341	Machine Learning 2 – Advanced Methods	4,5 LP	Zöllner
T-WIWI-102697	Business Process Modelling	4,5 LP	Oberweis
T-WIWI-102679	Nature-Inspired Optimization Methods	4,5 LP	Shukla
T-WIWI-109799	Process Mining	4,5 LP	Oberweis
T-WIWI-110848	Semantic Web Technologies	4,5 LP	Käfer
T-WIWI-102895	Software Quality Management	4,5 LP	Oberweis
T-WIWI-103112	Web Science	4,5 LP	Färber
Election block: Seminars and Advanced Labs ()			
T-WIWI-110144	Emerging Trends in Digital Health	4,5 LP	Sunyaev
T-WIWI-110143	Emerging Trends in Internet Technologies	4,5 LP	Sunyaev
T-WIWI-109249	Sociotechnical Information Systems Development	4,5 LP	Sunyaev
T-WIWI-111126	Advanced Lab Blockchain Hackathon (Master)	4,5 LP	Sunyaev
T-WIWI-111125	Advanced Lab Sociotechnical Information Systems Development (Master)	4,5 LP	Sunyaev
T-WIWI-110548	Advanced Lab Informatics (Master)	4,5 LP	Professorenschaft des Instituts AIFB
T-WIWI-108439	Advanced Lab Security, Usability and Society	4,5 LP	Volkamer
T-WIWI-109786	Advanced Lab Security	4,5 LP	Volkamer
T-WIWI-109985	Project Lab Cognitive Automobiles and Robots	4,5 LP	Zöllner
T-WIWI-109983	Project Lab Machine Learning	4,5 LP	Zöllner
T-WIWI-109251	Selected Issues in Critical Information Infrastructures	4,5 LP	Sunyaev

Competence Certificate

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

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

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

Competence Goal

The student

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

Prerequisites

None.

Content

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

Annotation

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

Workload

The total workload for this module is approximately 270 hours.

M 6.28 Module: Energy Economics and Energy Markets [M-WIWI-101451]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: Methods
                    Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	7

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

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.

Workload

The total workload for this module is approximately 270 hours.

M 6.29 Module: Energy Economics and Technology [M-WIWI-101452]

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	4

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

M 6.30 Module: Entrepreneurship (EnTechnon) [M-WIWI-101488]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	11

Election block: Mandatory part (1 item)			
T-WIWI-102864	Entrepreneurship	3 LP	Terzidis
Election block: Compulsory Elective Courses (between 1 and 2 items)			
T-WIWI-102866	Design Thinking	3 LP	Terzidis
T-WIWI-102833	Entrepreneurial Leadership & Innovation Management	3 LP	Terzidis
T-WIWI-102865	Business Planning	3 LP	Terzidis
T-WIWI-110374	Firm creation in IT security	3 LP	Terzidis
T-WIWI-110985	International Business Development and Sales	6 LP	Casenave , Klarmann, Terzidis
T-WIWI-109064	Joint Entrepreneurship Summer School	6 LP	Terzidis
T-WIWI-111561	Startup Experience	6 LP	Terzidis
Election block: Supplementary Courses (between 0 and 1 items)			
T-WIWI-102894	Entrepreneurship Research	3 LP	Terzidis
T-WIWI-102852	Case Studies Seminar: Innovation Management	3 LP	Weissenberger-Eibl
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 LP	Weinhardt
T-WIWI-102893	Innovation Management: Concepts, Strategies and Methods	3 LP	Weissenberger-Eibl
T-WIWI-102612	Managing New Technologies	3 LP	Reiß
T-WIWI-102853	Roadmapping	3 LP	Koch

Competence Certificate
See German version.

Competence Goal
Students are familiar with the basics and contents of entrepreneurship and ideally are able to start a company during or after their studies. The courses are therefore structured sequentially in modules, although in principle they can also be attended in parallel. In this way, the skills are taught to generate business ideas, to develop inventions into innovations, to write business plans for start-ups and to successfully establish a company. In the lecture, the basics of entrepreneurship will be developed, in the seminars, individual contents will be deepened. The overall learning objective is to enable students to develop and implement business ideas.

Prerequisites
None

Content
The lectures form the basis of the module and give an overview of the overall topic. The seminars deepen the phases of the foundation processes, in particular the identification of opportunities, the development of a value proposition (especially based on inventions and technical innovations), the design of a business model, business planning, the management of a start-up, the implementation of a vision as well as the acquisition on resources and the handling of risks. The lecture Entrepreneurship provides an overarching and connecting framework for this.

Recommendation
None

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

M 6.31 Module: Environmental Economics [M-WIWI-101468]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	4	2

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-102650	Energy and Environment	4,5 LP	Karl
T-WIWI-100007	Transport Economics	4,5 LP	Mitusch, Szimba
T-WIWI-102615	Environmental Economics and Sustainability	3 LP	Walz
T-WIWI-102616	Environmental and Resource Policy	4 LP	Walz
T-BGU-111102	Environmental Law	3 LP	

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.

M 6.32 Module: Experimental Economics [M-WIWI-101505]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	5

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

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.

M 6.33 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:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	1

Election block: Compulsory Elective Courses (9 credits)		
T-WIWI-102643	Derivatives	4,5 LP	Uhrig-Homburg
T-WIWI-102621	Valuation	4,5 LP	Ruckes
T-WIWI-102647	Asset Pricing	4,5 LP	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.

M 6.34 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: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	6

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-110513	Advanced Empirical Asset Pricing	4,5 LP	Thimme
T-WIWI-102647	Asset Pricing	4,5 LP	Ruckes, Uhrig-Homburg
T-WIWI-108880	Blockchains & Cryptofinance	4,5 LP	Schuster, Uhrig-Homburg
T-WIWI-110995	Bond Markets	4,5 LP	Uhrig-Homburg
T-WIWI-110997	Bond Markets - Models & Derivatives	3 LP	Uhrig-Homburg
T-WIWI-110996	Bond Markets - Tools & Applications	1,5 LP	Uhrig-Homburg
T-WIWI-102622	Corporate Financial Policy	4,5 LP	Ruckes
T-WIWI-109050	Corporate Risk Management	4,5 LP	Ruckes
T-WIWI-102643	Derivatives	4,5 LP	Uhrig-Homburg
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 LP	Weinhardt
T-WIWI-102644	Fixed Income Securities	4,5 LP	Uhrig-Homburg
T-WIWI-102900	Financial Analysis	4,5 LP	Luedecke
T-WIWI-102623	Financial Intermediation	4,5 LP	Ruckes
T-WIWI-102626	Business Strategies of Banks	3 LP	Müller
T-WIWI-102646	International Finance	3 LP	Uhrig-Homburg
T-WIWI-102645	Credit Risk	4,5 LP	Uhrig-Homburg
T-WIWI-110511	Strategic Finance and Technoloy Change	1,5 LP	Ruckes
T-WIWI-102621	Valuation	4,5 LP	Ruckes
T-WIWI-110933	Web App Programming for Finance	4,5 LP	Thimme

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.

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.

6.35 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: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	6

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-110513	Advanced Empirical Asset Pricing	4,5 LP	Thimme
T-WIWI-102647	Asset Pricing	4,5 LP	Ruckes, Uhrig-Homburg
T-WIWI-108880	Blockchains & Cryptofinance	4,5 LP	Schuster, Uhrig-Homburg
T-WIWI-110995	Bond Markets	4,5 LP	Uhrig-Homburg
T-WIWI-110997	Bond Markets - Models & Derivatives	3 LP	Uhrig-Homburg
T-WIWI-110996	Bond Markets - Tools & Applications	1,5 LP	Uhrig-Homburg
T-WIWI-102622	Corporate Financial Policy	4,5 LP	Ruckes
T-WIWI-109050	Corporate Risk Management	4,5 LP	Ruckes
T-WIWI-102643	Derivatives	4,5 LP	Uhrig-Homburg
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 LP	Weinhardt
T-WIWI-102644	Fixed Income Securities	4,5 LP	Uhrig-Homburg
T-WIWI-102900	Financial Analysis	4,5 LP	Luedecke
T-WIWI-102623	Financial Intermediation	4,5 LP	Ruckes
T-WIWI-102626	Business Strategies of Banks	3 LP	Müller
T-WIWI-102646	International Finance	3 LP	Uhrig-Homburg
T-WIWI-102645	Credit Risk	4,5 LP	Uhrig-Homburg
T-WIWI-110511	Strategic Finance and Technoloy Change	1,5 LP	Ruckes
T-WIWI-102621	Valuation	4,5 LP	Ruckes
T-WIWI-110933	Web App Programming for Finance	4,5 LP	Thimme

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.

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.

M 6.36 Module: Growth and Agglomeration [M-WIWI-101496]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	4

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-109194	Dynamic Macroeconomics	4,5 LP	Brumm
T-WIWI-103107	Spatial Economics	4,5 LP	Ott
T-WIWI-111318	Growth and Development	4,5 LP	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.

M 6.37 Module: Industrial Production II [M-WIWI-101471]

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: Methods
Electives (Business Administration)

Credits 9	**Grading scale** Grade to a tenth	**Recurrence** Each winter term	**Duration** 1 term	**Language** German/English	**Level** 4	**Version** 2

Mandatory			
T-WIWI-102631	Planning and Management of Industrial Plants	5,5 LP	Schultmann
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102763	Supply Chain Management with Advanced Planning Systems	3,5 LP	Bosch, Göbelt
T-WIWI-102826	Risk Management in Industrial Supply Networks	3,5 LP	Schultmann, Wiens
T-WIWI-102828	Supply Chain Management in the Automotive Industry	3,5 LP	Heupel, Lang
T-WIWI-103134	Project Management	3,5 LP	Schultmann
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102634	Emissions into the Environment	3,5 LP	Karl
T-WIWI-102882	International Management in Engineering and Production	3,5 LP	Sasse
T-WIWI-110512	Life Cycle Assessment	3,5 LP	Schultmann

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

Responsible:	Prof. Dr. Frank Schultmann
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each summer term	1 term	German/English	4	2

Mandatory			
T-WIWI-102632	Production and Logistics Management	5,5 LP	Glöser-Chahoud, Schultmann
Election block: Supplementary Courses from Module Industrial Production II (at most 1 item)			
T-WIWI-102634	Emissions into the Environment	3,5 LP	Karl
T-WIWI-102882	International Management in Engineering and Production	3,5 LP	Sasse
T-WIWI-110512	Life Cycle Assessment	3,5 LP	Schultmann
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102763	Supply Chain Management with Advanced Planning Systems	3,5 LP	Bosch, Göbelt
T-WIWI-102826	Risk Management in Industrial Supply Networks	3,5 LP	Schultmann, Wiens
T-WIWI-102828	Supply Chain Management in the Automotive Industry	3,5 LP	Heupel, Lang
T-WIWI-103134	Project Management	3,5 LP	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 6.39 Module: Informatics and Machine Learning [M-WIWI-InfoML]

Responsible: Professorenschaft des Instituts AIFB
Organisation: KIT Department of Economics and Management
Part of: Methods

Credits	Grading scale	Recurrence	Duration	Level	Language	Version
9	Grade to a tenth	Each term	2 term	4	German/English	1

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102661	Database Systems and XML	4,5 LP	Oberweis
T-WIWI-106423	Information Service Engineering	4,5 LP	Sack
T-WIWI-102666	Knowledge Discovery	4,5 LP	Färber
T-WIWI-106340	Machine Learning 1 - Basic Methods	4,5 LP	Zöller
T-WIWI-106341	Machine Learning 2 – Advanced Methods	4,5 LP	Zöllner
T-WIWI-109799	Process Mining	4,5 LP	Oberweis
T-WIWI-110848	Semantic Web Technologies	4,5 LP	Käfer

Competence Certificate

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

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

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

Competence Goal

The student

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

Content

The thematic focus will be based on the choice of courses in the areas of Applied Technical Cognitive Systems, Business Information Systems, Information Service Engineering or Web Science.

Workload

The total workload for this module is approximately 270 hours. The total number of hours per course is calculated from the time required to attend the lectures and exercises, as well as the examination times and the time required for an average student to achieve the learning objectives of the module.

M 6.40 Module: Information Engineering [M-WIWI-101411]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Level	Version
9	Grade to a tenth	Each term	1 term	4	7

Election block: Supplementary Courses ()			
T-WIWI-107501	Energy Market Engineering	4,5 LP	Weinhardt
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 LP	Weinhardt
T-WIWI-109940	Special Topics in Information Systems	4,5 LP	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

The student

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

Content

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

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.

M   6.41 Module: Information Systems in Organizations [M-WIWI-104068]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: Methods
                   Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	4

Election block: Compulsory Elective Courses (at least 9 credits)		
T-WIWI-105777	Business Intelligence Systems	4,5 LP	Mädche, Nadj, Toreini
T-WIWI-110851	Designing Interactive Systems	4,5 LP	Mädche
T-WIWI-108437	Practical Seminar: Information Systems and Service Design	4,5 LP	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 6.42 Module: Innovation and Growth [M-WIWI-101478]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	4

Election block: Compulsory Elective Courses (between 9 and 10 credits)			
T-WIWI-109194	Dynamic Macroeconomics	4,5 LP	Brumm
T-WIWI-102840	Innovation Theory and Policy	4,5 LP	Ott
T-WIWI-111318	Growth and Development	4,5 LP	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   6.43 Module: Innovation Economics [M-WIWI-101514]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	2

Election block: Compulsory Elective Courses (between 9 and 10 credits)		
T-WIWI-102840	Innovation Theory and Policy	4,5 LP	Ott
T-WIWI-102906	Methods in Economic Dynamics	1,5 LP	Ott
T-WIWI-109864	Product and Innovation Management	3 LP	Klarmann
T-WIWI-102789	Seminar in Economic Policy	3 LP	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.

M 6.44 Module: Innovation Management [M-WIWI-101507]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	7

Mandatory			
T-WIWI-102893	Innovation Management: Concepts, Strategies and Methods	3 LP	Weissenberger-Eibl
Election block: Compulsory Elective Courses (1 item)			
T-WIWI-102873	Current Issues in Innovation Management	3 LP	Weissenberger-Eibl
T-WIWI-110867	The negotiation of open innovation	3 LP	Beyer
T-WIWI-108875	Digital Transformation and Business Models	3 LP	Koch
T-WIWI-102852	Case Studies Seminar: Innovation Management	3 LP	Weissenberger-Eibl
T-WIWI-108774	Analyzing and Evaluating Innovation Processes	3 LP	Beyer
T-WIWI-110234	Innovation Processes Live	3 LP	Beyer
T-WIWI-110263	Methods in Innovation Management	3 LP	Koch
T-WIWI-102853	Roadmapping	3 LP	Koch
T-WIWI-110987	Seminar Methods along the Innovation process	3 LP	Beyer
T-WIWI-110986	Strategic Foresight China	3 LP	Weissenberger-Eibl
T-WIWI-109932	A Closer Look at Social Innovation	3 LP	Beyer
T-WIWI-102858	Technology Assessment	3 LP	Koch
T-WIWI-102854	Technologies for Innovation Management	3 LP	Koch
Election block: Supplementary Courses (1 item)			
T-WIWI-102873	Current Issues in Innovation Management	3 LP	Weissenberger-Eibl
T-WIWI-102866	Design Thinking	3 LP	Terzidis
T-WIWI-110867	The negotiation of open innovation	3 LP	Beyer
T-WIWI-108875	Digital Transformation and Business Models	3 LP	Koch
T-WIWI-102833	Entrepreneurial Leadership & Innovation Management	3 LP	Terzidis
T-WIWI-102864	Entrepreneurship	3 LP	Terzidis
T-WIWI-102852	Case Studies Seminar: Innovation Management	3 LP	Weissenberger-Eibl
T-WIWI-108774	Analyzing and Evaluating Innovation Processes	3 LP	Beyer
T-WIWI-110234	Innovation Processes Live	3 LP	Beyer
T-WIWI-110263	Methods in Innovation Management	3 LP	Koch
T-WIWI-102853	Roadmapping	3 LP	Koch
T-WIWI-110987	Seminar Methods along the Innovation process	3 LP	Beyer
T-WIWI-110986	Strategic Foresight China	3 LP	Weissenberger-Eibl
T-WIWI-109932	A Closer Look at Social Innovation	3 LP	Beyer
T-WIWI-102854	Technologies for Innovation Management	3 LP	Koch
T-WIWI-102858	Technology Assessment	3 LP	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.

M   6.45 Module: Intellectual Property Law [M-INFO-101215]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	4

Election block: Intellectual Property Law (at least 1 item as well as at least 9 credits)			
T-INFO-101308	Copyright	3 LP	Dreier
T-INFO-101313	Trademark and Unfair Competition Law	3 LP	Matz
T-INFO-101307	Internet Law	3 LP	Dreier
T-INFO-108462	Selected Legal Issues of Internet Law	3 LP	Dreier
T-INFO-111403	Seminar: Patent Law	3 LP	Dammler

Prerequisites
None

M 6.46 Module: Management Accounting [M-WIWI-101498]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	English	4	2

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

M 6.47 Module: Market Engineering [M-WIWI-101446]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	7

Mandatory			
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 LP	Weinhardt
Election block: Supplementary Courses (4,5 credits)			
T-WIWI-102613	Auction Theory	4,5 LP	Ehrhart
T-WIWI-108880	Blockchains & Cryptofinance	4,5 LP	Schuster, Uhrig-Homburg
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 LP	Weinhardt
T-WIWI-107501	Energy Market Engineering	4,5 LP	Weinhardt
T-WIWI-107503	Energy Networks and Regulation	4,5 LP	Weinhardt
T-WIWI-102614	Experimental Economics	4,5 LP	Weinhardt
T-WIWI-111109	KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics	4,5 LP	Weinhardt
T-WIWI-107504	Smart Grid Applications	4,5 LP	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.

M 6.48 Module: Marketing and Sales Management [M-WIWI-105312]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	Methods
	Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each summer term	1 term	German/English	4	5

Election block: Compulsory Elective Courses (at least 1 item)			
T-WIWI-111099	Judgment and Decision Making	4,5 LP	Scheibehenne
T-WIWI-107720	Market Research	4,5 LP	Klarmann
T-WIWI-109864	Product and Innovation Management	3 LP	Klarmann
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-106981	Digital Marketing and Sales in B2B	1,5 LP	Klarmann, Konhäuser
T-WIWI-110985	International Business Development and Sales	6 LP	Casenave , Klarmann, Terzidis
T-WIWI-102835	Marketing Strategy Business Game	1,5 LP	Klarmann
T-WIWI-102891	Price Negotiation and Sales Presentations	1,5 LP	Klarmann, Schröder
T-WIWI-111246	Pricing Excellence	1,5 LP	Bill, 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.

Annotation

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

Workload

The total workload for this module is approximately 270 hours.

M | 6.49 Module: Mathematical Programming [M-WIWI-101473]

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

Credits	**Grading scale**	**Recurrence**	**Duration**	**Language**	**Level**	**Version**
9	Grade to a tenth	Each term	1 term	German/English	4	7

Election block: Compulsory Elective Courses (at most 2 items)			
T-WIWI-102719	Mixed Integer Programming I	4,5 LP	Stein
T-WIWI-102726	Global Optimization I	4,5 LP	Stein
T-WIWI-103638	Global Optimization I and II	9 LP	Stein
T-WIWI-102856	Convex Analysis	4,5 LP	Stein
T-WIWI-111587	Multicriteria Optimization	4,5 LP	Stein
T-WIWI-102724	Nonlinear Optimization I	4,5 LP	Stein
T-WIWI-103637	Nonlinear Optimization I and II	9 LP	Stein
T-WIWI-102855	Parametric Optimization	4,5 LP	Stein
Election block: Supplementary Courses (at most 2 items)			
T-WIWI-106548	Advanced Stochastic Optimization	4,5 LP	Rebennack
T-WIWI-102720	Mixed Integer Programming II	4,5 LP	Stein
T-WIWI-102727	Global Optimization II	4,5 LP	Stein
T-WIWI-102723	Graph Theory and Advanced Location Models	4,5 LP	Nickel
T-WIWI-106549	Large-scale Optimization	4,5 LP	Rebennack
T-WIWI-111247	Mathematics for High Dimensional Statistics	4,5 LP	Grothe
T-WIWI-103124	Multivariate Statistical Methods	4,5 LP	Grothe
T-WIWI-102725	Nonlinear Optimization II	4,5 LP	Stein
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 LP	Nickel
T-WIWI-110162	Optimization Models and Applications	4,5 LP	Sudermann-Merx

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

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

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

Content

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

Annotation

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

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.

M   6.50 Module: Microeconomic Theory [M-WIWI-101500]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	3

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 LP	Mitusch
T-WIWI-102861	Advanced Game Theory	4,5 LP	Ehrhart, Puppe, Reiß
T-WIWI-102859	Social Choice Theory	4,5 LP	Puppe
T-WIWI-102613	Auction Theory	4,5 LP	Ehrhart
T-WIWI-105781	Incentives in Organizations	4,5 LP	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.

M 6.51 Module: Master Thesis [M-WIWI-101659]

Responsible: Studiendekan der KIT-Fakultät für Informatik, Dean of Students of the KIT study program
Organisation: KIT Department of Economics and Management
Part of: Master Thesis

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
30	Grade to a tenth	Each term	1 term	German	4	1

Mandatory			
T-WIWI-103142	Master Thesis	30 LP	Studiendekan der KIT-Fakultät für Informatik, Dean of Students of the KIT study program

Competence Certificate

The master's thesis is a written piece of work that demonstrates that the student is able to work scientifically on a problem from his or her subject scientific approach to a problem in his or her field of study. The performance is evaluated by at least two KIT examiners. At least one of the examiners must be a professor and usually an examiner at the the Faculty of Economics. The regular processing time is six months. The module grade is the grade for the Master's thesis.

Competence Goal

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

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

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

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

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

Content

The topic of the master's thesis can be proposed by the student. In terms of subject matter and content, it is assigned to economics and/or engineering sciences and covers subject-specific or interdisciplinary current issues and topics.

Workload

The total workload for this module is approximately 900 hours.

M 6.52 Module: Network Economics [M-WIWI-101406]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	2

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

M 6.53 Module: Operations Research in Supply Chain Management [M-WIWI-102832]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	7

Election block: Compulsory Elective Courses (at most 2 items)			
T-WIWI-102723	Graph Theory and Advanced Location Models	4,5 LP	Nickel
T-WIWI-106200	Modeling and OR-Software: Advanced Topics	4,5 LP	Nickel
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 LP	Nickel
Election block: Supplementary Courses (at most 2 items)			
T-WIWI-106546	Introduction to Stochastic Optimization	4,5 LP	Rebennack
T-WIWI-102718	Discrete-Event Simulation in Production and Logistics	4,5 LP	Nickel
T-WIWI-102719	Mixed Integer Programming I	4,5 LP	Stein
T-WIWI-102720	Mixed Integer Programming II	4,5 LP	Stein
T-WIWI-110162	Optimization Models and Applications	4,5 LP	Sudermann-Merx
T-WIWI-106549	Large-scale Optimization	4,5 LP	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

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

Prerequisites

At least one of the courses "Operations Research in Supply Chain Management", "Graph Theory and Advanced Location Models", "Modeling and OR-Software: Advanced Topics" and"Special Topics of Stochastic Optimization (elective)" has to be taken.
Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

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 to Operations Research* 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   6.54 Module: Private Business Law [M-INFO-101216]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	5

Election block: Private Business Law (at least 1 item as well as at least 9 credits)			
T-INFO-111405	Seminar: Commercial and Corporate Law in the IT Industry	3 LP	Dreier, Nolte
T-INFO-101288	Corporate Compliance	3 LP	Herzig
T-INFO-102036	Computer Contract Law	3 LP	Bartsch
T-INFO-111436	Employment Law	3 LP	Hoff
T-INFO-111437	Tax Law	3 LP	Dietrich

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	5

Election block: Public Business Law (at least 1 item as well as at least 9 credits)		
T-INFO-101309	Telecommunications Law	3 LP	Hermstrüwer
T-INFO-101312	European and International Law	3 LP	Brühann
T-INFO-111404	Seminar: IT- Security Law	3 LP	Schallbruch
T-INFO-111406	Data Protection Law	3 LP	Eichenhofer

Competence Certificate
see course description.

M   6.56 Module: Seminar Module [M-WIWI-101808]

Responsible: Dean of Students of the KIT study program
Organisation: KIT Department of Economics and Management
Part of: Electives (mandatory)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	1

Election block: 2 Seminars			
T-WIWI-103474	Seminar in Business Administration A (Master)	4.5 LP	Professors of the subject Business Administration
T-WIWI-103476	Seminar in Business Administration B (Master)	4.5 LP	Professors of the subject Business Administration
T-WIWI-103477	Seminar in Economics B (Master)	4.5 LP	Professors of the subject Economics
T-WIWI-103478	Seminar in Economics A (Master)	4.5 LP	Professors of the subject Economics
T-WIWI-103479	Seminar in Informatics A (Master)	4.5 LP	Professors of the subject Informatics
T-WIWI-103480	Seminar in Informatics B (Master)	4.5 LP	Professors of the subject Informatics
T-WIWI-103481	Seminar in Operations Research A (Master)	4.5 LP	Nickel, Rebennack, Stein
T-WIWI-103482	Seminar in Operations Research B (Master)	4.5 LP	Nickel, Rebennack, Stein
T-WIWI-103483	Seminar in Statistics A (Master)	4.5 LP	Grothe, Schienle
T-WIWI-103484	Seminar in Statistics B (Master)	4.5 LP	Grothe, Schienle
T-INFO-101997	Seminar: Legal Studies I	4.5 LP	Dreier
T-INFO-105945	Seminar: Legal Studies II	4.5 LP	Dreier

Competence Certificate

The modul examination consists of three seminars. A detailed description of every singled assessment is given in the specific course characerization.

The final mark for the module is the average of the marks for each of the three seminars weighted by the credits and truncated after the first decimal.

Competence Goal

- The students are in a position to independently handle current, research-based tasks according to scientific criteria.
- They are able to research, analyze, abstract and critically review the information.
- They can draw own conclusions using their interdisciplinary knowledge from the less structured information and selectively develop current research results.
- They can logically and systematically present the obtained results both orally and in written form in accordance with scientific guidelines (structuring, technical terminology, referencing). They can argue and defend the results professionally in the discussion.
- Students are familiar with the DFG´s Code of Conduct "Guidelines for Safeguarding Good Research Practice" and base their scientific work on it.

Prerequisites

The course specific preconditions must be observed. Three seminars out of the course list, that have at least 3 CP each and are offered by a representative of the Department of Economics and Management or of the Center for applied legal studies (Department of Informatics), have to be chosen

Content

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

Beside advancing skills in techniques of scientific working there are gained integrative key qualifications as well.

Annotation

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

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

Workload

he total workload for this module is approximately 270 hours.

M 6.57 Module: Service Analytics [M-WIWI-101506]

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

Organisation: KIT Department of Economics and Management

Part of: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	7

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-108715	Artificial Intelligence in Service Systems	4,5 LP	Satzger
T-WIWI-111219	Artificial Intelligence in Service Systems - Applications in Computer Vision	4,5 LP	Satzger
T-WIWI-105777	Business Intelligence Systems	4,5 LP	Mädche, Nadj, Toreini
T-WIWI-102899	Modeling and Analyzing Consumer Behavior with R	4,5 LP	Dorner, Weinhardt
T-WIWI-109940	Special Topics in Information Systems	4,5 LP	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 course Service Analytics A [2595501] should be taken.

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.

M   6.58 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: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each winter term	2 terms	English	4	1

Mandatory		
T-WIWI-102849	Service Design Thinking	12 LP	Satzger

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 6.59 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: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	4

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-110280	Digital Services: Business Models and Transformation	4,5 LP	Satzger
T-WIWI-102640	Market Engineering: Information in Institutions	4,5 LP	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 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.

M 6.60 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: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	4	3

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-110877	Engineering Interactive Systems	4,5 LP	
T-WIWI-102639	Business Models in the Internet: Planning and Implementation	4,5 LP	Weinhardt
T-WIWI-110887	Practical Seminar: Service Innovation	4,5 LP	Satzger
T-WIWI-108437	Practical Seminar: Information Systems and Service Design	4,5 LP	Mädche
T-WIWI-102641	Service Innovation	4,5 LP	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.

M 6.61 Module: Service Management [M-WIWI-101448]

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

Organisation: KIT Department of Economics and Management

Part of: Methods
Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	7

Mandatory			
T-WIWI-110280	Digital Services: Business Models and Transformation	4,5 LP	Satzger
Election block: Supplementary Courses (4,5 credits)			
T-WIWI-108715	Artificial Intelligence in Service Systems	4,5 LP	Satzger
T-WIWI-111219	Artificial Intelligence in Service Systems - Applications in Computer Vision	4,5 LP	Satzger
T-WIWI-102899	Modeling and Analyzing Consumer Behavior with R	4,5 LP	Dorner, Weinhardt
T-WIWI-102641	Service Innovation	4,5 LP	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 "Digital Services: Business Models and Transformation" 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.

M 6.62 Module: Service Operations [M-WIWI-102805]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	4	6

Election block: Compulsory Elective Courses (at most 2 items)			
T-WIWI-102718	Discrete-Event Simulation in Production and Logistics	4,5 LP	Nickel
T-WIWI-102884	Operations Research in Health Care Management	4,5 LP	Nickel
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 LP	Nickel
T-WIWI-102716	Practical Seminar: Health Care Management (with Case Studies)	4,5 LP	Nickel
Election block: Supplementary Courses (at most 2 items)			
T-WIWI-102872	Challenges in Supply Chain Management	4,5 LP	Mohr
T-WIWI-110971	Demand-Driven Supply Chain Planning	4,5 LP	Packowski

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

Competence Goal
Students

- knows the theoretical bases and the key components of Business Intelligence systems,

- acquires the basic skills to make use of business intelligence and analytics software in the service context

- are introduced into various application scenarios of analytics in the service context

- are able to distinguish different analytics methods and apply them in context

- learn how to apply analytics software in the service context

- are trained for the structured compilation and solution of practice relevant problems with the help of commercial business intelligence software packages as well as analytics methods and tools

Prerequisites
At least one of the fourcourses Operations Research in Supply Chain Management, Operations Research in Health Care Management, Practical seminar: Health Care Management orDiscrete-Event Simulation in Production and Logistics has to be assigned.
Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

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

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

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

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

Workload

The total workload for this module is approximately 270 hours.

M   6.63 Module: Sociology [M-GEISTSOZ-101169]

Responsible:	Prof. Dr. Gerd Nollmann
Organisation:	KIT Department of Humanities and Social Sciences
Part of:	Electives (Law and Sociology)

Credits	Grading scale	Recurrence	Duration	Level	Version
9	Grade to a tenth	Each term	2 terms	4	2

Mandatory			
T-GEISTSOZ-104565	Computer Aided Data Analysis	0 LP	Nollmann
T-GEISTSOZ-109052	Application of Social Science Methods (WiWi)	9 LP	Nollmann

Competence Goal

The student

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

Prerequisites

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

Content

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

Annotation

Basic knowledge in multivariate regression and inference statistics is required.

M 6.64 Module: Statistics & Econometrics [M-WIWI-StatEcon]

Responsible: Prof. Dr. F. Krüger
Organisation: KIT Department of Economics and Management
Part of: Methods

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	1

Mandatory			
T-WIWI-111388	Applied Econometrics	4,5 LP	Schienle
Election block: Supplementary Courses (between 4,5 and 5 credits)			
T-WIWI-103064	Financial Econometrics	4,5 LP	Schienle
T-WIWI-111247	Mathematics for High Dimensional Statistics	4,5 LP	Grothe
T-WIWI-103124	Multivariate Statistical Methods	4,5 LP	Grothe
T-WIWI-103126	Non- and Semiparametrics	4,5 LP	Schienle
T-WIWI-103127	Panel Data	4,5 LP	Heller
T-WIWI-110868	Predictive Modeling	4,5 LP	Krüger
T-WIWI-111387	Probabilistic Time Series Forecasting Challenge	4,5 LP	Krüger
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 LP	Heller
T-WIWI-110939	Financial Econometrics II	4,5 LP	Schienle

Competence Certificate

The assessment is carried out as partial examinations on the compulsory course and further courses of the module amounting to a total of 9 credits. 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 advanced econometric and statistical methods for various types of data and research questions
- is able to apply these methods, to implement them via statistical software and to interpret the results competently.

Content

The module offers a comprehensive portfolio of econometric and statistical methods for various types of data (e.g. cross section or time series, univariate or multivariate) and research questions (e.g. forecasting, parameter estimation and hypothesis testing, dimensionality reduction).

Workload

The total workload for this module is approximately 270 hours.

M　6.65 Module: Stochastic Optimization [M-WIWI-103289]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	4	10

Election block: Compulsory Elective Courses (between 1 and 2 items)		
T-WIWI-106546	Introduction to Stochastic Optimization	4,5 LP	Rebennack
T-WIWI-106548	Advanced Stochastic Optimization	4,5 LP	Rebennack
T-WIWI-106549	Large-scale Optimization	4,5 LP	Rebennack

Election block: Supplementary Courses (at most 1 item)		
T-WIWI-102723	Graph Theory and Advanced Location Models	4,5 LP	Nickel
T-WIWI-102719	Mixed Integer Programming I	4,5 LP	Stein
T-WIWI-102720	Mixed Integer Programming II	4,5 LP	Stein
T-WIWI-111247	Mathematics for High Dimensional Statistics	4,5 LP	Grothe
T-WIWI-103124	Multivariate Statistical Methods	4,5 LP	Grothe
T-WIWI-102715	Operations Research in Supply Chain Management	4,5 LP	Nickel
T-WIWI-106545	Optimization Under Uncertainty	4,5 LP	Rebennack
T-WIWI-110162	Optimization Models and Applications	4,5 LP	Sudermann-Merx

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

At least one of the courses "Advanced Stochastic Optimization", "Large-scale Optimization" or "Introduction to Stochastic Optimization" has to be taken.
Students who choose the module in the field "compulsory elective modules" may select any two courses of the module.

Content

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

Recommendation

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

Annotation

The course "Introduction to Stochastic Optimization" will be offered until the winter semester 2020/21 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 6.66 Module: Student Innovation Lab (SIL) 1 [M-WIWI-105010]

Responsible: Prof. Dr.-Ing. Sören Hohmann
                    Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: Methods
                    Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each winter term	2 terms	English	4	1

Mandatory			
T-WIWI-102864	Entrepreneurship	3 LP	Terzidis
T-WIWI-110166	SIL Entrepreneurship Project	3 LP	Terzidis
T-WIWI-110287	SIL Entrepreneurship Emphasis	3 LP	Terzidis

Competence Certificate

The assessment of this module comprises a written examination of 60 minutes on the lecture contents of the lecture "Entrepreneurship" as well as two seminars. All examinations are graded. In both seminars the following tasks have to be fulfilled:

- "SIL Entrepreneurship Project": Presentation of the Value Profile & submission of the Business Plan
- "SIL Entrepreneurship Emphasis": Submission of price calculation, market potential analysis, competition analysis, financial plan, risk analysis, decision basis for funding and legal form

In addition, both courses provide for smaller, ungraded tasks to monitor progress.

The grade consists of 60 % of the written examination, 20 % of the examination "SIL Entrepreneurship Project" and 20 % of the examination "SIL Entrepreneurship Advanced".

Competence Goal
Personal competence

- Ability to reflect: Students can analyse certain elements of their actions in social interaction, critically assess them and develop alternative actions.
- Decision-making ability: Students can prepare a decision template in due time and provide the necessary factual arguments for alternative decisions and thus make timely decisions.
- Interdisciplinary cooperation: Students can recognise the limits of their domain competence and adjust to domains outside their subject area. The students are able to recognise missing (own) competences and to supplement them with complementary competences (of other persons in the team). Students can communicate their domain to others and develop a basic understanding of foreign domains.
- Value-based action: Students can use selected tools of psychology to recognize their own values. They can compare these values with other team members and critically reflect on whether their offers match these values.

Social competence

- Ability to cooperate: Students can analyse and assess their cooperation behaviour in the group.
  Communication skills: Students can present their information in a convincing, focused and target group-oriented way.
- Conflict ability: Students can recognise conflicts at an early stage, analyse conflict situations and name solution concepts.

Innovation and Entrepreneurship Competence

- Agile product development: Students can apply methods of agile product development such as Scrum.
  Methodical innovation finding: Students can perform user- or technology-centric innovation processes to develop sustainable value propositions for dedicated target groups (e.g. Design Thinking (DT), Technology Application Selection (TAS) process).
- Orientation on the management of new technology-based companies (NTBF): Students can name the central concepts of intellectual property and legal form. Students can name the most important tasks of entrepreneurial leadership. They can identify the relevant forms of business modelling and draw up a business plan. Students know the central approaches to building an organisation. Students will be able to identify the ownership structure of investments and how to develop a strategy. The students can name marketing concepts and create a business model.
- Create investment readiness: The students are able to create a rudimentary sales and cost planning. Furthermore, they are able to create a project plan for a company and derive an investment plan from it. The students can present the business plan to potential investors and develop investor empathy.
- Business model development competence: Students are able to use relevant tools for business modelling, e.g. the Business Model Canvas. Students can develop and evaluate alternative business models.
- Dealing with risks:Students can identify the basic risks in terms of desirability, technical feasibility and profitability. Students can use customer interaction methods to test desirability and willingness to pay. Students can draw up a rudimentary competitive analysis. Students can identify and identify risks and possible reactions.

Systemic technical competence

- Problem-solving competence: Students can analyse, assess and solve a technical problem in a structured way.
- Agile Methodology of System Development: Students can name the different system development processes and apply them appropriately.
- Validation in a volatile environment: Students can perform a technical and economic validation under volatile boundary conditions. For this purpose they can name the boundary conditions and interpret the results of the validation.
- Functional decomposition: Students are able to identify and interpret complex customer needs and derive functional requirements from them.
- Architecture development: The students are able to recognize correlations from the functional requirements and to derive a suitable system architecture.

Prerequisites
The module can only be completed together with the module M-WIWI-105011 "Student Innovation Lab 2".

An application is required for participation in the modules Student Innovation Lab (SIL) 1 and Student Innovation Lab (SIL) 2. Information about the application can be found at http://www.kit-student-innovation-lab.de/index.php/for-students/.

.

Content

In a real laboratory, the module imparts professional, social and personal competences in entrepreneurship and in the respective technical domain. The aim is to prepare students in the best possible way for an entrepreneurial activity within or outside an established organisation. Our teaching is research-based and practice-oriented.

As an integral part, the lecture Entrepreneurship offers the theoretical basis and gives an overview of important theoretical concepts and empirical evidence. Current case studies and practical experiences of successful founders underline the theoretical and empirical contents. In order to operate a company on a long-term basis, important specialist knowledge is also of decisive importance. The content of the lecture therefore includes an introduction to Entrepreneurial Marketing and Leadership as well as the basics of Opportunity Recognition and Business Modeling. Customer-centric development methods, the lean start-up approach and methods for technology-oriented innovation are presented. Future founders must be able to develop and manage resources such as financial and human capital, infrastructure and intellectual property. Further aspects relate to the establishment of an organisation and the financing of one's own project.

The knowledge gained in the lecture Entrepreneurship will be applied in a practice-oriented seminar and in the labs. We use an action learning approach to complement the knowledge with skills and reflective attitudes. In five-member teams, the students experience their way from idea generation to the final investor pitch.

With regard to the labs, students have the following options:

- As an innovation platform, the Automation Innovation Lab offers flying robots for cooperative swarm solutions.
- The Industry 4.0 Innovation Lab enables innovations in the area of the next industrial revolution with mobile robot platforms.
- In the Internet of Things Innovation Lab, innovations in Assisted Living and Smart Housing are made possible by a comprehensive kit of mobile robots and sensors.

The module also teaches methods of agile system development (Scrum) and the associated validation methods as well as methods of functional prototyping. Gate plans are applied within the module to determine project progress.

Methods for the reflection of individual & team work are treated and applied as well as group work specific knowledge about different roles of team members, solution of conflict situations and interdisciplinary teams are obtained.

Annotation

New module starting winter term 2019/2020.

Workload

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

M 6.67 Module: Student Innovation Lab (SIL) 2 [M-WIWI-105011]

Responsible: Prof. Dr.-Ing. Sören Hohmann
Prof. Dr.-Ing. Eric Sax
Prof. Dr. Wilhelm Stork
Prof. Dr. Orestis Terzidis
Prof. Dr.-Ing. Thomas Zwick

Organisation: KIT Department of Economics and Management

Part of: Electives (Business Administration)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a third	Each winter term	2 terms	English	4	1

Mandatory			
T-ETIT-110291	Innovation Lab	9 LP	Hohmann, Sax, Stork, Zwick

Competence Certificate

The examination in this module comprises the submission of graded intermediate results in the form of prototypes (low fidelity and high fidelity) as well as various technical and economic reports (according to § 4 (2), 3 SPO):

1. Submission of a technical report with requirements list and system architectur
2. Submission of the reflection of the gate plans
3. Presentation of the High-fidelity

The module grade consists of 50% of the evaluation of the low fidelity prototype including intermediate results of a technical and economic nature and 50% of the evaluation of the high fidelity prototype including intermediate results of a technical and economic nature.

Competence Goal
Personal competence

- Ability to reflect: Students can analyse certain elements of their actions in social interaction, critically assess them and develop alternative actions.
- Decision-making ability: Students can prepare a decision template in due time and provide the necessary factual arguments for alternative decisions and thus make timely decisions.
- Interdisciplinary cooperation: Students can recognise the limits of their domain competence and adjust to domains outside their subject area. The students are able to recognise missing (own) competences and to supplement them with complementary competences (of other persons in the team). Students can communicate their domain to others and develop a basic understanding of foreign domains.
- Value-based action: Students can use selected tools of psychology to recognize their own values. They can compare these values with other team members and critically reflect on whether their offers match these values.

Social competence

- Ability to cooperate: Students can analyse and assess their cooperation behaviour in the group.
  Communication skills: Students can present their information in a convincing, focused and target group-oriented way.
- Conflict ability: Students can recognise conflicts at an early stage, analyse conflict situations and name solution concepts.

Innovation and Entrepreneurship Competence

- Agile product development: Students can apply methods of agile product development such as Scrum.
  Methodical innovation finding: Students can perform user- or technology-centric innovation processes to develop sustainable value propositions for dedicated target groups (e.g. Design Thinking (DT), Technology Application Selection (TAS) process).
- Orientation on the management of new technology-based companies (NTBF): Students can name the central concepts of intellectual property and legal form. Students can name the most important tasks of entrepreneurial leadership. They can identify the relevant forms of business modelling and draw up a business plan. Students know the central approaches to building an organisation. Students will be able to identify the ownership structure of investments and how to develop a strategy. The students can name marketing concepts and create a business model.
- Create investment readiness: The students are able to create a rudimentary sales and cost planning. Furthermore, they are able to create a project plan for a company and derive an investment plan from it. The students can present the business plan to potential investors and develop investor empathy.
- Business model development competence: Students are able to use relevant tools for business modelling, e.g. the Business Model Canvas. Students can develop and evaluate alternative business models.
- Dealing with risks:Students can identify the basic risks in terms of desirability, technical feasibility and profitability. Students can use customer interaction methods to test desirability and willingness to pay. Students can draw up a rudimentary competitive analysis. Students can identify and identify risks and possible reactions.

Systemic technical competence

- Problem-solving competence: Students can analyse, assess and solve a technical problem in a structured way.
- Agile Methodology of System Development: Students can name the different system development processes and apply them appropriately.
- Validation in a volatile environment: Students can perform a technical and economic validation under volatile boundary conditions. For this purpose they can name the boundary conditions and interpret the results of the validation.
- Functional decomposition: Students are able to identify and interpret complex customer needs and derive functional requirements from them.
- Architecture development: The students are able to recognize correlations from the functional requirements and to derive a suitable system architecture.

Prerequisites
The module can only be completed together with the module M-WIWI-105010 "Student Innovation Lab (SIL) 1".

An application is required for participation in the modules Student Innovation Lab (SIL) 1 and Student Innovation Lab (SIL) 2. Information about the application can be found at http://www.kit-student-innovation-lab.de/index.php/for-students/.

Content

In a real laboratory, the module imparts professional, social and personal competences in entrepreneurship and in the respective technical domain. The aim is to prepare students in the best possible way for an entrepreneurial activity within or outside an established organisation. Our teaching is research-based and practice-oriented.

As an integral part, the lecture Entrepreneurship offers the theoretical basis and gives an overview of important theoretical concepts and empirical evidence. Current case studies and practical experiences of successful founders underline the theoretical and empirical contents. In order to operate a company on a long-term basis, important specialist knowledge is also of decisive importance. The content of the lecture therefore includes an introduction to Entrepreneurial Marketing and Leadership as well as the basics of Opportunity Recognition and Business Modeling. Customer-centric development methods, the lean start-up approach and methods for technology-oriented innovation are presented. Future founders must be able to develop and manage resources such as financial and human capital, infrastructure and intellectual property. Further aspects relate to the establishment of an organisation and the financing of one's own project.

The knowledge gained in the lecture Entrepreneurship will be applied in a practice-oriented seminar and in the labs. We use an action learning approach to complement the knowledge with skills and reflective attitudes. In five-member teams, the students experience their way from idea generation to the final investor pitch.

With regard to the labs, students have the following options:

- As an innovation platform, the Automation Innovation Lab offers flying robots for cooperative swarm solutions.
- The Industry 4.0 Innovation Lab enables innovations in the area of the next industrial revolution with mobile robot platforms.
- In the Internet of Things Innovation Lab, innovations in Assisted Living and Smart Housing are made possible by a comprehensive kit of mobile robots and sensors.

The module also teaches methods of agile system development (Scrum) and the associated validation methods as well as methods of functional prototyping. Gate plans are applied within the module to determine project progress.

Methods for the reflection of individual & team work are treated and applied as well as group work specific knowledge about different roles of team members, solution of conflict situations and interdisciplinary teams are obtained.

Annotation

New module starting winter term 2019/2020.

Workload

The module comprises a total of 270 hours (8 hours attendance time, 213 hours preparation and follow-up time, 49 hours preparation time for examination), which corresponds to a total of 9 credit points for two semesters.

M 6.68 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
	Electives (Economics)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	4	2

Election block: Compulsory Elective Courses (2 items)			
T-WIWI-103107	Spatial Economics	4,5 LP	Ott
T-WIWI-100007	Transport Economics	4,5 LP	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.

| T | **6.69 Course: A Closer Look at Social Innovation [T-WIWI-109932]** |

Responsible:	Dr. Daniela Beyer
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Irregular	**Version** 1

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 6.70 Course: Advanced Digital Economics [T-WIWI-[ADE]]

Responsible: Dr. Frank Rosar
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-DigEcon - Digital Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	winter term	1

Competence Certificate
The assessment consists of a written exam (60min) during the lecture-free period of the semester. The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites
None

T 6.71 Course: Advanced Empirical Asset Pricing [T-WIWI-110513]

Responsible:	Jun.-Prof. Dr. Julian Thimme
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2530569	Advanced Empirical Asset Pricing	2 SWS	Lecture	Thimme
WT 21/22	2530570	Übung zu Advanced Empirical Asset Pricing	1 SWS	Practice	Thimme

Competence Certificate

The success control takes place in form of a written examination (60 min) during the semester break (according to §4(2), 1 SPO). If the number of participants is low, an oral examination (according to §4 (2), 2 SPO) may also be offered. The examination is offered every semester and can be repeated at any regular examination date.

Recommendation

We strongly recommend knowledge of the basic topics in investments (bachelor course), which will be necessary to be able to follow the course. In addition, prior participation in the Asset Pricing Master course is strongly recommended.

Annotation

New course from winter semester 2019/2020.

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

V Advanced Empirical Asset Pricing

2530569, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content

In this course we will discuss the fundamentals of Asset Pricing and how to test them. Although this is an Empirical Asset Pricing course, we deal with some concepts from Asset Pricing Theory that we can test afterwards (CAPM, ICAPM, CCAPM, recursive utility). Besides, the course will cover the most important empirical methods to do so. For that purpose, we will discuss the overarching tool *Generalized Method of Moments*, and the special cases of OLS and FMB regressions. Every second week, we will meet for a programing session, in which we will look at the data to draw our own conclusions. An introduction to the software MATLAB will be given at the beginning of the course. Students should bring a laptop to these sessions. Programing skills are not required but helpful.

We start with a review of the Stochastic Discount Factor, which is already known from the course „Asset Pricing". We then derive the CAPM and the Consumption-CAPM as special cases from the general consumption-savings optimization problem of the rational investor. In the first part of the course we discuss the CAPM and, as natural extensions, models with multiple factors. Prominent phenomena such as the value premium and momentum are discussed. In the second part of the lecture we will study extensions of Consumption-CAPM and study the implications of exotic preferences.

Literature
Basisliteratur

Asset pricing / Cochrane, J.H. - Rev. ed., Princeton Univ. Press, 2005.

zur Vertiefung/ Wiederholung

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 6.72 Course: Advanced Game Theory [T-WIWI-102861]

Responsible: Prof. Dr. Karl-Martin Ehrhart
Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-101500 - Microeconomic Theory
M-WIWI-101502 - Economic Theory and its Application in Finance
M-WIWI-DigEcon - Digital Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2521533	Advanced Game Theory	2 SWS	Lecture / 🖥	Reiß
WT 21/22	2521534	Übung zu Advanced Game Theory	1 SWS	Practice / 🖥	Reiß, Peters

Legend: 🖥 Online, ⬡ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

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 21/22, 2 SWS, Language: English, Open in study portal	Online

T   6.73 Course: Advanced Lab Blockchain Hackathon (Master) [T-WIWI-111126]

Responsible: Prof. Dr. Ali Sunyaev

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

Type Examination of another type	Credits 4,5	Grading scale Grade to a third	Recurrence Each term	Version 1

Events					
WT 21/22	2512403	Advanced Lab Blockchain Hackathon (Bachelor)		Practical course / 🖥	Sunyaev, Kannengießer, Sturm, Beyene

Legend: 🖥 Online, ⚃ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

The alternative exam assessment consists of:

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

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

Prerequisites

None

T 6.74 Course: Advanced Lab Informatics (Master) [T-WIWI-110548]

Responsible:	Professorenschaft des Instituts AIFB
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type Examination of another type	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each term	**Version** 1

Events					
ST 2021	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course / ⚙	Oberweis, Schiefer, Schüler, Toussaint
ST 2021	2512207	Lab Automation in Everyday Life (Master)	3 SWS	Practical course / ▐	Oberweis, Forell, Frister
ST 2021	2512401	Development of Sociotechnical Information Systems (Master)	3 SWS	Practical course / ▐	Sunyaev, Pandl
ST 2021	2512403	Advanced Lab Blockchain Hackathon (Master)		Practical course / ▐	Sunyaev, Beyene, Kannengießer
ST 2021	2512500	Project Lab Machine Learning	3 SWS	Practical course / ⚙	Zöllner
ST 2021	2512555	Practical lab Security, Usability and Society (Master)	3 SWS	Practical course / ▐	Strufe, Mayer, Arias Cabarcos, Berens, Mossano, Düzgün, Beckmann
WT 21/22	2512205	Lab Realisation of innovative services (Master)	3 SWS	Practical course / ⚙	Oberweis, Toussaint, Schüler, Schiefer
WT 21/22	2512401	Practical Course Sociotechnical Information Systems Development (Master)	3 SWS	Practical course / ▐	Sunyaev, Pandl, Goram
WT 21/22	2512403	Advanced Lab Blockchain Hackathon (Bachelor)		Practical course / ▐	Sunyaev, Kannengießer, Sturm, Beyene
WT 21/22	2512501	Practical Course Cognitive automobiles and robots (Master)	3 SWS	Practical course / ▐	Zöllner, Daaboul
WT 21/22	2512557	Practical Course Security (Master)	4 SWS	Practical course	Baumgart, Volkamer, Mayer, Leinweber, Schiffl
WT 21/22	2512600	Project lab Information Service Engineering (Master)	3 SWS	Practical course	Sack

Legend: ▐ Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
The alternative exam assessment consists of:

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

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

Prerequisites
None

Annotation
The title of this course is a generic one. Specific titles and the topics of offered seminars will be announced before the start of a semester in the internet at https://portal.wiwi.kit.edu.

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

V	**Lab Realisation of innovative services (Master)** 2512205, SS 2021, 3 SWS, Language: German, Open in study portal	**Practical course (P)** **Blended (On-Site/Online)**

Content

As part of the lab, the participants should work together in small groups to realize innovative services (mainly for students).

Further information can be found on the ILIAS page of the lab.

Organizational issues

Die genauen Termine und Informationen zur Anmeldung werden auf der Veranstaltungsseite bekannt gegeben.

V	**Lab Automation in Everyday Life (Master)** 2512207, SS 2021, 3 SWS, Language: German, Open in study portal	**Practical course (P)** **Online**

Content

As part of the lab, various topics on everyday automation are offered. During the lab, the participants will gain an insight into problem-solving oriented project work and work on a project together in small groups.

Further information can be found on the ILIAS page of the lab.

Organizational issues

Die genauen Termine und Informationen zur Anmeldung werden auf der Veranstaltungsseite bekannt gegeben.

V	**Development of Sociotechnical Information Systems (Master)** 2512401, SS 2021, 3 SWS, Language: German/English, Open in study portal	**Practical course (P)** **Online**

Content

The aim of the lab is to get to know the development of socio-technical information systems in different application areas. In the event framework, you should develop a suitable solution strategy for your problem alone or in group work, collect requirements, and implement a software artifact based on it (for example, web platform, mobile apps, desktop application). Another focus of the lab is on the subsequent quality assurance and documentation of the implemented software artifact.

Registration information will be announced on the course page.

V	**Project Lab Machine Learning** 2512500, SS 2021, 3 SWS, Language: German/English, Open in study portal	**Practical course (P)** **Blended (On-Site/Online)**

Content

The lab is intended as a practical supplement to lectures such as "Machine Learning". The theoretical basics are applied in the lab course. The aim of the lab course is that the participants work together to design, develop and evaluate a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

In addition to the scientific objectives involved in the investigation and application of the methods, aspects of project-specific teamwork in research (from specification to presentation of the results) are also developed in this practical course.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and implementation and evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

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

Recommendations:

Attendance of the lecture machine learning, C/C++ knowledge, Python knowledge

Workload:

The workload of 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V	**Practical lab Security, Usability and Society (Master)**	**Practical course (P)**
	2512555, SS 2021, 3 SWS, Language: German/English, Open in study portal	**Online**

Content

The internship "Security, Usability and Society" will cover topics both of usable security and privacy programming, and how to conduct user studies. This internship will be only in English. The kick-off, the presentations, and every written material to be graded must be in English. Communications with supervisors can be in German.
WiWi link: https://portal.wiwi.kit.edu/ys/4629

Important dates:

Kick-off: 06.04.2021, 10:00-11:00 CET in Microsoft Teams - Link

Report + code submission : 07.09.2021, 23:59 CET

Presentation deadline : 20.09.2021, 23:59 CET

Presentation day: 24.09.2021, 09:00 CET

Topics:

Privacy Friendly apps

In this subject, students complete an app (or an extension of an app) among our Privacy-Friendly Apps. Please click the following link to know more about them: https://secuso.aifb.kit.edu/english/105.php . Students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- Notes 2.0

Programming Usable Security Intervention

In this subject, students develop a part of coding, an extension, or another programming task dealing with various usable security interventions, eg as an extension. Eg TORPEDO (https://secuso.aifb.kit.edu/english/TORPEDO.php) or PassSec + (https://secuso.aifb.kit.edu/english/PassSecPlus.php). Just as before, students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- Password Manager Enrolment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Visualization app to explore Facebook behavioral data collection
- Authenticating on AR glasses: Implementing an authentication scheme for the Google Glass

Designing Security User studies (online studies only)

These topics are related to how to set up and conducting user studies of various types. This year, due to the Corona outbreak, we decided to conduct online studies only; otherwise, interviews and in lab studies would have been possible. At the end of the semester, the students present a report / paper and a talk in which they present their results.

- Neurotechnologies, Neuroprivacy, and User Acceptance
- Expert feedback for an anti-phishing webpage template (English only)
- "Your website has been hacked" - How to inform business owners about security issues on their webpages in more sensitive ways

Please, note that registration is not required to participate in the kick-off meeting.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

V	**Lab Realisation of innovative services (Master)**	**Practical course (P)**
	2512205, WS 21/22, 3 SWS, Language: German, Open in study portal	**Blended (On-Site/Online)**

Content

As part of the lab, the participants should work together in small groups to realize innovative services (mainly for students).

Further information can be found on the ILIAS page of the lab.

Organizational issues

Die genauen Termine und Informationen zur Anmeldung werden auf der Veranstaltungsseite bekannt gegeben.

V	**Practical Course Sociotechnical Information Systems Development (Master)**	**Practical course (P)**
	2512401, WS 21/22, 3 SWS, Language: German/English, Open in study portal	**Online**

Content

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.

Learning objectives:

- Independent and self-organized realization of a software development project
- Evaluation and selection of suitable development tools and methods
- Application of modern software development methods
- Planning and execution of different development tasks: requirements assessment, system design, implementation, and quality assurance
- Project documentation
- Presentation of project results in an comprehensible and structured form

V	**Practical Course Cognitive automobiles and robots (Master)** 2512501, WS 21/22, 3 SWS, Language: German/English, Open in study portal	**Practical course (P)** **Online**

Content

The lab is intended as a practical supplement to lectures such as "Machine Learning". The theoretical basics are applied in the lab course. The aim of the lab course is that the participants work together to design, develop and evaluate a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

In addition to the scientific objectives involved in the investigation and application of the methods, aspects of project-specific teamwork in research (from specification to presentation of the results) are also developed in this practical course.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and implementation and evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

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

Recommendations:

Attendance of the lecture machine learning, C/C++ knowledge, Python knowledge

Workload:

The workload of 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V	**Practical Course Security (Master)** 2512557, WS 21/22, 4 SWS, Language: German, Open in study portal	**Practical course (P)**

Content

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

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

More information on ILIAS.

V	**Project lab Information Service Engineering (Master)** 2512600, WS 21/22, 3 SWS, Language: English, Open in study portal	**Practical course (P)**

Content

The ISE project lab is based on the summer semester lecture "Information Service Engineering". Goal of the course is to work on a given research problem in small groups (3-4 students) related to the ISE lecture topics, i.e. Natural Language Processing, Knowledge Graphs, and Machine Learning. The solution of the given research problem requires the development of a software implementation.

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

Required coursework includes:

- Mid term presentation (5-10 min)
- Final presentation (10-15 min)
- Course report (c. 20 pages)
- Participation and contribution of the students during the course
- Software development and delivery

Notes:

The ISE project lab can also be credited as a **seminar** (if necessary).

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

Participation will be restricted to 15 students.

Participation in the lecture "Information Service Engineering" (summer semester) is required. There are video recordings on our youtube channel.

ISE Tutor Team:

- M. Sc. Russa Biswas
- M. Sc. Genet Asefa Gesese
- M. Sc. Oleksandra Bruns
- M. Sc. Yiyi Chen
- M. Sc. Mary Ann Tan
- B. Sc. Tabea Tietz

Literature

ISE video channel on youtube: https://www.youtube.com/channel/UCjkkhNSNuXrJpMYZoeSBw6Q/

T 6.75 Course: Advanced Lab Security [T-WIWI-109786]

Responsible:	Prof. Dr. Melanie Volkamer
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type Examination of another type	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 2

Events					
WT 21/22	2512557	Practical Course Security (Master)	4 SWS	Practical course	Baumgart, Volkamer, Mayer, Leinweber, Schiffl

Competence Certificate

The alternative exam assessment consists of:

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

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

Prerequisites

None

Recommendation

Knowledge from the lecture "Information Security" is recommended.

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

V Practical Course Security (Master)
2512557, WS 21/22, 4 SWS, Language: German, Open in study portal

Practical course (P)

Content

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

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

More information on ILIAS.

T   6.76 Course: Advanced Lab Security, Usability and Society [T-WIWI-108439]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

Type Examination of another type	Credits 4,5	Grading scale Grade to a third	Recurrence Each summer term	Version 2

Events					
ST 2021	2612554	Practical lab Security, Usability and Society (Bachelor)	3 SWS	Practical course / 📱	Strufe, Mayer, Arias Cabarcos, Berens, Mossano, Beckmann
WT 21/22	2500024	Praktikum Security, Usability and Society (Master)	3 SWS	Practical course	Volkamer, Mayer, Ghiglieri , Aldag, Beckmann, Mossano
WT 21/22	2512554	Praktikum Security, Usability and Society (Bachelor)	3 SWS	Practical course	Volkamer, Mayer, Ghiglieri , Aldag, Beckmann, Mossano

Legend: 📱 Online, ⚬ Blended (On-Site/Online), 🌑 On-Site, ✗ Cancelled

Competence Certificate
The alternative exam assessment consists of:

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

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

Prerequisites
None

Recommendation
Knowledge from the lecture "Information Security" is recommended.

Annotation
The course is expected to be offered from winter term 2018/2019.

Contents:

In the course of the programming lab, changing topics from the field of Human Factors in Security und Privacy will be worked on.

Learning goals:

The student

- can apply the basics of information security
- is able to implement appropriate measures to achieve different protection goals
- can structure a software project in the field of information security
- can use the Human Centred Security and Privacy by Design technique to develop user-friendly software
- can explain and present technical facts and the results of the programming lab in oral and written form

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

V   **Practical lab Security, Usability and Society (Bachelor)**
2612554, SS 2021, 3 SWS, Language: German/English, Open in study portal

Practical course (P)
Online

Content

The internship "Security, Usability and Society" will cover topics both of usable security and privacy programming, and how to conduct user studies. This internship will be only in English. The kick-off, the presentations, and every written material to be graded must be in English. Communications with supervisors can be in German.

WiWi portal: https://portal.wiwi.kit.edu/ys/4628

Important dates:

Kick-off: 06.04.2021, 10:00-11:00 CET in Microsoft Teams - Link

Report + code submission : 07.09.2021, 23:59 CET

Presentation deadline : 20.09.2021, 23:59 CET

Presentation day: 24.09.2021, 09:00 CET

Topics:

Privacy Friendly apps

In this subject, students complete an app (or an extension of an app) among our Privacy-Friendly Apps. Please click the following link to know more about them: https://secuso.aifb.kit.edu/english/105.php . Students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- Notes 2.0

Programming Usable Security Intervention

In this subject, students develop a part of coding, an extension, or another programming task dealing with various usable security interventions, eg as an extension. Eg TORPEDO (https://secuso.aifb.kit.edu/english/TORPEDO.php) or PassSec + (https://secuso.aifb.kit.edu/english/PassSecPlus.php). Just as before, students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- Password Manager Enrolment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Visualization app to explore Facebook behavioral data collection

Designing Security User studies (online studies only)

These topics are related to how to set up and conducting user studies of various types. This year, due to the Corona outbreak, we decided to conduct online studies only; otherwise, interviews and in lab studies would have been possible. At the end of the semester, the students present a report / paper and a talk in which they present their results.

- Neurotechnologies, Neuroprivacy, and User Acceptance
- Expert feedback for an anti-phishing webpage template (English only)
- "Your website has been hacked" - How to inform business owners about security issues on their webpages in more sensitive ways

Please, note that registration is not required to participate in the kick-off meeting.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

V	**Praktikum Security, Usability and Society (Master)** 2500024, WS 21/22, 3 SWS, Language: German/English, Open in study portal	**Practical course (P)**

Content

Registration is closed.

The internship "Security, Usability and Society" will cover topics both of usable security and privacy programming, and how to conduct user studies. To reserve a place, please, register on hte WiWi portal and send an email with your chosen topic, plus a back-up one, to melanie.volkamer@kit.edu . Topics are assigned first-come-first-served until all of them are filled. Topics in italics have been already assigned.

Important dates:

Kick-off: 11.10.2021, 11:30-12:30 CET in Microsoft Teams - Link

Report + code submission : 06.02.2022, 23:59 CET

Presentation deadline : 06.02.2022, 23:59 CET

Presentation day: 08.02.2022

Topics:

Privacy Friendly apps

In this subject, students complete an app (or an extension of an app) among our Privacy-Friendly Apps. Please click the following link to know more about them: https://secuso.aifb.kit.edu/english/105.php . Students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- Notes 2.0

Programming Usable Security Intervention

In this subject, students develop a part of coding, an extension, or another programming task dealing with various usable security interventions, eg as an extension. Eg TORPEDO (https://secuso.aifb.kit.edu/english/TORPEDO.php) or PassSec + (https://secuso.aifb.kit.edu/english/PassSecPlus.php). Just as before, students are provided with a point list of goals, containing both basic features mandatory to pass the course and mor*e advanced ones that heighten the final grade.*

- *Password Manager Enrolment Add-On*
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Cookie Consent Manager for Websites

Designing Security User studies (online studies only)

These topics are related to how to set up and conducting user studies of various types. This year, due to the Corona outbreak, we decided to conduct online studies only; otherwise, interviews and in lab studies would have been possible. At the end of the semester, the students present a report / paper and a talk in which they present their results.

- How to display URLs to support people's ability to detect phishing (English)
- *Studying the Effect of Static vs. Dynamic Phishing Detection*
- *How effective are QR-scanners in helping users detecting phishing emails?*

Please, note that registration is not required to participate in the kick-off meeting.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

| **V** | **Praktikum Security, Usability and Society (Bachelor)**
 2512554, WS 21/22, 3 SWS, Language: German/English, Open in study portal | **Practical course (P)** |

Content

Registration is now closed.

The internship "Security, Usability and Society" will cover topics both of usable security and privacy programming, and how to conduct user studies. To reserve a place, please, register on hte WiWi portal and send an email with your chosen topic, plus a back-up one, to melanie.volkamer@kit.edu . Topics are assigned first-come-first-served until all of them are filled. Topics in italics have been already assigned.

Important dates:

Kick-off: 11.10.2021, 11:30-12:30 CET in Microsoft Teams - Link

Report + code submission : 06.02.2022, 23:59 CET

Presentation deadline : 06.02.2022, 23:59 CET

Presentation day: 08.02.2022

Topics:

Privacy Friendly apps

In this subject, students complete an app (or an extension of an app) among our Privacy-Friendly Apps. Please click the following link to know more about them: https://secuso.aifb.kit.edu/english/105.php . Students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- *Notes 2.0*

Programming Usable Security Intervention

In this subject, students develop a part of coding, an extension, or another programming task dealing with various usable security interventions, eg as an extension. Eg TORPEDO (https://secuso.aifb.kit.edu/english/TORPEDO.php) or PassSec + (https://secuso.aifb.kit.edu/english/PassSecPlus.php). Just as before, students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

- *Password Manager Enrolment Add-On*
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Cookie Consent Manager for Websites

Designing Security User studies (online studies only)

These topics are related to how to set up and conducting user studies of various types. This year, due to the Corona outbreak, we decided to conduct online studies only; otherwise, interviews and in lab studies would have been possible. At the end of the semester, the students present a report / paper and a talk in which they present their results.

- *How to display URLs to support people's ability to detect phishing (English)*
- Studying the Effect of Static vs. Dynamic Phishing Detection
- *How effective are QR-scanners in helping users detecting phishing emails?*

Please, note that registration is not required to participate in the kick-off meeting.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

T 6.77 Course: Advanced Lab Sociotechnical Information Systems Development (Master) [T-WIWI-111125]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type Examination of another type	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each term	**Version** 1

Events					
WT 21/22	2512401	Practical Course Sociotechnical Information Systems Development (Master)	3 SWS	Practical course / ▯	Sunyaev, Pandl, Goram

Legend: ▯ Online, ⬡ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate

The alternative exam assessment consists of:

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

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

Prerequisites

None

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

V Practical Course Sociotechnical Information Systems Development (Master)
2512401, WS 21/22, 3 SWS, Language: German/English, Open in study portal **Practical course (P) Online**

Content

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.

Learning objectives:

- Independent and self-organized realization of a software development project
- Evaluation and selection of suitable development tools and methods
- Application of modern software development methods
- Planning and execution of different development tasks: requirements assessment, system design, implementation, and quality assurance
- Project documentation
- Presentation of project results in an comprehensible and structured form

T   6.78 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-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2540535	Advanced Machine Learning	2 SWS	Lecture / 🗖	Nazemi
ST 2021	2540536	Exercise Advanced Machine Learning	1 SWS	Practice / 🗖	Nazemi

Legend: 🗖 Online, ⬡ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

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.

Prerequisites

None

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

V   Advanced Machine Learning
2540535, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content

In recent years, the volume, variety, velocity, veracity, and variability of available data have increased due to improvements in computational and storage power. The rise of the Internet has made available large sets of data that allow us to use and merge them for different purposes. Data science helps us to extract knowledge from the continually-increasing large datasets. This course will introduce students to a wide range of machine learning and statistical techniques such as deep learning, LASSO, and support vector machine. You will get familiar with text mining, and the tools you need to analyze the various facets of data sets in practice. Students will learn theory and concepts with real data sets from different disciplines such as marketing, finance, and business.

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

Time of attendance

- Attending the lecture: 13 x 90min = 19h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m

The student will learn

- A wide range of machine learning algorithms and their weaknesses.
- The fundamental issues and challenges: data, high-dimension, train, model selection, etc.
- How to imply machine learning algorithms for real-world applications.
- The fundamentals of deep learning, main research activities, and on-going research in this field.

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 6.79 Course: Advanced Machine Learning and Data Science [T-WIWI-111305]

Responsible:	Prof. Dr. Maxim Ulrich
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-DigFinEcon - Digital Financial Economics
	M-WIWI-105659 - Advanced Machine Learning and Data Science

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	9	Grade to a third	Each term	1

Events					
ST 2021	2530357	Advanced Machine Learning and Data Science	4 SWS	Practical course / 🖥	Ulrich
WT 21/22	2530357	Advanced Machine Learning and Data Science	4 SWS	Practical course / 🖥	Ulrich

Legend: 🖥 Online, 🗯 Blended (On-Site/Online), 🖳 On-Site, ✗ Cancelled

Competence Certificate
The assessment is carried out in form of a written thesis based on the course "Advanced Machine Learning and Data Science".

Annotation
The course is targeted to students with a major in Data Science and/or Machine Learning. It offers students the opportunity to develop hands-on knowledge on new developments in data science and machine learning. Please apply via the link: https://portal.wiwi.kit.edu/forms/form/fbv-ulrich-msc-project. *An online meetup will be offered at 15:00 on Monday of the first week of winter semester 2021/2022 (i.e., 18.10.2021).*

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

V Advanced Machine Learning and Data Science
2530357, SS 2021, 4 SWS, Language: English, Open in study portal

Practical course (P)
Online

Content
The course is targeted to students with a major in Data Science and/or Machine Learning. It offers students the opportunity to develop hands-on knowledge on new developments in data science and machine learning.

Organizational issues
14-tägig, tba

Literature
Literatur wird in der ersten Vorlesung bekannt gegeben.

V Advanced Machine Learning and Data Science
2530357, WS 21/22, 4 SWS, Language: English, Open in study portal

Practical course (P)
Online

Content
The course is targeted to students with a major in Data Science and/or Machine Learning. It offers students the opportunity to develop hands-on knowledge on new developments in data science and machine learning.

Organizational issues
14-tägig, tba

Literature
Literatur wird in der ersten Vorlesung bekannt gegeben.

T 6.80 Course: Advanced Management Accounting [T-WIWI-102885]

Responsible:	Prof. Dr. Marcus Wouters
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-EconMan - Economics & Management
	M-WIWI-101510 - Cross-Functional Management Accounting

Type Oral examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 2

Events					
WT 21/22	2579907	Advanced Management Accounting	4 SWS	Lecture	Wouters

Competence Certificate

The assessment consists of an oral exam (30 min) (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 21/22, 4 SWS, Language: English, Open in study portal	**Lecture (V)**

Content

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).

Inhalt:

- 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.

Learning objectives:

- Students will be able to consider advanced management accounting methods in an interdisciplinary way and to apply these to managerial decision-making problems in operations and innovation.
- They will also be able to identify relevant research results on such methods.

Examination:

- The assessment consists of an oral exam (30 min) taking place in the recess period (according to § 4 (2) No. 2 of the examination regulation).
- The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Required prior Courses:

- The course is compulsory and must be examined.

Recommendations:

- 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.

Workload:

- The total workload for this course is approximately 135 hours.

Literature

Literature is mostly made available via ILIAS.

T 6.81 Course: Advanced Management Accounting 2 [T-WIWI-110179]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101510 - Cross-Functional Management Accounting

Type	Credits	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	see Annotations	1

Competence Certificate
The examination will no longer be offered as of summer semester 2021.

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
Lecture and examination will no longer be offered from summer semester 2021.

T   6.82 Course: Advanced Statistics [T-WIWI-103123]

Responsible:	Prof. Dr. Oliver Grothe
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101637 - Analytics and Statistics

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2550552	Statistik für Fortgeschrittene	2 SWS	Lecture / 📱	Grothe
WT 21/22	2550553	Übung zu Statistik für Fortgeschrittene	2 SWS	Practice / 📱	Grothe, Rieger

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

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

Prerequisites
None

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 21/22, 2 SWS, Open in study portal	**Lecture (V)** **Online**

Literature
Skript zur Vorlesung

T	6.83 Course: Advanced Stochastic Optimization [T-WIWI-106548]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101473 - Mathematical Programming
M-WIWI-103289 - Stochastic Optimization

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	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 6.84 Course: Advanced Topics in Economic Theory [T-WIWI-102609]

Responsible:	Prof. Dr. Kay Mitusch
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101406 - Network Economics
	M-WIWI-101497 - Agglomeration and Innovation
	M-WIWI-101500 - Microeconomic Theory
	M-WIWI-101502 - Economic Theory and its Application in Finance

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	1

Events					
ST 2021	2520527	Advanced Topics in Economic Theory	2 SWS	Lecture / 🖥	Mitusch, Brumm
ST 2021	2520528	Übung zu Advanced Topics in Economic Theory	1 SWS	Practice / 🖥	Pegorari

Legend: 🖥 Online, ✪ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate

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 2021, 2 SWS, Language: English, Open in study portal	Lecture (V) Online

Literature

Die Veranstaltung wird in englischer Sprache angeboten:

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 6.85 Course: Analyzing and Evaluating Innovation Processes [T-WIWI-108774]

Responsible:	Dr. Daniela Beyer
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
ST 2021	2545108	Innovationsprozesse analysieren & evaluieren	2 SWS	Seminar / 🗎	Beyer

Legend: 🗎 Online, ✣ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

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 is recommended.

T 6.86 Course: Application of Social Science Methods (WiWi) [T-GEISTSOZ-109052]

Responsible:	Prof. Dr. Gerd Nollmann
Organisation:	KIT Department of Humanities and Social Sciences
Part of:	M-GEISTSOZ-101169 - Sociology

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	9	Grade to a third	Each term	2

Events					
ST 2021	5011002	Opinion Dynamics on the Internet II	2 SWS	Seminar / 📱	Keijzer
ST 2021	5011006	Gender Pay Gap	2 SWS	Seminar / 📱	Nollmann
ST 2021	5011008	Decomposition and Regression Analysis	2 SWS	Seminar / 📱	Nollmann

Legend: 📱 Online, ♢ Blended (On-Site/Online), ◗ On-Site, ✕ Cancelled

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

V Opinion Dynamics on the Internet II
5011002, SS 2021, 2 SWS, Language: English, Open in study portal

Seminar (S)
Online

Content

The Internet has become an arena for public debate, providing users with unprecedented means of communicating their opinions and political views via online fora, tweets, Facebook posts, and the like. Many fear that this new technology changes public debate in ways that endanger societal cohesion and democracy, pointing to phenomena like filter bubbles or fake news. This seminar covers the computational social science approach to this research field, highlighting the opportunities and challenges that come with learning about human behavior in an increasingly data driven society. Specifically, we discuss theories and empirical research on opinion dynamics on the Internet, and focus on computational models of opinion dynamics in networks and their application to online (social media) platforms. We explore how social influence on the Internet can be studied empirically with experiments and the analysis of digital trace data, but stress the importance of theoretically well-informed models when doing so. In this course, students will have the opportunity to explore alternative methods from the emerging field of computational social science, analyzing computational models of opinion dynamics on the Internet, or gathering and analyzing data on the web.
The course consists of two parts (5011018 and 5011002) that need to be taken in parallel. It is not possible to attend only one of the two courses. To enroll to both parts, please use the registration procedure of course 5011018.

Organizational issues

The course consists of two parts (5011018 and 5011002) that need to be taken in parallel. It is not possible to attend only one of the two courses. To enroll to both parts, please use the registration procedure of course 5011018.

T   6.87 Course: Applied Econometrics [T-WIWI-111388]

Responsible:	Prof. Dr. Melanie Schienle
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-StatEcon - Statistics & Econometrics
	M-WIWI-101638 - Econometrics and Statistics I

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Winter term	1

Events					
WT 21/22	2520020	Applied Econometrics	2 SWS	Lecture / ✿	Krüger
WT 21/22	2520021	Tutorial in Applied Econometrics	2 SWS	Practice / ✿	Krüger, Koster

Legend: 📱 Online, ✿ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate

The assessment of this course is a written examination (90 min) according to §4(2), 1 of the examination regulation.

Prerequisites

None

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

V   Applied Econometrics
2520020, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
Content:

- Causal effects and prediction in the linear model, instrumental variables, analysis of natural experiments

- Theoretical exercises with computer-based illustrations

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Independent Study: 105 hours

Literature

Hansen (2021): Econometrics. Online textbook, University of Wisconsin.

Angrist und Pischke (2009): Mostly Harmless Econometrics. Princeton University Press, 2009.

Weitere Literatur wird in der Vorlesung bekanntgegeben.

6 MODULES

Course: Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-110339]

T 6.88 Course: Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-110339]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2511032	Applied Informatics - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	2 SWS	Lecture / 🖥	Sunyaev
ST 2021	2511033	Übungen zu Angewandte Informatik - Internet Computing	1 SWS	Practice / 🖥	Sunyaev, Teigeler, Beyene

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✘ Cancelled

Competence Certificate
The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is recommended for the written exam, which is offered at the end of the winter semester and at the end of the summer semester.

Prerequisites
None

Annotation
Replaces from winter semester 2019/2020 T-WIWI-109445 "Applied Informatics - Internet Computing".

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

V Applied Informatics - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services
2511032, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V) Online

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

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

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

Learning objectives:

The student learns about basic concepts and emerging technologies of distributed systems and internet computing. Practical topics will be deepened in lab classes.

Recommendations:

Knowledge of content of the module [WI1INFO].

Workload:

The total workload for this course is approximately 135-150 hours.

6 MODULES

Course: Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-110339]

Literature
Wird in der Vorlesung bekannt gegeben

T 6.89 Course: Artificial Intelligence in Service Systems [T-WIWI-108715]

Responsible: Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101448 - Service Management
M-WIWI-101506 - Service Analytics
M-WIWI-103117 - Data Science: Data-Driven Information Systems

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Each winter term	Version 1

Events

WT 21/22	2595650	Artificial Intelligence in Service Systems	1,5 SWS	Lecture / 🖥	Kühl, Vössing

Legend: 🖥 Online, ⚏ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of a written exam (60 min). Successful completion of the exercises is a prerequisite for admission to the written exam.

Prerequisites

None

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

V Artificial Intelligence in Service Systems
2595650, WS 21/22, 1,5 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content

Artificial Intelligence (AI) and the application of machine learning is becoming more and more popular to solve relevant business challenges — both within isolated entities but also within co-creating systems (like value chains). However, it is not only essential to be familiar with precise algorithms but rather a general understanding of the necessary steps with a holistic view—from real-world challenges to the successful deployment of an AI-based solution. As part of this course, we teach the complete lifecycle of an AI project focusing on supervised machine learning challenges. We do so by also introducing the use of Python and the required packages like scikit-learn with exemplary data and use cases. 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. Apart from the technical aspects necessary when developing AI within service systems, we also shed light on the collaboration of humans and AI in such systems (e.g., with the support of XAI), topics of ethics and bias in AI, as well as AI's capabilities on being creative.

Students of this course will be able to understand and implement the complete lifecycle of a typical Artificial Intelligence use case with supervised machine learning. Furthermore, they understand the importance and the means of applying AI and Machine Learning within service systems, which allows multiple, independent entities to collaborate and derive insights. Besides technical aspects, they will gain an understanding of the broader challenges and aspects when dealing with AI. Students will be proficient with typical Python code for AI challenges.

Organizational issues

Diese Veranstaltung findet mittwochs von 10:00 - 11.30 Uhr online statt.

Literature

- Baier, L., Kühl, N., & Satzger, G. (2019). How to cope with change?-preserving validity of predictive services over time. In Proceedings of the 52nd Hawaii International Conference on System Sciences.
- Cawley, G. C., & Talbot, N. L. (2010). On over-fitting in model selection and subsequent selection bias in performance evaluation. The Journal of Machine Learning Research, 11, 2079-2107.
- Fink, O., Netland, T., & Feuerriegel, S. (2021). Artificial intelligence across company borders. arXiv preprint arXiv:2107.03912.
- Gama, J., Žliobaitė, I., Bifet, A., Pechenizkiy, M., & Bouchachia, A. (2014). A survey on concept drift adaptation. ACM computing surveys (CSUR), 46(4), 1-37.
- Hemmer, P., Schemmer, M., Vössing, M., & Kühl, N. (2021). Human-AI Complementarity in Hybrid Intelligence Systems: A Structured Literature Review. PACIS 2021 Proceedings.
- Hirt, R., & Kühl, N. (2018). Cognition in the Era of Smart Service Systems: Inter-organizational Analytics through Meta and Transfer Learning. In 39th International Conference on Information Systems, ICIS 2018; San Francisco Marriott MarquisSan Francisco; United States; 13 December 2018 through 16 December 2018.
- Kühl, N., Goutier, M., Hirt, R., & Satzger, G. (2019, January). Machine Learning in Artificial Intelligence: Towards a Common Understanding. In Proceedings of the 52nd Hawaii International Conference on System Sciences.
- Kühl, N., Hirt, R., Baier, L., Schmitz, B., & Satzger, G. (2021). How to Conduct Rigorous Supervised Machine Learning in Information Systems Research: The Supervised Machine Learning Report Card. Communications of the Association for Information Systems, 48(1), 46.
- Maleshkova, M., Kühl, N., & Jussen, P. (Eds.). (2020). Smart Service Management: Design Guidelines and Best Practices. Springer Nature.
- Martin, D., Hirt, R., & Kühl, N. (2019). Service Systems, Smart Service Systems and Cyber-Physical Systems—What's the difference? Towards a Unified Terminology. 14. Internationale Tagung Wirtschaftsinformatik 2019 (WI 2019), Siegen, Germany, February 24-27.
- Mehrabi, N., Morstatter, F., Saxena, N., Lerman, K., & Galstyan, A. (2019). A survey on bias and fairness in machine learning. arXiv preprint arXiv:1908.09635.
- Müller, V. C., & Bostrom, N. (2016). Future progress in artificial intelligence: A survey of expert opinion. In Fundamental issues of artificial intelligence (pp. 555-572). Springer, Cham.
- Pan, S. J., & Yang, Q. (2009). A survey on transfer learning. IEEE Transactions on knowledge and data engineering, 22(10), 1345-1359.
- Schöffer, J., Machowski, Y., & Kühl, N. (2021). A Study on Fairness and Trust Perceptions in Automated Decision Making. In Joint Proceedings of the ACM IUI 2021 Workshops, April 13–17, 2021, College Station, USA.
- Shmueli, G., & Koppius, O. R. (2011). Predictive analytics in information systems research. MIS quarterly, 553-572.
- Zahn, M. V., Feuerriegel, S., & Kühl, N. (2021). The cost of fairness in AI: Evidence from e-commerce. Business & information systems engineering.

T   6.90 Course: Artificial Intelligence in Service Systems - Applications in Computer Vision [T-WIWI-111219]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101448 - Service Management
	M-WIWI-101506 - Service Analytics
	M-WIWI-103117 - Data Science: Data-Driven Information Systems
	M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2595501	Artificial Intelligence in Service Systems - Applications in Computer Vision	3 SWS	Lecture / 🖳	Satzger, Schmitz

Legend: 🖳 Online, ⚙ Blended (On-Site/Online), 🎙 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment.

Modeled Conditions
The following conditions have to be fulfilled:

1. The course T-WIWI-105778 - Service Analytics A must not have been started.

Annotation
This course is admission restricted (see http://dsi.iism.kit.edu).

The course replaces "Service Analytics A" as of summer semester 2021.

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

V	**Artificial Intelligence in Service Systems - Applications in Computer Vision** 2595501, SS 2021, 3 SWS, Language: English, Open in study portal	Lecture (V) Online

Content
---We renamed this course from "Service Analytics A" to "Artificial Intelligence in Service Systems - Applications in Computer Vision ---

Learning objectives
This course teaches students how to apply machine learning concepts to develop predictive models that form the basis of many innovative service offerings and business models today. Using a selected use case each term, students learn the foundations of selected algorithms and development frameworks and apply them to build a functioning prototype of an analytics-based service. Students will become proficient in writing code in Python to implement a data science use case over the course period.

Description

Data-driven services have become a key differentiator for many companies. Their development is based on the increasing availability of structured and unstructured data and their analysis through methods from data science and machine learning. Examples comprise highly innovative service offerings based on technologies such as natural language processing, computer vision or reinforcement learning.

Using a selected use case, this lecture will teach students how to develop analytics-based services in an applied setting. We teach the theoretical foundations of selected machine learning algorithms (e.g., convolutional neural networks) and development concepts (e.g., developing modeling, training, inference pipelines) and teach how to apply these concepts to build a functioning prototype of an analytics-based service (e.g., inference running on a device). During the course, students will work in small groups to apply the learned concepts in the programming language Python using packages such as Keras, Tensorflow or Scikit-Learn.

Recommendations

The course is aimed at students in the Master's program with basic knowledge in statistics and applied programming in Python. Knowledge from the lecture Artificial Intelligence in Service Systems may be beneficial.

Additional information

Due to the practical group sessions in the course, the number of participants is limited. The offiicial application period in the WiWi portal is over. However, there is a limited number of remaining spaces. In case you are motivated to participate and have previous experience in the fields of Python Programming and Machine Learning please send a mail to jannis.walk∂kit.edu until Friday, 9th of April 2021.
Your mail has to contain:
- A short letter of motivation, ideally (but not necessarily) with reference to previous experience in programming and data science (maximum one page)
- Transcript of records (for Bachelor and Master if available)

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

Literature

- Friedman, Jerome, Trevor Hastie, and Robert Tibshirani. *The elements of statistical learning*. Vol. 1. No. 10. New York: Springer series in statistics, 2001.
- Russell, S., & Norvig, P. (2002). Artificial intelligence: a modern approach.
- Goldstein, E. B. (2009). Sensation and perception. 8th. *Belmont: Wadsworth, Cengage Learning, 496*(3).
- Gonzalez, Rafael C., Woods, Richard E. (2018). *Digital Image Processing*. 4th Pearson India
- Szeliski, R. (2010). *Computer vision: algorithms and applications*. Springer Science & Business Media.
- Redmon, J., Divvala, S., Girshick, R., & Farhadi, A. (2016). You only look once: Unified, real-time object detection. In *Proceedings of the IEEE conference on computer vision and pattern recognition*(pp. 779-788).
- Sermanet, P., Chintala, S., & LeCun, Y. (2012, November). Convolutional neural networks applied to house numbers digit classification. In *Proceedings of the 21st International Conference on Pattern Recognition (ICPR2012)*(pp. 3288-3291). IEEE.
- Ren, S., He, K., Girshick, R., & Sun, J. (2015). Faster r-cnn: Towards real-time object detection with region proposal networks. In *Advances in neural information processing systems*(pp. 91-99).
- Girshick, R., Donahue, J., Darrell, T., & Malik, J. (2014). Rich feature hierarchies for accurate object detection and semantic segmentation. In *Proceedings of the IEEE conference on computer vision and pattern recognition*(pp. 580-587).
- Krizhevsky, A., Sutskever, I., & Hinton, G. E. (2012). Imagenet classification with deep convolutional neural networks. In *Advances in neural information processing systems*(pp. 1097-1105).

T 6.91 Course: Asset Pricing [T-WIWI-102647]

Responsible:	Prof. Dr. Martin Ruckes
	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-DigFinEcon - Digital Financial Economics
	M-WIWI-101480 - Finance 3
	M-WIWI-101482 - Finance 1
	M-WIWI-101483 - Finance 2
	M-WIWI-101502 - Economic Theory and its Application in Finance

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2530555	Asset Pricing	2 SWS	Lecture / 🖥	Uhrig-Homburg
ST 2021	2530556	Übung zu Asset Pricing	1 SWS	Practice / 🖥	Uhrig-Homburg, Reichenbacher

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🖳 On-Site, ✖ Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

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   Lecture (V)
2530555, SS 2021, 2 SWS, Language: German, Open in study portal   Online

Organizational issues

Veranstaltungskonzept umfasst vollständige Aufzeichnungen von Vorlesung und Übung. Ergänzend bieten wir zweiwöchig freiwillige Live-Fragerunden zum fachlichen und organisatorischen Austausch an.

Literature
Basisliteratur

- Asset pricing / Cochrane, J.H. - Rev. ed., Princeton Univ. Press, 2005.

Zur Wiederholung/Vertiefung

- 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 6.92 Course: Auction Theory [T-WIWI-102613]

Responsible:	Prof. Dr. Karl-Martin Ehrhart
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101446 - Market Engineering
	M-WIWI-101453 - Applied Strategic Decisions
	M-WIWI-101500 - Microeconomic Theory
	M-WIWI-DigEcon - Digital Economics

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2520408	Auktionstheorie	2 SWS	Lecture	Ehrhart
WT 21/22	2520409	Übungen zu Auktionstheorie	1 SWS	Practice	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 21/22, 2 SWS, Open in study portal

Lecture (V)

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	**6.93 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 - Advanced Topics in Public Finance

Type	**Credits**	**Grading scale**	**Recurrence**	**Version**
Written examination	4,5	Grade to a third	Each winter term	2

Events

WT 21/22	2560134	Basics of German Company Tax Law and Tax Planning	3 SWS	Lecture / 📱	Wigger, Gutekunst

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🔵 On-Site, ✗ Cancelled

Competence Certificate

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5 h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

Prerequisites

None

Recommendation

Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course "Öffentliche Einnahmen" beforehand.

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

V	**Basics of German Company Tax Law and Tax Planning**	**Lecture (V)**
	2560134, WS 21/22, 3 SWS, Language: German, Open in study portal	**Online**

Content
Workload:

The total workload for this course is approximately 135.0 hours.

T 6.94 Course: Behavioral Experiments in Action [T-WIWI-111393]

Responsible:	Prof. Dr. Benjamin Scheibehenne
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-105714 - Consumer Research

Type	Credits	Grading scale	Recurrence	Expansion	Version
Examination of another type	4,5	Grade to a third	Each summer term	1 terms	1

Competence Certificate

Gradings will be based on the quality of the experimental program, data, and the research report in Stage 2.

Prerequisites

Experimental design (either take the course in our module, or gain basic knowledge of experimental design by self-education)

Annotation

In this course, students will gain first-hand experience into how to conduct an experimental study in the area of behavioral economics/psychology.

The course contains two stages. In Stage 1, students will learn how to plan, program, and run an experiment by attending to blocked lectures. In Stage 2, students will choose one classic experiment in the area of behavioral economics or psychology, conduct a replication of that experiment using the techniques acquired in Stage 1, and write a research report on the results of the replication.

The number of participants is limited. The registration will take place via the Wiwi-Portal.

T   6.95 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-DigFinEcon - Digital Financial Economics
	M-WIWI-101409 - Electronic Markets
	M-WIWI-101446 - Market Engineering
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	1

Competence Certificate

The examination is offered for the last time in winter semester 20/21 for first-time writers and then again for second attempts. The assessment consists of a written exam (75 min).

Depending on further pandemic developments, the examination will be offered as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

None

Annotation

The lecture is currently not offered.

T   6.96 Course: Bond Markets [T-WIWI-110995]

Responsible:	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-DigFinEcon - Digital Financial Economics
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2530560	Bond Markets	3 SWS	Lecture / Practice (	Uhrig-Homburg, Müller

Competence Certificate

The assessment consists of a written exam (75min.). The examination is offered in each semester and can be repeated at any regular examination date.

Depending on further pandemic developments, the examination will be offered as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Annotation

This course will be held in English.

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

V   Bond Markets
2530560, WS 21/22, 3 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)

Content

The lecture "Bond Markets" deals with the national and international bond markets, which are an important source of financing for companies, as well as for the public sector. After an overview of the most important bond markets, different yield definitions are discussed. Based on this, the concept of the yield curve is presented. In addition, the theoretical and empirical relationships between ratings, default probabilities and spreads are analyzed. The focus will then be on questions regarding the valuation, measurement, management and control of credit risks.

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

The assessment consists of a written exam (75min.) (according to §4(2), 1 SPO). The examination is offered in each semester and can be repeated at any regular examination date.

Students deepen their knowledge of national and international bond markets. They gain knowledge of the traded instruments and their key figures for describing default risk such as ratings, default probabilities or credit spreads.

Organizational issues

Blockveranstaltung: Einführungsveranstaltung Do 21.10. 10-11:30 Uhr im Geb. 05.20, Raum 1C-04, 04.11. und 18.11. 10-15 Uhr im Seminarraum Blücherstraße

T   6.97 Course: Bond Markets - Models & Derivatives [T-WIWI-110997]

Responsible:	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2530565	Bond Markets - Models & Derivatives	2 SWS	Lecture / Practice (	Grauer, Uhrig-Homburg

Competence Certificate

The assessment of success consists in equal parts of a written thesis and an oral exam including a discussion of one's own work. The main examination is offered once a year, re-examinations every semester.

Recommendation

Knowledge of "Bond Markets" and "Derivatives" courses is very helpful.

Annotation

This course will be held in English.

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

V   Bond Markets - Models & Derivatives
2530565, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture / Practice (VÜ)

Content

- **Competence Certificate:** The assessment of success consists in equal parts of a written thesis and an oral exam (according to §4(2), 3 SPO) including a discussion of one's own work. The main examination is offered once a year, re-examinations every semester.
- **Competence Goal:** Students deepen their knowledge of national and international bond markets. They are able to apply the knowledge they have gained about traded instruments and common valuation models for pricing derivative financial instruments.
- **Prerequisites:**
- **Content:** The lecture "Bond Markets – Models & Derivatives" deepens the content of the lecture "Bond Markets". The modelling of the dynamics of yield curves and the management of credit risks forms the theoretical foundation for the valuation of interest rate and credit derivatives to be discussed. In this course, students deal intensively with selected topics and acquire the relevant knowledge on their own.
- **Recommendation:** Knowledge of "Bond Markets" and "Derivatives" courses is very helpful.
- **Workload:** The total workload for this course is approximately 90 hours (3.0 credits).

Organizational issues

Blockveranstaltung, Kickoff am 03.12.21, Präsentation am 11.02.22 Seminarraum 320 Geb. 09.21 (Blücherstraße)

T 6.98 Course: Bond Markets - Tools & Applications [T-WIWI-110996]

Responsible:	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	1,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2530562	Bond Markets - Tools & Applications	1 SWS	Block	Uhrig-Homburg, Grauer

Competence Certificate

The assessment consists of an empirical case study with written elaboration and presentation. The main examination is offered once a year, re-examinations every semester.

Recommendation

Knowledge of the "Bond Markets" course is very helpful.

Annotation

This course will be held in English.

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

V Bond Markets - Tools & Applications
2530562, WS 21/22, 1 SWS, Language: English, Open in study portal

Block (B)

Content

- **Competence Certificate:** The assessment consists of an empirical case study with written elaboration and presentation (according to $4(2), 3 SPO). The main examination is offered once a year, re-examinations every semester.
- **Competence Goal:** The students apply various methods in practice within the framework of a project-related case study. They are able to deal with empirical data and analyze them in a targeted manner.
- **Content:** The course "Bond Markets – Tools & Applications" includes a hands-on project in the field of national and international bond markets. Using empirical datasets, the students have to apply practical methods in order to analyze the data in a targeted manner.
- **Recommendation:** Knowledge of the "Bond Markets" course is very helpful.
- **Workload:** The total workload for this course is approximately 45 hours (1.5 credits).

Organizational issues

Blockveranstaltung, Kickoff am 21./22.10.21 in der Blockveranstaltung Bond Markets (Geb. 05.20, 1C-04), Präsentation am 03.12.21 im Seminarraum 320 Geb. 09.21

T   6.99 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

Type Examination of another type	Credits 4,5	Grading scale Grade to a third	Recurrence Each summer term	Version 2

Events					
ST 2021	2540466	Business Data Analytics: Application and Tools	2 SWS	Lecture / 🖥	Dann, Grote, Stoeckel
ST 2021	2540467	Excercise Business Data Analytics: Application and Tools	1 SWS	Practice / 🖥	Badewitz, Grote, Sterk

Legend: 🖥 Online, ✖ Blended (On-Site/Online), 🔵 On-Site, ✗ Cancelled

Competence Certificate
Success is monitored through ongoing elaborations and presentations of tasks and a written exam (60 minutes) at the end of the lecture period. Successful participation in the excercises is a prerequisite for admission to the written examination.
The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Prerequisites
None

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 2021, 2 SWS, Language: German, Open in study portal	Lecture (V) Online

T 6.100 Course: Business Data Strategy [T-WIWI-106187]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103117 - Data Science: Data-Driven Information Systems

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2540484	Business Data Strategy	2 SWS	Lecture	Weinhardt, Dinther
WT 21/22	2540485	Übung zu Business Data Strategy	1 SWS	Practice	Weinhardt, Badewitz

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 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)

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.

Organizational issues
Application/Registration

Attendance will be limited to 20-25 participants. Application/registration is therefore preliminary. After the application deadline has passed, positions will be allocated, based on evaluation of the previous study records. Applications are accepted only through the Wiwi-Portal: https://portal.wiwi.kit.edu/ys/5254

Anmeldung

Die Teilnehmeranzahl ist begrenzt (ca. 20-25 Plätze). Eine Anmeldung erfolgt deshalb zunächst unter Vorbehalt. Nach Ablauf der Anmeldefrist werden die Plätze zur Teilnahme, nach Einsicht der Vorleistungen im Studium vergeben. Die Anmeldung/Bewerbung erfolgt ausschließlich über das Wiwi-Portal: https://portal.wiwi.kit.edu/ys/5254

T 6.101 Course: Business Dynamics [T-WIWI-102762]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
	Dr Paul Glenn
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101409 - Electronic Markets
	M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Each winter term	Version 1

Events					
WT 21/22	2540531	Business Dynamics	2 SWS	Lecture	Geyer-Schulz, Glenn
WT 21/22	2540532	Exercise Business Dynamics	1 SWS	Practice	Geyer-Schulz, Glenn

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.

Prerequisites

None

Recommendation

None

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

V Business Dynamics
2540531, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)

Literature

John D. Sterman. Business Dynamics: Systems Thinking and Modeling for a Complex World. McGraw-Hill, 2000.

T 6.102 Course: Business Intelligence Systems [T-WIWI-105777]

Responsible:	Prof. Dr. Alexander Mädche
	Mario Nadj
	Dr. Peyman Toreini
Organisation:	KIT Department of Economics and Management
Part of:	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	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	2

Events					
WT 21/22	2540422	Business Intelligence Systems	3 SWS	Lecture	Mädche, Nadj

Competence Certificate

Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

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 21/22, 3 SWS, Language: English, Open in study portal

Lecture (V)

Content

In most modern enterprises, Business Intelligence & Analytics (BI&A) Systems represent a core enabler of 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. Modern BI&A systems leverage beyond reporting and dashboards also advanced analytical functions. Thus, today they also play a major role in enabling data-driven products and services. The aim of this course is to introduce theoretical foundations, concepts, tools, and current practice of BI&A Systems from a managerial and technical perspective.

The course is complemented with an engineering capstone project, where students work in a team with real-world use cases and data in order to create running Business intelligence & Analytics system prototypes.

Learning objectives

- Understand the theoretical foundations of key Business Intelligence & Analytics concepts supporting decision-making
- Explore key capabilities of state-of-the-art Business Intelligence & Analytics Systems
- Learn how to successfully implement and run Business Intelligence & Analytics Systems from multiple perspectives, e.g. architecture, data management, consumption, analytics
- Get hands-on experience by working with Business Intelligence & Analytics Systems with real-world use cases and data

Prerequisites

This course is limited to a capacity of 50 places. The capacity limitation is due to the attractive format of the accompanying engineering capstone project. Strong analytical abilities and profound skills in SQL as wells as Python and/or R are required. Students have to apply with their CV and transcript of records. All organizational details and the underlying registration process of the lecture and the capstone project will be presented in the first lecture. The teaching language is English.

Literature

- Turban, E., Aronson, J., Liang T.-P., Sharda, R. 2008. "Decision Support and Business Intelligence Systems".
- 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.

Further literature will be made available in the lecture.

T 6.103 Course: Business Models in the Internet: Planning and Implementation [T-WIWI-102639]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-102806 - Service Innovation, Design & Engineering

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2540456	Internet Business Models	2 SWS	Lecture / 🖳	Huber
ST 2021	2540457	Übungen zu Geschäftsmodelle im Internet: Planung und Umsetzung	1 SWS	Practice / 🖳	Richter, Huber, Fegert

Legend: 🖳 Online, ⚄ Blended (On-Site/Online), 🗣 On-Site, ✖ Cancelled

Competence Certificate

Please note that in the summer semester 2020 the exam will only be offered to students who have completed the semester performance but have not yet taken the exam. From summer semester 2021 the exam will be offered again regularly.

Success is monitored through ongoing elaborations and presentations of tasks and a written exam (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Successful participation in the excercises is a prerequisite for admission to the written examination.

Prerequisites
None

Recommendation
None

Annotation
Please note that the lecture will not be offered in summer semester 2020 due to the research semester of Prof. Weinhardt.

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

V	**Internet Business Models** 2540456, SS 2021, 2 SWS, Language: German, Open in study portal	**Lecture (V)** **Online**

Literature
Wird in der Vorlesung bekannt gegeben.

T 6.104 Course: Business Planning [T-WIWI-102865]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type Examination of another type	Credits 3	Grading scale Grade to a third	Recurrence Each term	Version 1

Events					
ST 2021	2545007	Business Planning for Founders	2 SWS	Seminar / 📱	Kleinn, Ntagiakou, Terzidis
ST 2021	2545109	Business Planning for Founders in the field of IT-Security (KASTEL)	2 SWS	Seminar / 📱	Ntagiakou, Terzidis
WT 21/22	2545007	Business Planning for Founders	2 SWS	Seminar / 📱	Wohlfeil, Bauman

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment.

Prerequisites
None

Recommendation
None

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

V	**Business Planning for Founders** 2545007, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content
The seminar introduces students to the basic concepts of business planning for entrepreneurs. On the one hand, this involves concepts for the concretisation of business ideas (business modelling, market potential assessment, resource planning, etc.) and on the other hand, the preparation of an implementable business plan (with or without VC financing). In the course of the seminar, the students are familiarized with methods of further developing patents and business ideas into a more concrete business plan and formulating them in a business plan.

Organizational issues
Block am 26.04., 03.05., 10.05. jeweils 9-17 Uhr

V	**Business Planning for Founders in the field of IT-Security (KASTEL)** 2545109, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

Content

In order to identify opportunities, the participants should identify fields for entrepreneurial opportunities in a systematic web research. For this purpose, Systematic Mapping procedures will be adapted to the research of general web sources and applied to the research of interesting fields in the area of cyber security.

Information about the seminar:

In the seminar you will work in groups of max. 4 persons. Group applications are welcome but not a prerequisite for participation.

Some of the seminars will be held in English.

The focus of the seminar is Opportunity Recognition in the field of IT-Security, followed by ideation sessions with the aim to find possible applications for technologies that are developed at the KIT. Prototyping and also Pitching are part of the seminar.

Target group:

Master Students

Information on the allocation of seminar places:

The registration for the seminar is possible in the Wiwi portal in the period from 11.09.2019 to 05.10.2019 at 23:55 clock. To apply for the seminar, please send us a letter of motivation (max. 5 sentences).

Seminar contents:

- To identify opportunities, the participants should identify fields for entrepreneurial opportunities in a systematic web research. For this purpose, Systematic Mapping procedures will be adapted to the research of general web sources and applied to the research of interesting fields in the area of cyber security.
- All information will be discussed with experts on the second seminar day. The aim of the first two sessions is to develop a systematic segmentation of market needs.
- After the teams have been formed, the workshop "Technology Application Selection (TAS)" follows. This is a framework developed by EnTechnon that will help the teams to develop concrete business ideas based on given technologies. The three steps of the TAS will be the content of the third and fourth seminar days. Participants will generate ideas and then - based on specific criteria that we will provide - choose an idea on which they will build their value proposition.
- The final session before the final day will deal with prototyping and validation. This will use rapid prototyping and validation methods from the design thinking environment.
- On the last day - before their final presentations - the participants learn how to present the idea in a short presentation (pitch) to an interested audience.

Organizational issues

Blockveranstaltung im Rahmen des KASTEL Projekts am 12.05., 09.06., 23.06.

	Business Planning for Founders	**Seminar (S)**
V	2545007, WS 21/22, 2 SWS, Language: English, Open in study portal	**Online**

Content

The seminar introduces students to basic concepts of business planning based on technological innovations. On the one hand, this involves concepts for the concretization of business ideas (business modeling, market potential assessment, resource planning, etc.) and, on the other hand, the creation of a feasible business plan (with or without VC financing).

During the seminar, students are familiarized with methods to develop technological inventions and initial business ideas into a more concrete business plan. After completing this seminar, students will have learned and actually practiced the whole business model development process.

T 6.105 Course: Business Process Modelling [T-WIWI-102697]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	2

Events

WT 21/22	2511210	Business Process Modelling	2 SWS	Lecture / 🔊	Oberweis
WT 21/22	2511211	Exercise Business Process Modelling	1 SWS	Practice / 🧩	Oberweis, Schüler

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🔊 On-Site, ✗ Cancelled

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites

None

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

V Business Process Modelling

2511210, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

The proper modeling of relevant aspects of business processes is essential for an efficient and effective design and implementation of processes. This lecture presents different classes of modeling languages and discusses the respective advantages and disadvantages of using actual application scenarios. For that simulative and analytical methods for process analysis are introduced. In the accompanying exercise the use of process modeling tools is practiced.

Learning objectives:

Students

- describe goals of business process modeling and aplly different modeling languages,
- choose the appropriate modeling language according to a given context,
- use suitable tools for modeling business processes,
- apply methods for analysing and assessing process modells to evaluate specific quality characteristics of the process model.

Recommendations:

Knowledge of course Applied Informatics I - Modelling is expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer 2012.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karl: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T   6.106 Course: Business Strategies of Banks [T-WIWI-102626]

Responsible:	Prof. Dr. Wolfgang Müller
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	see Annotations	1

Events					
ST 2021	2530299	Business Strategies of Banks	2 SWS	Lecture / ✗	Müller
WT 21/22	2530299	Business Strategies of Banks	2 SWS	Lecture / 🗣	Müller

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

Competence Certificate
The lecture will be offered for the last time in the winter semester 2021/22. The exam will take place for the last time in the summer semester 2022 (only for repeaters).

Prerequisites
None

Recommendation
None

Annotation
The lecture will be offered for the last time in the winter semester 2021/22.

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

V	**Business Strategies of Banks** 2530299, SS 2021, 2 SWS, Language: German, Open in study portal	**Lecture (V) Cancelled**

Literature
Weiterführende Literatur:

- Ein Skript wird im Verlauf der Veranstaltung kapitelweise ausgeteilt.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2014, Bankbetriebslehre, 6. Auflage, Springer

V	**Business Strategies of Banks** 2530299, WS 21/22, 2 SWS, Language: German, Open in study portal	**Lecture (V) On-Site**

Organizational issues
Die Veranstaltung findet nur statt, wenn sie in Präsenz stattfinden kann.

Termine und Räume laut Ankündigung am Institut.

Literature
Weiterführende Literatur:

- Ein Skript wird im Verlauf der Veranstaltung kapitelweise ausgeteilt.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2014, Bankbetriebslehre, 6. Auflage, Springer

T 6.107 Course: Case Studies Seminar: Innovation Management [T-WIWI-102852]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2545105	Case studies seminar: Innovation management	2 SWS	Seminar / ✿	Weissenberger-Eibl

Legend: 🗖 Online, ✿ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessments (§4(2), 3 SPO).

Prerequisites
None

Recommendation
Prior attendance of the course Innovation Management is recommended.

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

V Case studies seminar: Innovation management
2545105, WS 21/22, 2 SWS, Language: German, Open in study portal
     Seminar (S)
Blended (On-Site/Online)

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.

Literature
Werden in der ersten Veranstaltung bekannt gegeben.

T 6.108 Course: Challenges in Supply Chain Management [T-WIWI-102872]

Responsible:	Esther Mohr
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-102805 - Service Operations
	M-WIWI-102808 - Digital Service Systems in Industry

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2550494	Challenges in Supply Chain Management	3 SWS	Lecture / 🖥	Mohr

Legend: 🖥 Online, ⚯ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written paper and an oral exam of ca. 30-40 min.

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 2021, 3 SWS, Language: English, Open in study portal

Lecture (V)
Online

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.

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

Literature
Wird in Abhängigkeit vom Thema in den Projektteams bekanntgegeben.

T 6.109 Course: Cognitive Modeling [T-WIWI-111392]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-105714 - Consumer Research

Type	Credits	Grading scale	Recurrence	Expansion	Version
Examination of another type	4,5	Grade to a third	Each winter term	1 terms	1

Events					
WT 21/22	2540601	Cognitive Modeling	2 SWS	Lecture	Scheibehenne, Liu

Competence Certificate
There will be 4 assignments during the course of the semester. Each will count 25% towards the final grade.

Prerequisites
Calculus, probability theory

Annotation
The goal of this course is to help students develop a basic understanding of computational models in the study of human cognition and behavior.

In the first half of the semester, we will go over the following contents to prepare for the learning of cognitive modeling: basics of the R software, foundations of probability, and parameter estimation. In the second half, we will discuss the general ideas of modeling in behavioral science as well as some specific cognitive models. The class will take a biweekly lecture form. All lectures, materials, and assignments are in English.

The number of participants is limited. The registration will take place via the Wiwi-Portal.

T 6.110 Course: Competition in Networks [T-WIWI-100005]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101406 - Network Economics

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Each winter term	Version 3

Events					
WT 21/22	2561204	Competition in Networks	2 SWS	Lecture	Mitusch
WT 21/22	2561205	Übung zu Wettbewerb in Netzen	1 SWS	Practice	Wisotzky, Mitusch, Corbo

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 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)

Content

Network or infrastructure industries like telecommunication, transport, and utilities form the backbone of modern economies. The lecture provides an overview of the economic characteristics of network industries. The planning of networks is complicated by the multitude of aspects involved (like spatial differentiation and the like). The interactions of different companies - competition or cooperation or both - are characterized by complex interdependencies within the networks: network effects, economies of scale, effects of vertical integration, switching costs, standardization, compatibility etc. appear increasingly in these sectors and even tend to appear in combination. Additionally, government interventions can often be observed, partly driven by the aims of competition policy and partly driven by the aims industrial policy. All these issues are brought up, analyzed formally (in part) and illustrated by several examples in the lecture

Literature

Literatur und Skripte werden in der Veranstaltung angegeben.

T	**6.111 Course: Computational Economics [T-WIWI-102680]**

Responsible: PD Dr. Pradyumn Kumar Shukla
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Each winter term	Version 3

Events					
WT 21/22	2590458	Computational Economics	2 SWS	Lecture / 📱	Shukla
WT 21/22	2590459	Excercises to Computational Economics	1 SWS	Practice / 📱	Shukla

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulation).

Prerequisites
None

Annotation
The credits have been changed to 5 starting summer term 2016.

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

V	**Computational Economics** 2590458, WS 21/22, 2 SWS, Language: English, Open in study portal	**Lecture (V) Online**

Content
Examining complex economic problems with classic analytical methods usually requires making numerous simplifying assumptions, for example that agents behave rationally or homogeneously. Recently, widespread availability of computing power gave rise to a new field in economic research that allows the modeling of heterogeneity and forms of bounded rationality: Computational Economics. Within this new discipline, computer based simulation models are used for analyzing complex economic systems. In short, an artificial world is created which captures all relevant aspects of the problem under consideration. Given all exogenous and endogenous factors, the modelled economy evolves over time and different scenarios can be analyzed. Thus, the model can serve as a virtual testbed for hypothesis verification and falsification.

Learning objectives:

The student

- understands the methods of Computational Economics and applies them on practical issues,
- evaluates agent models considering bounded rational behaviour and learning algorithms,
- analyses agent models based on mathematical basics,
- knows the benefits and disadvantages of the different models and how to use them,
- examines and argues the results of a simulation with adequate statistical methods,
- is able to support the chosen solutions with arguments and can explain them.

Literature

- R. Axelrod: "Advancing the art of simulation in social sciences". R. Conte u.a., Simulating Social Phenomena, Springer, S. 21-40, 1997.
- R. Axtel: "Why agents? On the varied motivations for agent computing in the social sciences". CSED Working Paper No. 17, The Brookings Institution, 2000.
- K. Judd: "Numerical Methods in Economics". MIT Press, 1998, Kapitel 6-7.
- A. M. Law and W. D. Kelton: "Simulation Modeling and Analysis", McGraw-Hill, 2000.
- R. Sargent: "Simulation model verification and validation". Winter Simulation Conference, 1991.
- L. Tesfation: "Notes on Learning", Technical Report, 2004.
- L. Tesfatsion: "Agent-based computational economics". ISU Technical Report, 2003.

Weiterführende Literatur:

- Amman, H., Kendrick, D., Rust, J.: "Handbook of Computational Economics". Volume 1, Elsevier North-Holland, 1996.
- Tesfatsion, L., Judd, K.L.: "Handbook of Computational Economics". Volume 2: Agent-Based Computational Economics, Elsevier North-Holland, 2006.
- Marimon, R., Scott, A.: "Computational Methods for the Study of Dynamic Economies". Oxford University Press, 1999.
- Gilbert, N., Troitzsch, K.: "Simulation for the Social Scientist". Open University Press, 1999.

T 6.112 Course: Computer Aided Data Analysis [T-GEISTSOZ-104565]

Responsible:	Prof. Dr. Gerd Nollmann
Organisation:	KIT Department of Humanities and Social Sciences
Part of:	M-GEISTSOZ-101169 - Sociology

Type	Credits	Grading scale	Version
Completed coursework	0	pass/fail	1

Events					
WT 21/22	5011009	Decomposition and regression analysis	2 SWS	Course (/ 📱	Nollmann

Legend: 📱 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

T 6.113 Course: Computer Contract Law [T-INFO-102036]

Responsible:	Michael Bartsch
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101216 - Private Business Law

Type Written examination	Credits 3	Grading scale Grade to a third	Recurrence Each winter term	Version 1

Events					
WT 21/22	2411604	Computer Contract Law	2 SWS	Lecture / 🗣	Menk

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

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

V Computer Contract Law
2411604, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V) On-Site

Content

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.

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

Weiterführende Literatur

Ergänzende Literatur wird in den Vorlesungsfolien angegeben.

T   6.114 Course: Convex Analysis [T-WIWI-102856]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101473 - Mathematical Programming

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Irregular	Version 1

Events					
ST 2021	2550120	Konvexe Analysis	2 SWS	Lecture / 📱	Stein

Legend: 📱 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

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 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content
Convex Analysis deals with properties of convex functions and convex sets, amongst others 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 intuitive 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:

- Introduction to entropic smoothing and convexity
- Global error bounds
- Smoothness properties of convex functions
- The convex subdifferential
- Global Lipschitz continuity
- Descent directions and stationarity conditions

Remark:

Prior to the attendance of this lecture, it is strongly recommend to acquire basic knowledge on optimization problems in one of the lectures "Global Optimization I and II" and "Nonlinear Optimization I and II".

Learning objectives:

The student

- knows and understands the fundamentals of convex analysis,
- is able to choose, design and apply modern techniques of convex analysis in practice.

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
- B. Mordukhovich, N.M. Nam, An Easy Path to Convex Analysis and Applications, Morgan & Claypool Publishers, 2014
- R.T. Rockafellar, Convex Analysis, Princeton University Press, 1970
- R.T. Rockafellar, R.J.B. Wets, Variational Analysis, Springer, Berlin, 1998

T 6.115 Course: Copyright [T-INFO-101308]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-INFO-101215 - Intellectual Property Law

Type Written examination	Credits 3	Grading scale Grade to a third	Recurrence Each winter term	Version 1

Events						
WT 21/22	24121	Copyright	2 SWS	Lecture / 🖥		Dreier

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), ◗ On-Site, ✗ Cancelled

T 6.116 Course: Corporate Compliance [T-INFO-101288]

Responsible: Andreas Herzig
Organisation: KIT Department of Informatics
Part of: M-INFO-101216 - Private Business Law

Type Written examination	Credits 3	Grading scale Grade to a third	Recurrence Each winter term	Version 1

Events					
WT 21/22	2400087	Corporate Compliance	2 SWS	Lecture / 👤	Herzig

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 👤 On-Site, ✗ Cancelled

T   6.117 Course: Corporate Financial Policy [T-WIWI-102622]

Responsible:	Prof. Dr. Martin Ruckes
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101453 - Applied Strategic Decisions
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2
	M-WIWI-101502 - Economic Theory and its Application in Finance

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2530214	Corporate Financial Policy	2 SWS	Lecture / 🖥	Ruckes
ST 2021	2530215	Übungen zu Corporate Financial Policy	1 SWS	Practice / 🖥	Ruckes, Hoang

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

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   Corporate Financial Policy
2530214, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content

The course develops the foundations for the management and financing of firms in imperfect markets.

The course covers the following topics:

- Measures of good corporate governance
- Corporate finance
- Liquidity management
- Executive compensation and incentives
- Corporate takeovers

Learning outcomes: The students

- are able to explain the importance of information asymmetry for the contract design of firms,
- are capable to evaluate measures for the reduction of information asymmetry,
- are in the position to analyze contracts with regard to their incentive and communication effects.

| T | **6.118 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 - Economic Theory and its Application in Finance

Type	**Credits**	**Grading scale**	**Recurrence**	**Version**
Written examination	4,5	Grade to a third	Each summer term	2

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 will be held again in the summer term 2023 at the earliest. Please pay attention to the announcements on our website.

T   6.119 Course: Credit Risk [T-WIWI-102645]

Responsible:	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	1

Competence Certificate

The examination is offered for first-time writers for the last time in the winter semester 2020/21 and (only) for repeaters in the summer semester 2021.

The assessment consists of a written exam (75 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. 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

The course will no longer be offered from winter semester 2020/21.

T 6.120 Course: Critical Information Infrastructures [T-WIWI-109248]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101628 - Emphasis in Informatics
        M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	4

Events					
WT 21/22	2511400	Critical Information Infrastructures	2 SWS	Lecture	Sunyaev, Dehling, Lins
WT 21/22	2511401	Exercises to Critical Information Infrastructures	1 SWS	Practice	Sunyaev, Dehling, Lins

Competence Certificate
The alternative exam assessment 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.

The examination is only offered to first-time students in the winter semester, but can be repeated in the following summer semester.

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 21/22, 2 SWS, Language: English, Open in study portal | **Lecture (V)** |
|---|---|---|

Content

The course critical information infrastructures (CII) introduces students to the world of 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 course, 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. Students will work (in a group of 4) on a selected topic and have to write a course paper. Students can choose a topic from a variety of topics. To answer the research questions, students can use literature reviews but also interviews, surveys, programming tasks, and other research methods.

There will be a short introduction to the topics for the course paper in the following topic areas. In addition, it will be possible to propose your own topics as a group in the topic areas:

- Distributed Ledger Technology
- Critical Cloud Services
- Health Information Infrastructures
- Vehicluar Fog Computing
- Information Privacy
- Trustworthy Artificial Intelligence

Since we offer topics in this course that also correspond to the research interests in our research group, there may be the opportunity to work on the topics in more depth in the course of a final thesis.

Learning objectives:

Students know concepts and technologies relevant for the design and reliable operation of critical information infrastructures and can leverage them to develop solutions for real-world challenges.

Notes:

The number of participants is limited to 24 students. Please register via the WiWi portal: https://portal.wiwi.kit.edu/ys/5035

The registration will be opened from August 17, 2021 until October 1, 2021.

Please make sure that you are available at the following dates if you want to take the course:

- 21.10.2021, Noon–01:30 pm: 1. Introduction & Topic Area Presentations
- 28.10.2021, Noon–01:30 pm: 2. Foundations to Critical Information Infrastructures
- 04.11.2021, Noon–01:30 pm: 3. Critical Information Infrastructure Landscape
- 11.11.2021, Noon–01:30 pm: 4. Research on Information Systems & Group Assignment
- 10.12.2021, 10:00 am–06:00 pm: Interim Presentation (estimated)
- 28.01.2022, 10:00 am–06:00 pm: Final Presentation (estimated)

Further information on the course structure will be announced in the first session. Depending on the number of participants the individual sessions can have a shorter duration.

The meetings will take place online via MS Teams, as currently planned. We will provide a link to join the team if your registration was approved. Interim and final presentation may take a hybrid or real-life form.

If you have any questions regarding course registration, please contact lins@kit.edu or dehling@kit.edu

T   6.121 Course: Current Directions in Consumer Psychology [T-WIWI-111100]

Responsible:	Prof. Dr. Benjamin Scheibehenne
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-105714 - Consumer Research

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each term	**Expansion** 1 terms	**Version** 1

Events					
ST 2021	2540441	Current Directions in Consumer Psychology	2 SWS	Others (sons / 🖥	Scheibehenne, Liu
WT 21/22	2540441	Current Directions in Consumer Psychology	2 SWS	Others (sons / ⚙	Scheibehenne

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), ⬤ On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment. Grading will be based on a continuous basis throughout the semester.

Annotation
This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class and will be updated throughout the semester. Grades will be based on weekly participation throughout the semester including short oral presentation of papers in class, active engagement in discussions, and homework assignments. Due to the highly interactive format of this class the number of participants is limited.

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

V	**Current Directions in Consumer Psychology** 2540441, SS 2021, 2 SWS, Language: English, Open in study portal	**Others (sonst.)** **Online**

Content
This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class. Grades will be based on continuous participation throughout the semester including short oral presentation of papers in class, active engagement in discussions and homework assignments. This class will be taught in English.

V	**Current Directions in Consumer Psychology** 2540441, WS 21/22, 2 SWS, Language: English, Open in study portal	**Others (sonst.)** **Blended (On-Site/Online)**

Content
This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class. Grades will be based on continuous participation throughout the semester including short oral presentation of papers in class, active engagement in discussions and homework assignments. This class will be taught in English.

T 6.122 Course: Current Issues in Innovation Management [T-WIWI-102873]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

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 6.123 Course: Data Protection Law [T-INFO-111406]

Responsible:	Dr. Johannes Eichenhofer
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101217 - Public Business Law

Type Written examination	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2400238	Bereichsdatenschutz	2 SWS	Lecture /	Boehm

Legend: Online, Blended (On-Site/Online), On-Site, X Cancelled

| T | **6.124 Course: Database Systems and XML [T-WIWI-102661]** |

Responsible: Prof. Dr. Andreas Oberweis

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-InfoML - Informatics & Machine Learning
M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 2

Events					
WT 21/22	2511202	Database Systems and XML	2 SWS	Lecture	Oberweis
WT 21/22	2511203	Exercises Database Systems and XML	1 SWS	Practice / ⚙	Oberweis, Fritsch

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites

None

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

| V | **Database Systems and XML**
2511202, WS 21/22, 2 SWS, Language: German, Open in study portal | **Lecture (V)** |

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.

Learning objectives:

Students

- know the basics of XML and generate XML documents,
- are able to use XML database systems and to formulate queries to XML documents,
- know to assess the use of XML in operational practice in different application contexts.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

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

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T 6.125 Course: Demand-Driven Supply Chain Planning [T-WIWI-110971]

Responsible: Josef Packowski
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-102805 - Service Operations

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Competence Certificate
The assessment consists of a written exam.

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

T 6.126 Course: Derivatives [T-WIWI-102643]

Responsible:	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101482 - Finance 1
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2530550	Derivatives	2 SWS	Lecture / ▯	Uhrig-Homburg
ST 2021	2530551	Übung zu Derivate	1 SWS	Practice / ▯	Uhrig-Homburg, Eska

Legend: ▯ Online, ⬡ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Recommendation

None

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

V Derivatives
2530550, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Organizational issues

Veranstaltungskonzept umfasst vollständige Aufzeichnungen von Vorlesung und Übung. Ergänzend bieten wir zweiwöchig freiwillige Live-Fragerunden zum fachlichen und organisatorischen Austausch an.

Literature

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

Weiterführende Literatur:

Cox/Rubinstein (1985): Option Markets, Prentice Hall

T 6.127 Course: Design Thinking [T-WIWI-102866]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2021	2545008	Design Thinking (Track 1)	2 SWS	Seminar / 🖥	González, Abraham, Csernalabics, Manthey
WT 21/22	2545008	Design Thinking (Track 1)	2 SWS	Seminar / 🖥	Abraham, Csernalabics

Legend: 🖥 Online, ❖ Blended (On-Site/Online), ● On-Site, ✖ Cancelled

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.

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

V Design Thinking (Track 1)
2545008, WS 21/22, 2 SWS, Language: English, Open in study portal

Seminar (S)
Online

Content
Course Content:

Design Thinking is a user-centric innovation management method. The iterative process first analyzes the problem space and builds a sound understanding of the future users. Subsequently, ideas for the solution are generated, prototypes are created and tested by the user group. The result is a proven and validated product.

During the seminar, the students learn basic procedures for achieving user-centric innovations. These are concrete methods that start with the potential user of certain products and services. The method is problem-oriented and emphasizes the specific customer situation. After attending the seminar, the students have a clear understanding of the need to explore end-user needs and are able to independently apply the methods of Design Thinking for developing market-driven innovations at a basic level.

Credentials:

Registration is via the Wiwi portal.

ATTENTION: Creditability in the seminar module: The seminar is NOT credited in the seminar module! Crediting is only possible in the EXPERT MODULE ENTREPRENEURSHIP.

T   6.128 Course: Designing Interactive Systems [T-WIWI-110851]

Responsible:	Prof. Dr. Alexander Mädche
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-DigSoc - Digitalization & Society
	M-WIWI-EconMan - Economics & Management
	M-WIWI-104068 - Information Systems in Organizations
	M-WIWI-104080 - Designing Interactive Information Systems

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2540558	Designing Interactive Systems	3 SWS	Lecture / 📱	Mädche, Gnewuch

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

Prerequisites

None

Annotation

This course replaces T-WIWI-108461 "Interactive Information Systems" starting summer term 2020.

The course is held in english.

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

V	**Designing Interactive Systems**	**Lecture (V)**
	2540558, SS 2021, 3 SWS, Language: English, Open in study portal	**Online**

Content
Description

Computers have evolved from batch processors towards highly interactive systems. This offers new possibilities but also challenges for the successful design of the interaction between human and computer. Interactive system are socio-technical systems in which users perform tasks by interacting with technology in a specific context in order to achieve specified goals and outcomes.

The aim of this course is to introduce advanced concepts and theories, interaction technologies as well as current practice of contemporary interactive systems.

The course is complemented with a design capstone project, where students in a team select and apply design methods & techniques in order to create an interactive prototype

Learning objectives

- Get an advanced understanding of conceptual foundations of interactive systems from a human and computer perspective

- explore the theoretical grounding of Interactive Systems leveraging theories from reference disciplines such as psychology

- know specific design principles for the design of advanced interactive systems

- get hands-on experience in conceptualizing and designing advanced Interactive Systems to solve a real-world challenge from an industry partner by applying the lecture contents.

Prerequisites

No specific prerequisites are required for the lecture

Literature
Die Vorlesung basiert zu einem großen Teil auf

· Benyon, D. (2014). Designing interactive systems: A comprehensive guide to HCI, UX and interaction design (3. ed.). Harlow: Pearson.

Weiterführende Literatur wird in der Vorlesung bereitgestellt.

T 6.129 Course: Digital Health [T-WIWI-109246]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	3

Events					
WT 21/22	2511402	Digital Health	2 SWS	Lecture	Sunyaev, Thiebes, Schmidt-Kraepelin

Competence Certificate

Alternative exam assessment (written elaboration, presentation, peer review, oral participation) according to §4(2),3 of the examination regulation. Details of the grading will be announced at the beginning of the course. The examination is only offered to first-time writers in the winter semester, but can be repeated in the following summer semester.

Prerequisites

None.

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

V	**Digital Health**	Lecture (V)
	2511402, WS 21/22, 2 SWS, Language: English, Open in study portal	

Content

The master course Digital Health introduces master students to the subject of digitization in health care. Students will learn about the theoretical foundations and practical implications of various topics surrounding the digitization in health care, including health information systems, telematics, big health care data, and patient-centered health care.

After an introduction to the challenge of digitization in health care, the following sessions will focus on an in-depth exploration of selected cases that represent current challenges in research and practice. Students will work (in a group of 3-4) on a selected topic and have to write a course paper. Students can choose a topic from a variety of topics. To answer the research questions, students can use literature reviews but also interviews, surveys, programming tasks, and other research methods are possible.

There will be a short introduction to the topics for the course paper in the following topic areas. In addition, it will be possible to propose your own topics as a group in the topic areas:

- Mobile Health (mHealth) / Gamification
- Distributed Ledger Technology / Blockchain
- Artificial Intelligence / Machine Learning
- Genomics / Biomedical Data

Since we offer topics in this course that also correspond to the research interests in our research group, there may be the opportunity to work on the topics in more depth in the course of a final thesis.

Learning objectives:

Students know about the challenges of digitization in health care and can leverage relevant concepts and technologies to address these challenges. Students learn to work in teams and critically discuss digital health topics with fellow students, researchers, and practitioners.

Notes:

The number of participants is limited to 30 students. Please register at the Wiwi-Portal here. The registration will be opened from September 7, 2021 until October 12, 2021.

Please make sure that you are available at the following dates if you want to take the course:

- 21.10.2021, 16:00–17:30 - 1. Introduction to Digital Health
- 28.10.2021, 16:00–17:30 - 2. Topic Area Presentation #1
- 04.11.2021, 16:00–17:30 - 3. Topic Area Presentation #2
- 11.11.2021, 16:00–17:30 - 4. Guest Lecture
- 10.02.2022, 10:00–17:00 - Final Presentation

Further information on the course structure will be announced in the first session. Depending on the number of participants the individual sessions can have a shorter duration.

The meetings will take place online via MS Teams. We will provide a link to join the team if your registration was approved.

If you have any questions regarding course registration, please contact scott.thiebes@kit.edu or manuel.schmidt-kraepelin@kit.edu

T   6.130 Course: Digital Marketing and Sales in B2B [T-WIWI-106981]

Responsible:	Prof. Dr. Martin Klarmann
	Anja Konhäuser
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-105312 - Marketing and Sales Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	1,5	Grade to a third	Each summer term	1

Events					
ST 2021	2571156	Digital Marketing and Sales in B2B	1 SWS	Others (sons / ▯	Konhäuser

Legend: ▯ Online, ⚃ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

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**	**Others (sonst.)**
	2571156, SS 2021, 1 SWS, Language: English, Open in study portal	**Online**

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.

- Understand digital marketing and sales approaches for the B2B sector
- Recognise important elements and understand how-to-setup of digital strategies
- Become familiar with the effectiveness and usage of different digital marketing channels
- Understand the effect of digital sales on sales management, customer support and value chain
- Be able to measure and interpret digital KPIs
- Calculate the Return on Investment (RoI) for digital marketing by combining online data with company performance data

time of presentness = 15 hrs.

private study = 30 hrs.

Organizational issues
Blockveranstaltung, Raum 115, Geb. 20.21, Termine werden noch bekannt gegeben

Literature
-

T 6.131 Course: Digital Services: Business Models and Transformation [T-WIWI-110280]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101448 - Service Management
	M-WIWI-102754 - Service Economics and Management
	M-WIWI-102808 - Digital Service Systems in Industry

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2595484	Digital Services: Business Models and Transformation	2 SWS	Lecture	Satzger, Schüritz
WT 21/22	2595485		1 SWS	Practice	Schüritz, Heinz

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.

Prerequisites
None

Recommendation
None

Annotation
former name until winter semester 2019/2020: "Business and IT Service Management" (T-WIWI-102881)

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

V Digital Services: Business Models and Transformation
2595484, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content
While the digitalization creates new opportunities for organizations, it also comes with its challenges: formerly proven business models become obsolete and need to be refined, internal processes cannot keep up with the requirements of the market and need to reassessed in any way.

The shift towards a service-based economy enables and requires companies to leverage advances in information technology to create added value for their customers. In particular, the emergence of big data and analytics enables better decision-making. The lecture teaches approaches that enable organizations to adapt their business models to new market requirements and showcases how to plan and execute a successful transformation to the desired organizational setup.

The lecture links academic content with practical examples and excises. Students are asked to actively engage in the discussion and contribute their knowledge. Invited guest speakers from industry and case studies emphasize the practical character of this lecture.

Literature

Böhmann, T./ Leimeister, J.M./ Möslein, K. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79

Cardoso et al. (Hrsg.) (2015), Fundamentals on Service Systems

Hartmann/ Zaki/ Feldmann/ Neely (2016), Capturing value from big data - a taxonomy of data-driven business models used by start-up firms, IJPOR, 36 (10), 1382-1406.

Schüritz R./Seebacher S./Satzger G./Schwartz L. (2017), Datatization as the Next Frontier of Servitization; in Proceedings of International Conference on Information Systems 2017

Vargo S. / Lusch R. (2017) Service-dominant logic 2025, in: IJRM 34, 46-67

Weill, P.; Woerner, S.L. (2018): "What's your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise". Boston, Massachusetts: Harvard Business Review Press.

Wirtz, B.(2019): "Digital Business Models – Concepts, Models, and the Alphabet Case Study". Springer.

T 6.132 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 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 1

Events					
ST 2021	2545103	Digital Transformation and Business Models	2 SWS	Seminar / 🖳	Koch

Legend: 🖳 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

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 is recommended.

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

V	**Digital Transformation and Business Models** 2545103, SS 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

Content
The seminar "Digital Transformation and Business Models" aims at the development of thematic aspects of digital transformation with simultaneous application of different business model methodologies. Established companies face the challenge of digital transformation. The digital transformation is particularly relevant for the business models of industrial enterprises. As part of innovation management, the examination of business model changes against the background of digital transformation is one of the main challenges facing the German economy. At the beginning, seminar topics will be assigned. These will be presented and discussed at the end of the seminar. In the first seminar date impulses to business model methodologies and the digital transformation take place, which are to be discussed then, in order to provide an understanding for the topic complex and to ensure the purposeful development of the seminar topics.

T 6.133 Course: Discrete-Event Simulation in Production and Logistics [T-WIWI-102718]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-102805 - Service Operations
	M-WIWI-102832 - Operations Research in Supply Chain Management

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2550488	Ereignisdiskrete Simulation in Produktion und Logistik	3 SWS	Lecture / ▯	Spieckermann

Legend: ▯ Online, ⚙ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written paper and an oral exam of about 30-40 min (alternative exam assessment).

Prerequisites
None

Recommendation
Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

Annotation
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is planned to be held every summer term.

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

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

V Ereignisdiskrete Simulation in Produktion und Logistik
2550488, SS 2021, 3 SWS, Language: German, Open in study portal

Lecture (V)
Online

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.

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 6.134 Course: Dynamic Macroeconomics [T-WIWI-109194]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101478 - Innovation and Growth
                    M-WIWI-101496 - Growth and Agglomeration
                    M-WIWI-101497 - Agglomeration and Innovation
                    M-WIWI-CompOpt - Computation & Optimization

Type	Credits	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	Each winter term	3

Events					
WT 21/22	2560402	Dynamic Macroeconomics	2 SWS	Lecture / 🖥	Brumm
WT 21/22	2560403	Übung zu Dynamic Macroeconomics	1 SWS	Practice / 🖥	Krause

Legend: 🖥 Online, ⬦ Blended (On-Site/Online), 📍 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a oral exam (30 min.).

Prerequisites
None.

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

V Dynamic Macroeconomics
2560402, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Literature
Literatur und Skripte werden in der Veranstaltung angegeben.

T 6.135 Course: Efficient Energy Systems and Electric Mobility [T-WIWI-102793]

Responsible: PD Dr. Patrick Jochem
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101452 - Energy Economics and Technology

Type Written examination	Credits 3,5	Grading scale Grade to a third	Recurrence Each summer term	Version 1

Events					
ST 2021	2581006	Efficient Energy Systems and Electric Mobility	2 SWS	Lecture / 🖥	Jochem

Legend: 🖥 Online, ⚼ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites
None

Recommendation
None

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

V Efficient Energy Systems and Electric Mobility
2581006, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

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.

- Understand the concept of energy efficiency as applied to specific systems

- Obtain an overview of the current trends in energy efficiency

- Be able to determine and evaluate alternative methods of energy efficiency improvement

- Overview of technical and economical stylized facts on electric mobility

- Judging economical, ecological and social impacts through electric mobility

Organizational issues
Freitag 09:45-11:15 Uhr

Literature
Wird in der Vorlesung bekanntgegeben.

T 6.136 Course: eFinance: Information Systems for Securities Trading [T-WIWI-110797]

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 Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2540454	eFinance: Information Systems for Securities Trading	2 SWS	Lecture / 📱	Weinhardt, Notheisen
WT 21/22	2540455	Übungen zu eFinance: Informationssysteme für den Wertpapierhandel	1 SWS	Practice / 🗣	Jaquart

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

Competence Certificate
Success is monitored by means of ongoing elaborations and presentations of tasks and an examination (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

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.

Annotation
The course"eFinance: Information Systems for Securities Trading" covers different actors and their function in the securities industry in-depth, highlighting key trends in modern financial markets, such as Distributed Ledger Technology, Sustainable Finance, and Artificial Intelligence. Security prices evolve through a large number of bilateral trades, performed by market participants that have specific, well-regulated and institutionalized roles. Market microstructure is the subfield of financial economics that studies the price formation process. This process is significantly impacted by regulation and driven by technological innovation. Using the lens of theoretical economic models, this course reviews insights concerning the strategic trading behaviour of individual market participants, and models are brought market data. Analytical tools and empirical methods of market microstructure help to understand many puzzling phenomena in securities markets.

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

V eFinance: Information Systems for Securities Trading
2540454, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V) Online

Literature

- Picot, Arnold, Christine Bortenlänger, Heiner Röhrl (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners"". Oxford University Press, New York

Weiterführende Literatur:

- Gomber, Peter (2000): "Elektronische Handelssysteme - Innovative Konzepte und Technologien". Physika Verlag, Heidelberg
- Schwartz, Robert A., Reto Francioni (2004): "Equity Markets in Action - The Fundamentals of Liquidity, Market Structure and Trading". Wiley, Hoboken, NJ

T   6.137 Course: Emerging Trends in Digital Health [T-WIWI-110144]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type Examination of another type	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 2

Events					
ST 2021	2513404	Seminar Emerging Trends in Digital Health (Bachelor)	2 SWS	Seminar / 🖵	Lins, Sunyaev, Thiebes
ST 2021	2513405	Seminar Emerging Trends in Digital Health (Master)	2 SWS	Seminar / 🖵	Lins, Sunyaev, Thiebes

Legend: 🖵 Online, ⚯ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

Competence Certificate
The alternative exam assessment consists of a final thesis.

Prerequisites
None.

Annotation
The course is usually held as a block course.

T   6.138 Course: Emerging Trends in Internet Technologies [T-WIWI-110143]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2513402	Seminar Emerging Trends in Internet Technologies (Bachelor)	2 SWS	Seminar / 🖥	Sunyaev, Thiebes, Lins
ST 2021	2513403	Seminar Emerging Trends in Internet Technologies (Master)	2 SWS	Seminar / 🖥	Lins, Sunyaev, Thiebes

Legend: 🖥 Online, ⬡ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
The alternative exam assessment consists of a final thesis.

Prerequisites
None.

Annotation
The course is usually held as a block course.

T   6.139 Course: Emissions into the Environment [T-WIWI-102634]

Responsible:	Ute Karl
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101412 - Industrial Production III
	M-WIWI-101471 - Industrial Production II

Type	Credits	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2581962	Emissions into the Environment	2 SWS	Lecture / 📱	Karl

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Recommendation

None

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

V   Emissions into the Environment

2581962, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content

Emission sources/emission monitoring/emission reduction: The lecture gives an overview of relevant emissions of air pollutants and greenhouse gases, emission monitoring and pollutant abatement options together with relevant legal regulations at national and international level. In addition, the fundamentals of circular economy, waste management and recycling are explained.

Structure:

Air pollution control

- Introduction, terms and definitions
- Sources of air pollutants
- Legal framework of air quality control
- Technical measures to reduce air pollutant emissions

Circular economy, recycling and waste management

- Waste collection and logistics
- Dual systems for packaging waste
- Recycling
- Thermal and biological waste treatment
- Final waste disposal

Literature

Wird in der Veranstaltung bekannt gegeben.

T   6.140 Course: Employment Law [T-INFO-111436]

Responsible: Dr. Alexander Hoff
Organisation: KIT Department of Informatics
Part of: M-INFO-101216 - Private Business Law

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each summer term	2

T 6.141 Course: Energy and Environment [T-WIWI-102650]

Responsible: Ute Karl
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101452 - Energy Economics and Technology
M-WIWI-101468 - Environmental Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2581003	Energy and Environment	2 SWS	Lecture / 🖥	Karl
ST 2021	2581004	Übungen zu Energie und Umwelt	1 SWS	Practice / 🖥	Fraunholz, Langenmayr, Fichtner

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), ◗ On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites
None.

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

V Energy and Environment
2581003, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content
The lecture focuses on the environmental impacts arising from fossil fuels use and on the methods for the evaluation of such impacts. The first part of the lecture describes the environmental impacts of air pollutants and greenhouse gases as well as technical measures for emission control. The second part covers methods of impact assessment and their use in environmental communication as well as methods for the scientific support of emission control strategies.

The topics include:

- Fundamentals of energy conversion
- Formation of air pollutants during combustion
- Technical measures to control emissions from fossil-fuel combustion processes
- External effects of energy supply (life cycle analyses of selected energy systems)
- Environmental communication on energy services (e.g. electricity labelling, carbon footprint)
- Integrated Assessment Modelling to support the European Clean Air Strategy
- Cost-effectiveness analyses and cost-benefit analyses for emission control strategies
- Monetary valuation of external effects (external costs)

Literature
Die Literaturhinweise sind in den Vorlesungsunterlagen enthalten (vgl. ILIAS)

T   6.142 Course: Energy Market Engineering [T-WIWI-107501]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-EconMan - Economics & Management
	M-WIWI-101411 - Information Engineering
	M-WIWI-101446 - Market Engineering
	M-WIWI-101451 - Energy Economics and Energy Markets
	M-WIWI-103720 - eEnergy: Markets, Services and Systems

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2540464	Energy Market Engineering	2 SWS	Lecture / ▯	Staudt
ST 2021	2540465	Übung zu Energy Market Engineering	1 SWS	Practice / ▯	Staudt, Meinke

Legend: ▯ Online, ⬡ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations).

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 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

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 6.143 Course: Energy Networks and Regulation [T-WIWI-107503]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101446 - Market Engineering
	M-WIWI-103720 - eEnergy: Markets, Services and Systems

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2540494	Energy Networks and Regulation	2 SWS	Lecture / 🗣	Rogat
WT 21/22	2540495	Übung zu Energy Networks and Regulation	1 SWS	Practice	Rogat

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✘ Cancelled

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**	Lecture (V)
	2540494, WS 21/22, 2 SWS, Open in study portal	**On-Site**

Content
Learning Goals

The student,

- understands the business model of a network operator and knows its central tasks in the energy supply system,
- has a holistic overview of the interrelationships in the network economy,
- understands the regulatory and business interactions,
- is in particular familiar with the current model of incentive regulation with its essential components and understands its implications for the decisions of a network operator
- is able to analyse and assess controversial issues from the perspective of different stakeholders.

Content of teaching

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
- First major 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.

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 6.144 Course: Energy Systems Analysis [T-WIWI-102830]

Responsible: Dr. Armin Ardone
                   Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101452 - Energy Economics and Technology

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	1

Events					
WT 21/22	2581002	Energy Systems Analysis	2 SWS	Lecture / ⚙	Fichtner, Ardone, Dengiz, Yilmaz

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 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 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

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

Learning goals:

The student

- has the ability to understand and critically reflect the methods of energy system analysis, the possibilities of its application in the energy industry and the limits and weaknesses of this approach
- can use select methods of the energy system analysis by her-/himself

Organizational issues
Bitte Institutsaushang beachten.

Literature
Weiterführende Literatur:

- Möst, D. und Fichtner, W.: **Einführung zur Energiesystemanalyse**, in: Möst, D., Fichtner, W. und Grunwald, A. (Hrsg.): Energiesystemanalyse, Universitätsverlag Karlsruhe, 2009
- Möst, D.; Fichtner, W.; Grunwald, A. (Hrsg.): **Energiesystemanalyse** - Tagungsband des Workshops "Energiesystemanalyse" vom 27. November 2008 am KIT Zentrum Energie, Karlsruhe, Universitätsverlag Karlsruhe, 2009 [PDF: http://digbib.ubka.uni-karlsruhe.de/volltexte/documents/928852]

T   6.145 Course: Energy Trade and Risk Management [T-WIWI-102691]

Responsible: N.N.
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101451 - Energy Economics and Energy Markets

Type Written examination	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 2

Events					
ST 2021	2581020	Energy Trade and Risk Management	2 SWS	Lecture / ▯	Kraft, Fraunholz, Fichtner

Legend: ▯ Online, ✧ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate

The lecture "Energiehandel und Risikomanagement" will be held in English under the title "Energy Trading and Risk Management" from the summer semester 2022. The examination for the English-language lecture will be offered in English from the summer semester 2022.

Examination offer for the previous German-language lecture: Last first attempt in winter semester 21/22; last examination offer for repeaters in summer semester 2022.

The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 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 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content

1. Introduction to Markets, Mechanisms and Interaction
2. Electricity Trading (platforms, products, mechanisms)
3. Balancing Energy Markets and Congestion Management
4. Coal Markets (reserves, supply, demand, and transport)
5. Investments and Capacity Markets
6. Oil and Gas Markets (supply, demand, trade, and players)
7. Trading Game
8. Risk Management in Energy Trading

Organizational issues
Termine siehe Institutsaushang, freitags 14:00-15:30 Uhr

Literature

Weiterführende Literatur:

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 6.146 Course: Engineering Interactive Systems [T-WIWI-110877]

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-102806 - Service Innovation, Design & Engineering
M-WIWI-104080 - Designing Interactive Information Systems

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	1

Competence Certificate

Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

Prerequisites

None

Recommendation

None

Annotation

The course is held in English.

T 6.147 Course: Entrepreneurial Leadership & Innovation Management [T-WIWI-102833]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	3

Competence Certificate
Please note: The seminar cannot be offered in the winter semester 2019/2020 due to organizational reasons.
Alternative exam assessment.

Prerequisites
None

Recommendation
None

T   6.148 Course: Entrepreneurship [T-WIWI-102864]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovation Management
	M-WIWI-105010 - Student Innovation Lab (SIL) 1

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each term	1

Events					
ST 2021	2545001	Entrepreneurship	2 SWS	Lecture / 📱	Terzidis

Legend: 📱 Online, ♻ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

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 2021, 2 SWS, Language: English, Open in study portal	**Lecture (V)** **Online**

Literature

Füglistaller, Urs, Müller, Christoph und Volery, Thierry (2008): Entrepreneurship

Ries, Eric (2011): The Lean Startup

Osterwalder, Alexander (2010): Business Model Generation

T 6.149 Course: Entrepreneurship Research [T-WIWI-102894]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

Events					
ST 2021	2545002	Entrepreneurship Research	2 SWS	Seminar / 🖥	Henn, Manthey, Terzidis

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
The performance review is done via a so called other methods of performance review (term paper) (alternative exam assessment). 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 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

Organizational issues
Block am 21.04., 05.05., 14.07.

Literature
Wird im Seminar bekannt gegeben.

T 6.150 Course: Environmental and Resource Policy [T-WIWI-102616]

Responsible:	Rainer Walz
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101468 - Environmental Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4	Grade to a third	Each summer term	1

Events					
ST 2021	2560548	Environmental and Ressource Policy	2 SWS	Lecture / Practice (/ 📱	Walz

Legend: 📱 Online, ⚙ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

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].

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

V	**Environmental and Ressource Policy**	**Lecture / Practice (VÜ)**
	2560548, SS 2021, 2 SWS, Language: German, Open in study portal	**Online**

Literature
Weiterführende Literatur:

Michaelis, P.: Ökonomische Instrumente in der Umweltpolitik. Eine anwendungsorientierte Einführung, Heidelberg
OECD: Environmental Performance Review Germany, Paris

T 6.151 Course: Environmental Economics and Sustainability [T-WIWI-102615]

Responsible: Prof. Dr. Rainer Walz
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101468 - Environmental Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	2

Events					
WT 21/22	2521547	Umweltökonomik und Nachhaltigkeit (mit Übung)	2 SWS	Lecture / Practice (	Walz

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   6.152 Course: European and International Law [T-INFO-101312]

Responsible:	Ulf Brühann
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101217 - Public Business Law

Type Written examination	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 1

Events					
ST 2021	24666	Europäisches und Internationales Recht	2 SWS	Lecture / 🖥	Brühann

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🔴 On-Site, ✗ Cancelled

T   6.153 Course: Experimental Design [T-WIWI-111395]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-105714 - Consumer Research

Type	Credits	Grading scale	Recurrence	Expansion	Version
Examination of another type	4,5	Grade to a third	Each winter term	1 terms	1

Events					
WT 21/22	2540603	Experimentelles Design	2 SWS	Others (sons	Scheibehenne, Seidler

Competence Certificate
Alternative exam assessment. Details will be announced at the beginning of the course.

Annotation
The course provides an overview of important methods of empirical research. Students learn basic theories and methods that are relevant in planning, conducting and evaluating experiments. They learn to analyze, critique, and independently develop experimental designs. The course covers, for example, the development of a research question, formulation of scientific hypotheses, sample selection, calculation of statistical power, the difference between correlative and causal relationships, and the relevance of experimental research to test the latter.

Exemplary studies from decision research are analyzed and discussed with respect to experimental design.

The workload of the course is 4.5 ECTS. This consists of exercises, smaller presentations by the students during the semester, as well as the preparation of the examination at the end of the semester.

The number of participants is limited. Places are allocated via the Wiwi-Portal. Course language is German.

T 6.154 Course: Experimental Economics [T-WIWI-102614]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101446 - Market Engineering
	M-WIWI-101453 - Applied Strategic Decisions
	M-WIWI-101505 - Experimental Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2540489	Experimental Economics	2 SWS	Lecture / 🖳	Peukert, Knierim
WT 21/22	2540493	Übung zu Experimentelle Wirtschaftsforschung	1 SWS	Practice	Greif-Winzrieth, Knierim

Legend: 🖳 Online, ⟡ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

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 Experimental Economics
2540489, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Literature

- Strategische Spiele; S. Berninghaus, K.-M. Ehrhart, W. Güth; Springer Verlag, 2. Aufl. 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 6.155 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each term	1

Competence Certificate

The assessment depends on which extraordinary course becomes part of the module "Cross-Functional Management Accounting".

.

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 6.156 Course: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101413 - Applications of Operations Research
	M-WIWI-101414 - Methodical Foundations of OR
	M-WIWI-101421 - Supply Chain Management
	M-WIWI-CompOpt - Computation & Optimization

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	4

Events					
WT 21/22	2550486	Facility Location and Strategic Supply Chain Management	2 SWS	Lecture	Nickel
WT 21/22	2550487	Übungen zu Standortplanung und strategisches SCM	1 SWS	Practice / 🖥	Pomes, Linner
Exams					
ST 2021	7900343	Facility Location and Strategic Supply Chain Management			Nickel
WT 21/22	7900292	Facility Location and Strategic Supply Chain Management			Nickel

Legend: 🖥 Online, ⚯ Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

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.
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 21/22, 2 SWS, Language: German, Open in study portal   **Lecture (V)**

Literature
Weiterführende Literatur:

- Daskin: Network and Discrete Location: Models, Algorithms, and Applications, Wiley, 1995
- Domschke, Drexl: Logistik: Standorte, 4. Auflage, Oldenbourg, 1996
- Francis, McGinnis, White: Facility Layout and Location: An Analytical Approach, 2nd Edition, Prentice Hall, 1992
- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
- Thonemann: Operations Management - Konzepte, Methoden und Anwendungen, Pearson Studium, 2005

T 6.157 Course: Financial Analysis [T-WIWI-102900]

Responsible:	Dr. Torsten Luedecke
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2530205	Financial Analysis	2 SWS	Lecture / 📱	Luedecke
ST 2021	2530206	Übungen zu Financial Analysis	2 SWS	Practice / 📱	Luedecke

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🔵 On-Site, ✗ Cancelled

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 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

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   6.158 Course: Financial Econometrics [T-WIWI-103064]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-StatEcon - Statistics & Econometrics
                    M-WIWI-101638 - Econometrics and Statistics I
                    M-WIWI-101639 - Econometrics and Statistics II

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	2

Competence Certificate
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites
None

Recommendation
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Annotation
The course takes place each second summer term: 2018/2020....

T   6.159 Course: Financial Econometrics II [T-WIWI-110939]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-StatEcon - Statistics & Econometrics
M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	see Annotations	2

Competence Certificate
Alternative exam assessment (Takehome Exam). Details will be announced at the beginning of the course.

Prerequisites
None

Recommendation
Knowledge of the contents covered by the course "Financial Econometrics"

Annotation
Course language is English
The course takes place each second winter term starting in WS2020/21

T   6.160 Course: Financial Intermediation [T-WIWI-102623]

Responsible:	Prof. Dr. Martin Ruckes
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101453 - Applied Strategic Decisions
	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2
	M-WIWI-101502 - Economic Theory and its Application in Finance

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2530232	Financial Intermediation	2 SWS	Lecture / 📱	Ruckes
WT 21/22	2530233	Übung zu Finanzintermediation	1 SWS	Practice / 📱	Ruckes, Benz

Legend: 📱 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

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 21/22, 2 SWS, Language: German, Open in study portal	Lecture (V) Online

Literature
Weiterführende Literatur:

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6. Auflage, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2. Auflage, MIT Press.

T 6.161 Course: Firm creation in IT security [T-WIWI-110374]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Competence Certificate

Alternative exam assessment. The grade consists of the presentation and the written elaboration.

Prerequisites

None

T	**6.162 Course: Fixed Income Securities [T-WIWI-102644]**

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	1

Competence Certificate

The examination is offered for first-time writers for the last time in the winter semester 2020/21 and (only) for repeaters in the summer semester 2021.

The assessment takes place in the form of a written examination (75 minutes) according to §4(2), 1 SPO. The examination takes place during the semester break. The examination is offered every semester and can be repeated at any regular examination date.

Prerequisites

None

Recommendation

Knowledge from the course "Derivatives" is very helpful.

Annotation

The course will no longer be offered from winter semester 2020/21.

T 6.163 Course: Food Chemistry Basics [T-CHEMBIO-109442]

Responsible:	Prof. Dr. Mirko Bunzel
Organisation:	KIT Department of Chemistry and Biosciences
Part of:	M-CIWVT-101119 - Specialization in Food Process Engineering

Type	Credits	Grading scale	Recurrence	Version
Oral examination	3	Grade to a third	Each summer term	2

Events					
ST 2021	6601	Grundlagen der Lebensmittelchemie I	2 SWS	Lecture / 🖥	Bunzel

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), ⬤ On-Site, ✗ Cancelled

Prerequisites
None

T 6.164 Course: Fundamentals of National and International Group Taxation [T-WIWI-111304]

Responsible:	Prof. Dr. Berthold Wigger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101511 - Advanced Topics in Public Finance

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2560133	Grundlagen der nationalen und internationalen Konzernbesteuerung	3 SWS	Lecture / 🔲	Wigger, Gutekunst

Legend: 🔲 Online, ⚙ Blended (On-Site/Online), 🔴 On-Site, ✖ Cancelled

Competence Certificate

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

Prerequisites

None

Recommendation

It is recommended to attend the course "Basics of German Company Tax Law and Tax Planning" beforehand.

T	**6.165 Course: Global Optimization I [T-WIWI-102726]**

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101473 - Mathematical Programming
M-WIWI-CompOpt - Computation & Optimization

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 1

Events					
ST 2021	2550134	Globale Optimierung I	2 SWS	Lecture / ▤	Stein

Legend: ▤ Online, ⚙ Blended (On-Site/Online), ● On-Site, ✘ Cancelled

Competence Certificate

Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO). The successful completion of the exercises is required for admission to the written exam.

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Prerequisites
None

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 2021, 2 SWS, Language: German, Open in study portal	**Lecture (V) Online**

Content

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Algorithms (Kelley's cutting plane method, Frank-Wolfe method, primal-dual interior point methods)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *nonconvex* optimization problems forms the contents of the lecture "Global Optimization II". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the convex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the convex case in practice.

Literature

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

T	**6.166 Course: Global Optimization I and II [T-WIWI-103638]**

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101473 - Mathematical Programming

Type	Credits	Grading scale	Recurrence	Version
Written examination	9	Grade to a third	Each summer term	1

Events					
ST 2021	2550134	Globale Optimierung I	2 SWS	Lecture / 🖥	Stein
ST 2021	2550135	Übung zu Globale Optimierung I und II	2 SWS	Practice / 🖥	Stein, Schwarze, Beck
ST 2021	2550136	Globale Optimierung II	2 SWS	Lecture / 🖥	Stein

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

Prerequisites
None

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 2021, 2 SWS, Language: German, Open in study portal	**Lecture (V)** **Online**

Content

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Algorithms (Kelley's cutting plane method, Frank-Wolfe method, primal-dual interior point methods)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *nonconvex* optimization problems forms the contents of the lecture "Global Optimization II". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the convex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the convex case in practice.

Literature

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

V **Globale Optimierung II**
2550136, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the nonconvex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the nonconvex case in practice.

Literature

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

T 6.167 Course: Global Optimization II [T-WIWI-102727]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2550136	Globale Optimierung II	2 SWS	Lecture / ▤	Stein

Legend: ▤ Online, ✿ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Prerequisites

None

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 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands the fundamentals of deterministic global optimization in the nonconvex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the nonconvex case in practice.

Literature

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

T   6.168 Course: Graph Theory and Advanced Location Models [T-WIWI-102723]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming
	M-WIWI-102832 - Operations Research in Supply Chain Management
	M-WIWI-103289 - Stochastic Optimization

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Irregular	**Version** 2

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   6.169 Course: Growth and Development [T-WIWI-111318]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101478 - Innovation and Growth
                     M-WIWI-101496 - Growth and Agglomeration

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Competence Certificate
Depending on further pandemic developments, the examination will be offered either as an open-book examination or as a 60-minute written examination.

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 will not be offered in the winter semester 2021/22. The exam will take place. Preparation materials can be found in ILIAS.

T	**6.170 Course: Heat Economy [T-WIWI-102695]**

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101452 - Energy Economics and Technology

Type Written examination	Credits 3	Grading scale Grade to a third	Recurrence Each summer term	Version 1

Events					
ST 2021	2581001	Heat Economy	2 SWS	Lecture / ▤	Fichtner

Legend: ▤ Online, ⚃ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

Competence Certificate
The lecture will be suspended in summer semester 2021.
The assessment consists of a written (60 minutes) or oral exam (30 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites
None.

Recommendation
None

Annotation
See German version.

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

V	**Heat Economy** 2581001, SS 2021, 2 SWS, Language: German, Open in study portal	Lecture (V) **Online**

Organizational issues
Seminarraum Standort West Mittwoch: 08:00 - 09:30

T 6.171 Course: Human Factors in Security and Privacy [T-WIWI-109270]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-DigSoc - Digitalization & Society
M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	3

Events					
WT 21/22	2511554	Human Factors in Security and Privacy	2 SWS	Lecture / 🗣	Volkamer
WT 21/22	2511555	Übungen zu Human Factors in Security and Privacy	1 SWS	Practice / 🗣	Volkamer, Berens

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

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. Only those who have successfully participated in the exercises and the lecture will be admitted to the examination.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

Both need to be done:

- Pass Quiz on Paper for Graphical Passwords
- Presentation of Results Exercise 2

+ 9 of the following 11 need to be done:

- Submit ILIAS certificate until Oct 24
- Pass Quiz on InfoSec Lecture
- Active participation exercise 1 Part 1 - Evaluation and analyses methods
- Pass Quiz Paper Discussion 1 - User Behaviour and motivation theories
- Active participation exercise 1 Part 2
- Pass Quiz Paper Discussion 2 - User Behaviour and motivation theories
- Pass Quiz Paper Discussion 3 - Security Awareness
- Active participation exercise 1 Part 3
- Pass Quiz Paper Discussion 4 - Graphical Authentication
- Pass Quiz Paper Discussion 5 - Shoulder Surfing Authentication
- Active participation exercise 2

Recommendation

The prior attendance of the lecture "Information Security" is strongly recommended.

Annotation

Some lectures are in English, some in German.

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

V	**Human Factors in Security and Privacy** 2511554, WS 21/22, 2 SWS, Language: German/English, Open in study portal	**Lecture (V)** **On-Site**

Content

Please take a look at all the information provided before the first event (e.g. first slides)!

The event will be conducted with 3G. Accordingly, either a one-time proof of vaccination or an official proof of a negative test is required for each event.

Some lectures are in English, some in German.

To participate in the quizzes at the beginning of the event a charged device is needed e.g. laptop or cell phone.

To successfully pass the course, the following requirements must be met:

Both need to be done:

- Reading Paper, Active Participation & Pass Quiz on Paper for Graphical Passwords
- Presentation of Results Exercise 2

+ 9 of the following 11 need to be done:

- Submit ILIAS certificate until Oct 24
- Pass Quiz on InfoSec Lecture
- Active participation exercise 1 – Part 1
- Reading Paper, Active Participation & Pass Quiz "Users are not the enemy"Active participation exercise 1 – Part 2
- Reading Paper, Active Participation & Pass Quiz "Why Johnny can't encrypt"
- Reading Paper, Active Participation & Pass Quiz "Put Your Warning Where Your Link Is: Improving and Evaluating Email Phishing Warnings"
- Active participation exercise 1 – Part 3
- Active participation exercise 1 – Part 4 Results
- Reading Paper, Active Participation & Pass Quiz "User-centered security"Active participation exercise 2 – Part 1

Here is a first preview of the topics planned for the lecture:

1. General Introduction
2. Self-Study: Knowlege of Information Security Lecture
3. Terminology + Basics
4. Evaluation and analyses methods
5. Risk Communication
6. Security Awareness
7. Security Indicators
8. Graphical Authentication
9. Shoulder Surfing Authentication
10. Usable Verifiable Electronic Voting
11. Q&A + Exam preparation

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 6.172 Course: Incentives in Organizations [T-WIWI-105781]

Responsible:	Prof. Dr. Petra Nieken
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-EconMan - Economics & Management
	M-WIWI-101453 - Applied Strategic Decisions
	M-WIWI-101500 - Microeconomic Theory
	M-WIWI-101505 - Experimental Economics
	M-WIWI-101510 - Cross-Functional Management Accounting

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 1

Events					
ST 2021	2573003	Incentives in Organizations	2 SWS	Lecture / ▯	Nieken
ST 2021	2573004	Übung zu Incentives in Organizations	2 SWS	Practice / ▯	Nieken, Mitarbeiter

Legend: ▯ Online, ⬡ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate

The assessment of this course is a written examination (60 min). The exam takesplace in every semester. Re-examinations are offered at every ordinaryexamination 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.

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

V	**Incentives in Organizations** 2573003, SS 2021, 2 SWS, Language: English, Open in study portal	**Lecture (V)** **Online**

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.

Aim

The student

- develops a strategic understanding about incentives systems and how they work.
- analyzes models from personnel economics.
- understands how econometric methods can be used to analyze performance and compensation data.
- knows incentive schemes that are used in companies and is able to evaluate them critically.
- can develop practical implications which are based on theoretical models and empirical data from companies.
- understands the challenges of managing incentive and compensation systems and their relationship with corporate strategy.

Workload

The total workload for this course is: approximately 135 hours.

Lecture: 32 hours

Preparation of lecture: 52 hours

Exam preparation: 51 hours

Literature

Slides, Additional case studies and research papers will be announced in the lecture.

Literature (complementary):

Managerial Economics and Organizantional Architecture, Brickley / Smith / Zimmerman, McGraw-Hill Education, 2015

Behavioral Game Theory, Camerer, Russel Sage Foundation, 2003

Personnel Economics in Practice, Lazear / Gibbs, Wiley, 2014

Introduction to Econometrics, Wooldridge, Andover, 2014

Econometric Analysis of Cross Section and Panel Data, Wooldridge, MIT Press, 2010

Organizational issues

Die Vorlesungsinhalte sind als Aufzeichnungen verfügbar. An ausgewählten Vorlesungsterminen gibt es Live-Sessions. Diese werden zum Vorlesungsstart bekannt gegeben.
There are recordings of the lecture contents. There will be live sessions on selected lecture dates. These will be announced at the start of the lecture time.

T	**6.173 Course: Information Service Engineering [T-WIWI-106423]**

Responsible: Prof. Dr. Harald Sack
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-InfoML - Informatics & Machine Learning
                    M-WIWI-101628 - Emphasis in Informatics
                    M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2511606	Information Service Engineering	2 SWS	Lecture / 🖥	Sack
ST 2021	2511607	Exercises to Information Service Engineering	1 SWS	Practice / 🖥	Sack

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

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

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

V	**Information Service Engineering** 2511606, SS 2021, 2 SWS, Language: English, Open in study portal	Lecture (V) Online

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

- Knowledge Graphs

  - Knowledge Representations and Ontologies
  - Resource Description Framework (RDF)
    as simple Data Model
  - Creating new Models with RDFS
  - Querying RDF(S) with SPARQL
  - More Expressivity via Web Ontology Language (OWL)
  - From Linked Data to Knowledge Graphs
  - Wikipedia, DBpedia, and Wikidata
  - Knowledge Graph Programming

- Basic Machine Learning

  - Machine Learning Fundamentals
  - Evaluation and Generalization Problems
  - Linear Regression
  - Decision Trees
  - Unsupervised Learning
  - Neural Networks and Deep Learning

- ISE Applications

  - From Data to Knowledge
  - Data Mining, Information Visualization and Knowledge Discovery
  - Semantic Search
  - Exploratory Search
  - Semantic Recommender Systems

Learning objectives:

- The students know the fundamentals and measures of information theory and are able to apply those in the context of Information Service Engineering.
- The students have basic skills of natural language processing and are enabled to apply natural language processing technology to solve and evaluate simple text analysis tasks.
- The students have fundamental skills of knowledge representation with ontologies as well as basic knowledge of Semantic Web and Linked Data technologies. The students are able to apply these skills for simple representation and analysis tasks.
- The students have fundamental skills of information retrieval and are enabled to conduct and to evaluate simple information retrieval tasks.
- The students apply their skills of natural language processing, Linked Data engineering, and Information Retrieval to conduct and evaluate simple knowledge mining tasks.
- The students know the fundamentals of recommender systems as well as of semantic and exploratory search.

Literature

- D. Jurafsky, J.H. Martin, Speech and Language Processing, 2nd ed. Pearson Int., 2009.
- A. Hogan, The Web of Data, Springer, 2020.
- G. Rebala, A. Ravi, S. Churiwala, An Introduction to Machine Learning, Springer, 2019.

T 6.174 Course: Innovation Management: Concepts, Strategies and Methods [T-WIWI-102893]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon)
	M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each summer term	1

Events					
ST 2021	2545100	Innovation Management: Concepts, Strategies and Methods	2 SWS	Lecture / 🖳	Weissenberger-Eibl

Legend: 🖳 Online, ⚙ Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written exam (60 minutes). The exam takes place in every summer 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 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content
The course 'Innovation Management: Concepts, Strategies and Methods' offers scientific concepts which facilitate the understanding of the different phases of the innovation process and resulting strategies and appropriate methodologies suitable for application. The concepts refer to the entire innovation process so that an integrated perspective is made possible. This is the basis for the teaching of strategies and methods which fulfil the diverse demands of the complex innovation process. The course focuses particularly on the creation of interfaces between departments and between various actors in a company's environment and the organisation of a company's internal procedures. In this context a basic understanding of knowledge and communication is taught in addition to the specific characteristics of the respective actors. Subsequently methods are shown which are suitable for the profitable and innovation-led implementation of integrated knowledge.

Aim: Students develop a differentiated understanding of the different phases and concepts of the innovation process, different strategies and methods in innovation management.

Organizational issues
Die **Vorlesung** wird als interaktive **online Veranstaltung** durchgeführt. Die Vorlesung startet am 15.04.2021 und findet donnerstags 10:00-11:30 Uhr statt. **Wichtig!** Bitte treten Sie dem **ILIAS-Kurs zur Vorlesung** bei, damit wir Ihnen weitere Informationen mittteilen können.

Literature
Eine ausführliche Literaturliste wird mit den Vorlesungsunterlagen zur Verfügung gestellt.

Eine Einführung bei: Vahs,D./Brem,A. (2013): Innovationsmanagement. Von der Idee zur erfolgreichen Vermarktung, 4. Auflage, Stuttgart 2013.

T   6.175 Course: Innovation Processes Live [T-WIWI-110234]

Responsible:	Dr. Daniela Beyer
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Competence Certificate

Alternative exam assessments (§4(2), 3 SPO). The grade consists of an exposé (15%), a guideline interview or an analysis tool (25%), a group presentation of the results (20%) and a seminar paper (40%).

Prerequisites

None.

Recommendation

Prior attendance of the course Innovation Management [2545015] is recommended.

T   6.176 Course: Innovation Theory and Policy [T-WIWI-102840]

Responsible:	Prof. Dr. Ingrid Ott
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101478 - Innovation and Growth
	M-WIWI-101497 - Agglomeration and Innovation
	M-WIWI-101514 - Innovation Economics
	M-WIWI-DigEcon - Digital Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2560236	Innovationtheory and -policy	2 SWS	Lecture / 🗔	Ott
ST 2021	2560237		1 SWS	Practice / 🗔	Ott

Legend: 🗔 Online, ⚙ Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

Competence Certificate
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

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 2021, 2 SWS, Language: German/English, Open in study portal	**Online**

Content
Learning objectives:

Students shall be given the ability to

- identify the importance of alternative incentive mechanisms for the emergence and dissemination of innovations
- understand the relationships between market structure and the development of innovation
- 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

Course content:

The course covers the following topics:

- Incentives for the emergence of innovations
- Patents
- Diffusion
- Impact of technological progress
- Innovation Policy

Recommendations:

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:

The total workload for this course is approximately 135.0 hours.

Exam description:

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.

Literature
Auszug:

- 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 6.177 Course: Intelligent Agent Architectures [T-WIWI-111267]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

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.

Prerequisites

None

Recommendation

It is recommended to additionally review the Bachelor-level lecture "Customer Relationship Management" from the module "CRM and Servicemanagement".

T 6.178 Course: Intelligent Agents and Decision Theory [T-WIWI-110915]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2540537	Intelligent Agents and Decision Theory		Lecture / 📱	Geyer-Schulz
ST 2021	2540538	Übung zu Intelligent Agents and Decision Theory	1 SWS	Practice / 📱	Schweizer

Legend: 📱 Online, ⟡ Blended (On-Site/Online), 🌐 On-Site, ✕ Cancelled

Competence Certificate
Oral (30 minutes) or written examination (60 minutes). The exam is held in each semester and can be repeated at any regular examination date.

Prerequisites
None

Recommendation
We assume knowledge in statistics, operations research and microeconomics as taught in the Bachelor program (VWL I, Operations Research I + II, Statistics I + II) and a familiarity with preferably the Python programming language.

Annotation
new lecture starting summer semester 2020

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

V	**Intelligent Agents and Decision Theory** 2540537, SS 2021, SWS, Language: English, Open in study portal	Lecture (V) Online

Content

The key assumption of this lecture is that the concept of artificial intelligence is inseparably linked to the economic concept of rationality of agents. We consider different classes of decision problems - decisions under certainty, risk and uncertainty - from an economic, managerial and AI-engineering perspective:

From an economic point of view, we analyze how to act rationally in these situations based on classic utility theory. In this regard, the course also introduces the relevant parts of decision theory for dealing with

- multiple conflicting objectives,
- incomplete, risky and uncertain information about the world,
- assessing utility functions, and
- quantifying the value of information ...

From an engineering perspective, we discuss how to develop practical solutions for these decision problems, using appropriate AI components. We introduce

- a general, agent-based design framework for AI systems,

as well as AI methods from the fields of

- search (for decisions under certainty),
- inference (for decions under risk) and
- learning (for decisions under uncertainty).

Where applicable, the course highlights the theoretical ties of these methods with decision theory.

We conclude with a discussion of ethical and philosophical issues concerning the development and use of AI.

Learning objectives

Students are able to design, analyze, implement, and evaluate intelligent agents.

Lecture Outline

1. Introduction: Artificial intelligence and the economic concept of rationality
2. Intelligent Agents: A general, agent-based design framework for AI systems
3. Decision under certainty: Assessing utility functions for decisions with multiple objectives
4. Search: Linear programming for decisions under certainty
5. Decisions under risk: The expected utility principle
6. Information systems: Improving economic decisions under risk
7. Inference: Bayesian networks for decisions under risk
8. Information Learning objectives value: When should an agent gather new information?
9. Decisions under uncertainty: Complete lack of information
10. Learning: Statistical learning of bayesian networks
11. Learning: Supervised learning with neural networks
12. Learning: Reinforcement learning
13. Learning: Preference-based reinforcement learning
14. Discussion: Ethical and philosophical issues

Note: This rough outline may be subject to change.

Literature
Basic literature (by lecture):

1. Russell & Norvig (2016, chapter 1), Bamberg et al. (2019, chapters 1 & 2)
2. Russell & Norvig (2016, chapter 2)
3. Keeney & Raiffa (1993, chapter 3)
4. Nickel et al. (2014, chapter 1) [German], Russell & Norvig (2016, chapter 3)
5. Bamberg et al. (2019, chapter 4), Fishburn (1988)
6. Bamberg et al. (2019, chapter 6)
7. Russell & Norvig (2016, chapters 13, 14, 16)
8. Russell & Norvig (2016, chapter 16), Bamberg et al. (2019, chapter 6)
9. Bamberg et al. (2019, chapter 5)
10. Russell & Norvig (2016, chapter 20)
11. Goodfellow et al. (2016, chapter 6)
12. Sutton & Barto (2018, chapter 3)
13. Wirth et al. (2017)
14. Russell & Norvig (2016, chapter 26)

Detailed references:

Bamberg, Coenenberg & Krapp (2019). Betriebswirtschaftliche Entscheidungslehre (16th ed.). Verlag Franz Vahlen GmbH.

Fishburn (1988). Nonlinear preference and utility theory. Baltimore: Johns Hopkins University Press.

Goodfellow, Bengio & Courville (2016). Deep learning. Cambridge: MIT press.

Keeney & Raiffa (1993). Decisions with multiple objectives: preferences and value trade-offs. Cambridge University Press.

Nickel, S., Stein, O., & Waldmann, K.-H. (2014). Operations Research (2nd ed.). Springer Berlin Heidelberg.

Russell & Norvig (2016). Artificial Intelligence: A Modern Approach (3rd Global Edition). Pearson.

Sutton & Barto (2018). Reinforcement learning: An introduction. Cambridge: MIT press.

Wirth, Akrour, Neumann & Fürnkranz (2017). A Survey of Preference-Based Reinforcement Learning Methods. Journal of Machine Learning Research, 18(1), 1–46.

T 6.179 Course: International Business Development and Sales [T-WIWI-110985]

Responsible:	Erice Casenave Prof. Dr. Martin Klarmann Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon) M-WIWI-105312 - Marketing and Sales Management

Type Examination of another type	**Credits** 6	**Grading scale** Grade to a third	**Recurrence** see Annotations	**Version** 1

Events					
WT 21/22	2572189	International Business Development and Sales	4 SWS	Block / 🔊	Klarmann, Terzidis, Casernave

Legend: 📱 Online, ⚃ Blended (On-Site/Online), 🔊 On-Site, ✗ Cancelled

Competence Certificate
Non exam assessment. The grade is based on the presentation, the subsequent discussion and the written elaboration.

Annotation
Due to the Corona situation it is currently unclear whether the seminar can be offered in WS20 / 21.

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

V International Business Development and Sales
2572189, WS 21/22, 4 SWS, Language: English, Open in study portal

Block (B)
On-Site

Content
This course is offered as part of the EUCOR programme in cooperation with EM Strasbourg. Max. 10 students of KIT and max. 10 students of EM Strasbourg will develop a sales presentation in tandems (teams of 2). This is based on the value proposition of a business model.

- An application is required to participate in this event. The application phase usually takes place at the beginning of the lecture period. Further information on the application process can be found on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the start of the lecture period.

Total workload for 6 ECTS: about 180 hours.

Organizational issues
At KIT

February 2nd, 2022, 1.00 pm – 6.00 pm

February 3rd, 2022, 8.00 am – 7.00 pm

February 4th, 2022, 10.00 am – 4.00 pm

AT EM Strasbourg

February 23th, 2022, 1.00 pm – 6.00 pm

February 24th, 2022, 8.00 am – 7.00 pm

February 25th, 2022, 10.00 am – 4.00 pm

T   6.180 Course: International Finance [T-WIWI-102646]

Responsible:	Prof. Dr. Marliese Uhrig-Homburg
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	see Annotations	1

Events					
ST 2021	2530570	International Finance	2 SWS	Lecture / 🖥	Walter, Uhrig-Homburg

Legend: 🖥 Online, ⚃ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

Competence Certificate
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites
None

Recommendation
None

Annotation
The course is offered as a 14-day or block course.

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

V **International Finance**	**Lecture (V)**
2530570, SS 2021, 2 SWS, Language: German, Open in study portal	**Online**

Organizational issues
nach dem 21.04. nach Absprache

Literature
Weiterführende Literatur:

- Eiteman, D. et al., Multinational Business Finance, 13. Auflage, 2012.
- Solnik, B. und D. McLeavey, Global Investments, 6. Auflage, 2008.

T 6.181 Course: International Management in Engineering and Production [T-WIWI-102882]

Responsible:	Dr. Henning Sasse
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101412 - Industrial Production III
	M-WIWI-101471 - Industrial Production II

Type Written examination	**Credits** 3,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2581956	International Management in Engineering and Production	2 SWS	Lecture / 🔋	Sasse

Legend: 🔋 Online, ⚙ Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites
None

Recommendation
None

Annotation
The lecture will be renamed "Global Manufacturing" from WS 2022/23.

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

V	**International Management in Engineering and Production** 2581956, WS 21/22, 2 SWS, Language: English, Open in study portal	Lecture (V) **Online**

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

Organizational issues
Blockveranstaltung, siehe Homepage

Literature
Wird in der Veranstaltung bekannt gegeben.

T 6.182 Course: Internet Law [T-INFO-101307]

Responsible:	Prof. Dr. Thomas Dreier
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101215 - Intellectual Property Law

Type Written examination	Credits 3	Grading scale Grade to a third	Recurrence Each winter term	Version 2

Events					
WT 21/22	24354	Internet Law	2 SWS	Lecture / 📱	Dreier

Legend: 📱 Online, ⚗ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

T 6.183 Course: Introduction to Bayesian Statistics for Analyzing Data [T-WIWI-110918]

Responsible:	Prof. Dr. Benjamin Scheibehenne
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103117 - Data Science: Data-Driven Information Systems

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Once	**Version** 1

Competence Certificate

Grades will be based on active participation (50%) and homework assignments (50%).

Prerequisites

Participants should already have a basic knowledge of R and standard frequentist statistical tests. Please bring your own Laptop with you as we will be using R for several hands-on examples and exercises during the class. We will mainly work with the book "Statistical Rethinking. A Bayesian Course with Examples in R and Stan" by Richard McElrath. Students are advised to obtain the book before the class starts.

Annotation

Due to its interactive nature, participation will be limited to 10 students. If you want to participate, please send a short email to scheibehenne@kit.edu until Thursday, the 23rd of April in which you outline why you are interested in this class and what your expectations are.

The class will consist of three day-long sessions from 9:00 (s.t.) to 18:00. The first session will be held on Thursday, the 7th of May 2020. The second session will be on Thursday, the 28th of May. The third session will be on Thursday, the 18th of June. The classroom will be communicated to registered students in advance. In case classrooms will be closed due to the Corona virus, the class will be taught online and the schedule will be adapted.

T 6.184 Course: Introduction to Food Law [T-CHEMBIO-108091]

Responsible:	Dr. Thomas Kuballa
Organisation:	KIT Department of Chemistry and Biosciences
Part of:	M-CIWVT-101119 - Specialization in Food Process Engineering

Type Completed coursework	Credits 1,5	Grading scale pass/fail	Recurrence Each winter term	Version 2

Events					
WT 21/22	6627	Einführung in das Lebensmittelrecht	1 SWS	Lecture	Kuballa

Prerequisites

T 6.185 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

Responsible:	Prof. Dr. Steffen Rebennack
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-102832 - Operations Research in Supply Chain Management
	M-WIWI-103289 - Stochastic Optimization

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2550470	Einführung in die Stochastische Optimierung	2 SWS	Lecture / 📱	Rebennack
ST 2021	2550471	Übung zur Einführung in die Stochastische Optimierung	1 SWS	Practice / 📱	Rebennack, Sinske
ST 2021	2550474	Rechnerübung zur Einführung in die Stochastische Optimierung	2 SWS	Practice / 📱	Rebennack, Sinske

Legend: 📱 Online, ✾ Blended (On-Site/Online), 👤 On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment (open book exam). The exam takes place in every semester.

Prerequisites

None.

T 6.186 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 Examination of another type	Credits 6	Grading scale Grade to a third	Recurrence Irregular	Version 1

Events					
ST 2021	2545021	Joint Entrepreneurship School	4 SWS	Seminar / 🖥	Kleinn, Mohammadi, Terzidis

Legend: 🖥 Online, ⚄ Blended (On-Site/Online), ◗ On-Site, ✗ Cancelled

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 6.187 Course: Judgment and Decision Making [T-WIWI-111099]

Responsible:	Prof. Dr. Benjamin Scheibehenne
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-EconMan - Economics & Management
	M-WIWI-105312 - Marketing and Sales Management
	M-WIWI-105714 - Consumer Research

Type	Credits	Grading scale	Recurrence	Expansion	Version
Written examination	4,5	Grade to a third	Each winter term	1 terms	1

Events					
WT 21/22	2540440	Judgment and Decision Making	3 SWS	Lecture / ♻	Scheibehenne, Seidler

Legend: 📱 Online, ♻ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
written exam (90min) at the end of the Semester

Annotation
The judgments and decisions that we make can have long ranging and important consequences for our (financial) well-being and individual health. Hence, the goal of this lecture is to gain a better understanding of how people make judgments and decisions and the factors that influences their behavior. We will look into simple heuristics and mental shortcuts that decision makers use to navigate their environment, in particular so in an economic context. Following this the lecture will provide an overview into social and emotional influences on decision making. In the second half of the semester we will look into some more specific topics including self-control, nudging, and food choice. The last part of the lecture will focus on risk communication and risk perception. We will address these questions from an interdisciplinary perspective at the intersection of Psychology, Behavioral Economics, Marketing, Cognitive Science, and Biology. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates.

The workload of the class is 4.5 ECTS. This consists of 3 ETCS for the lecture and 1.5 ETCS for the Übung. Details about the Übung will be communicated at the first day of the class.

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

V Judgment and Decision Making
2540440, WS 21/22, 3 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

Content
In this lecture, students will be introduced to fundamental theories and key insights on human judgment and decision making. Topics include decision making under uncertainty, choice biases, simple heuristics, risk perception and -communication, as well as social and emotional influences on decision making, to name but a few. In the Wintersemester 20/21 this class will be held online. The lecture videos will be available for download and there will be regular online meetings to discuss the topics. The lecture will be held in English.

T 6.188 Course: KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics [T-WIWI-111109]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101446 - Market Engineering
	M-WIWI-104080 - Designing Interactive Information Systems

Type	Credits	Grading scale	Recurrence	Expansion	Version
Examination of another type	4,5	Grade to a third	Each summer term	1 terms	1

Competence Certificate

Non exam assessment. Grading will be based on a continuous basis throughout the semester. The assessment consists of:

- A written paper, and
- a group presentation with subsequent discussion and question and answer session of 30 minutes.

Annotation

Due to the laboratory capacity and in order to ensure an optimal supervision of the project groups, the number of participants is limited. Places are allocated according to preferences and suitability for the topics. In particular, previous knowledge in the field of experimental economics plays a role.

The course will be offered starting in the summer semester 2021.

T   6.189 Course: Knowledge Discovery [T-WIWI-102666]

Responsible: Michael Färber
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-InfoML - Informatics & Machine Learning
                    M-WIWI-101628 - Emphasis in Informatics
                    M-WIWI-101630 - Electives in Informatics

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 2

Events					
WT 21/22	2511302	Knowledge Discovery	2 SWS	Lecture / 📱	Färber
WT 21/22	2511303	Exercises to Knowledge Discovery	1 SWS	Practice / 🧩	Färber, Saier

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation.

Prerequisites
None

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

V   Knowledge Discovery
2511302, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content
The lecture gives an overview of approaches of machine learning and data mining for knowledge acquisition from large data sets. These are examined especially with respect to algorithms, applicability to different data representations and the use in real application scenarios.
Knowledge Discovery is an established research area with a large community that investigates methods for discovering patterns and regularities in large amounts of data, including unstructured text. A variety of methods exist to extract patterns and provide previously unknown insights. This information can be predictive or descriptive.
The lecture gives an overview of Knowledge Discovery. Specific techniques and methods, challenges and current and future research topics in this research area will be taught.
Contents of the lecture cover the entire machine learning and data mining process with topics on supervised and unsupervised learning and empirical evaluation. Covered learning methods range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

Learning obectives:

Students

- know fundamentals of Machine Learning, Data Mining and Knowledge Discovery.
- are able to design, train and evaluate adaptive systems.
- conduct Knowledge Discovery projects in regards to algorithms, representations and applications.

Workload:

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

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 21/22, 1 SWS, Language: English, Open in study portal	**Practice (Ü)** **Blended (On-Site/Online)**

Content

The exercises are based on the lecture Knowledge Discovery. Several exercises are covered, which take up and discuss in detail the topics covered in the lecture Knowledge Discovery. Practical examples are demonstrated to the students to enable a knowledge transfer of the theoretical aspects learned into practical application.

Contents of the lecture cover the entire machine learning and data mining process with topics on monitored and unsupervised learning processes and empirical evaluation. The learning methods covered range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

Learning objectives:

Students

- know fundamentals of Machine Learning, Data Mining and Knowledge Discovery.
- are able to design, train and evaluate adaptive systems.
- conduct Knowledge Discovery projects in regards to algorithms, representations and applications.

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 6.190 Course: Large-scale Optimization [T-WIWI-106549]

Responsible:	Prof. Dr. Steffen Rebennack
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming
	M-WIWI-102832 - Operations Research in Supply Chain Management
	M-WIWI-103289 - Stochastic Optimization
	M-WIWI-CompOpt - Computation & Optimization

Type Examination of another type	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 2

Events					
ST 2021	2550475	Large-Scale Optimization	2 SWS	Lecture / 📱	Rebennack
ST 2021	2550476	Übung zu Large-Scale Optimization	1 SWS	Practice / 📱	Rebennack, Sinske
ST 2021	2550477	Rechnerübung zu Large-scale Optimization	2 SWS	Practice / 📱	Rebennack, Sinske

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment (open book exam). The exam takes place in every semester.

Prerequisites
None.

T 6.191 Course: Liberalised Power Markets [T-WIWI-107043]

Responsible:	Prof. Dr. Wolf Fichtner
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-EconMan - Economics & Management
	M-WIWI-101451 - Energy Economics and Energy Markets
	M-WIWI-102808 - Digital Service Systems in Industry

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	1

Events					
WT 21/22	2581998	Liberalised Power Markets	2 SWS	Lecture	Fichtner, Kraft

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites

None

Recommendation

None

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

V	**Liberalised Power Markets**	Lecture (V)
	2581998, WS 21/22, 2 SWS, Language: English, Open in study portal	

Content

1. Power markets in the past, now and in future

2. Designing liberalised power markets

2.1.   Unbundling Dimensions of liberalised power markets

2.2.   Central dispatch versus markets without central dispatch

2.3.   The short-term market model

2.4.   The long-term market model

2.5.   Market flaws and market failure

2.6.   Regulation in liberalised markets

3. The power (sub)markets

3.1   Day-ahead market

3.2   Intraday market

3.3   (Long-term) Forwards and futures markets

3.4   Emission rights market

3.5   Market for ancillary services

3.6   The "market" for renewable energies

3.7   Future market segments

4. Grid operation and congestion management

4.1.   Grid operation

4.2.   Congestion management

5. Market power

5.1.   Defining market power

5.2.   Indicators of market power

5.3.   Reducing market power

6. Future market structures in the electricity value chain

1. Power markets in the past, now and in future

2. Designing liberalised power markets

2.2.   Unbundling Dimensions of liberalised power markets

2.3.   Central dispatch versus markets without central dispatch

2.4.   The short-term market model

2.5.   The long-term market model

2.6.   Market flaws and market failure

2.7.   Regulation in liberalised markets

3. The power (sub)markets

3.1   Day-ahead market

3.2   Intraday market

3.3   (Long-term) Forwards and futures markets

3.4   Emission rights market

3.5   Market for ancillary services

3.6   The "market" for renewable energies

3.7   Future market segments

4. Grid operation and congestion management

4.1.   Grid operation

4.2.   Congestion management

5. Market power

5.1.   Defining market power

5.2.   Indicators of market power

5.3.   Reducing market power

6. Future market structures in the electricity value chain

Literature
Weiterführende Literatur:

Power System Economics; Steven Stoft, IEEE Press/Wiley-Interscience Press, 0-471-15040-1

T 6.192 Course: Life Cycle Assessment [T-WIWI-110512]

Responsible:	Prof. Dr. Frank Schultmann
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101412 - Industrial Production III
	M-WIWI-101471 - Industrial Production II

Type	Credits	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2581995	Life Cycle Assessment	2 SWS	Lecture / ▯	Maier

Legend: ▯ Online, ⚬ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites

None.

Recommendation

None

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

V Life Cycle Assessment
2581995, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content

Introduction to life cycle assessment. The lecture describes structure and individual steps of life cycle assessment in detail.

Literature

werden in der Veranstaltung bekannt gegeben

T   6.193 Course: Machine Learning 1 - Basic Methods [T-WIWI-106340]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-InfoML - Informatics & Machine Learning
M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Each winter term	Version 3

Events					
WT 21/22	2511500	Machine Learning 1 - Fundamental Methods	2 SWS	Lecture / 🧩	Zöllner
WT 21/22	2511501	Exercises to Machine Learning 1 - Fundamental Methods	1 SWS	Practice / 🧩	Zöllner, Daaboul, Polley

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🎤 On-Site, ✘ Cancelled

Competence Certificate

Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min):

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

None.

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

V   Machine Learning 1 - Fundamental Methods
2511500, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
Blended (On-Site/Online)

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.

Learning obectives:

- Students acquire knowledge of the fundamental methods in the field of machine learning.
- 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 of machine learning.

Literature
Die Foliensätze sind als PDF verfügbar

Weiterführende Literatur

- 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

Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

T 6.194 Course: Machine Learning 2 – Advanced Methods [T-WIWI-106341]

Responsible: Prof. Dr.-Ing. Johann Marius Zöllner
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-InfoML - Informatics & Machine Learning
M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-101637 - Analytics and Statistics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2511502	Machine Learning 2 - Advanced methods	2 SWS	Lecture / 📱	Zöllner
ST 2021	2511503	Exercises for Machine Learning 2 - Advanced Methods	1 SWS	Practice / 📱	Zöllner

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🔌 On-Site, ✗ Cancelled

Competence Certificate
Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min).

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites
None.

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

V Machine Learning 2 - Advanced methods
2511502, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

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.).

Learning objectives:

- Students understand extended concepts of machine learning and their possible applications.
- Students can classify, formally describe and evaluate methods of machine learning.
- In detail, methods of machine learning can be embedded and applied in complex decision and inference systems.
- Students can use their knowledge to select suitable models and methods of machine learning for existing problems in the field of machine intelligence.

Recommendations:

Attending the lecture *Machine Learning 1* or a comparable lecture is very helpful in understanding this lecture.

Literature
Die Foliensätze sind als PDF verfügbar

Weiterführende Literatur

- 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

Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

T   6.195 Course: Management Accounting 1 [T-WIWI-102800]

Responsible:	Prof. Dr. Marcus Wouters
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101498 - Management Accounting

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 2

Events					
ST 2021	2579900	Management Accounting 1	2 SWS	Lecture / ▤	Wouters
ST 2021	2579901	Übung zu Management Accounting 1 (Bachelor)	2 SWS	Practice / ▤	Riar
ST 2021	2579902		2 SWS	Practice / ▤	Riar

Legend: ▤ Online, � Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered either as a 120-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites

None

Annotation

Students in the Bachelor' program can only take the related tutorial and examination. Students in the Master's program (and Bachelor's students who are already completing examinations for their Master's program) can only take the related tutorial and examination.

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

V	**Management Accounting 1** 2579900, SS 2021, 2 SWS, Language: English, Open in study portal	**Lecture (V)** **Online**

Content

The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA1 are: short-term planning, investment decisions, budgeting and activity-based costing.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Learning objectives:

- Students have an understanding of theory and applications of management accounting topics.
- They can use financial information for various purposes in organizations.

Examination:

- The assessment consists of a written exam (120 minutes) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

Workload:

- The total workload for this course is approximately 135.0 hours.

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Publisher: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- In addition, several papers that will be available on ILIAS.

| **V** | **Übung zu Management Accounting 1 (Bachelor)**
2579901, SS 2021, 2 SWS, Language: English, Open in study portal | **Practice (Ü)**
Online |

Content
see Module Handbook

| **V** | 2579902, SS 2021, 2 SWS, Language: English, Open in study portal | **Practice (Ü)**
Online |

Content
see Module Handbook

T 6.196 Course: Management Accounting 2 [T-WIWI-102801]

Responsible: Prof. Dr. Marcus Wouters
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101498 - Management Accounting

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	2

Events					
WT 21/22	2579903	Management Accounting 2	2 SWS	Lecture	Wouters
WT 21/22	2579904		2 SWS	Practice	Ebinger
WT 21/22	2579905		2 SWS	Practice	Ebinger

Competence Certificate
Depending on further pandemic developments, the examination will be offered either as a 120-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

Prerequisites
None

Recommendation
It is recommended to take part in the course "Management Accounting 1" before this course.

Annotation
Students in the Bachelor' program can only take the related tutorial and examination. Students in the Master's program (and Bachelor's students who are already completing examinations for their Master's program) can only take the related tuturial and examination.

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

V Management Accounting 2
2579903, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content

The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA2 are: cost estimation, product costing and cost allocation, financial performance measures, transfer pricing, strategic performance measurement systems.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

Learning objectives:

- Students have an understanding of theory and applications of management accounting topics. They can use financial information for various purposes in organizations.

Recommendations:

- It is recommended to take part in the course "Management Accounting 1" before this course.

Examination:

- The assessment consists of a written exam (120 min) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

Workload:

- The total workload for this course is approximately 135.0 hours.

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Verlag: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- Zusätzlich werden Artikel auf ILIAS zur Vergügung gestellt.

V	2579904, WS 21/22, 2 SWS, Language: English, Open in study portal	**Practice (Ü)**

Content
see ILIAS

V	2579905, WS 21/22, 2 SWS, Language: English, Open in study portal	**Practice (Ü)**

Content
see ILIAS

T 6.197 Course: Management of IT-Projects [T-WIWI-102667]

Responsible:	Dr. Roland Schätzle
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 3

Events					
ST 2021	2511214	Management of IT-Projects	2 SWS	Lecture / ▮	Schätzle
ST 2021	2511215	Übungen zu Management von Informatik-Projekten	1 SWS	Practice / ▮	Schätzle

Legend: ▮ Online, ⬨ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate

The assessment takes place in the form of a written examination (exam) in the amount of 60 minutes. The examination is offered every semester and can be repeated at any regular examination date.

Prerequisite for the participation in the examination is the successful participation in the exercise, which takes place in the summer semester, starting from summer semester 2020. The number of participants in the exercise is limited.

The exact details will be announced in the lecture.

Prerequisites

Prerequisite for the participation in the examination is the successful participation in the exercise, which takes place in the summer semester, starting from summer semester 2020. The number of participants in the exercise is limited.

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

V	**Management of IT-Projects** 2511214, SS 2021, 2 SWS, Language: German, Open in study portal	**Lecture (V)** **Online**

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.

Learning objectives:

Students

- explain the terminology of IT project management and typical used methods for planning, handling and controlling,
- apply methods appropiate to current project phases and project contexts,
- consider organisational and social impact factors.

Recommendations:

Knowledge from the lecture Software Engineering is helpful.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

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.

V	**Übungen zu Management von Informatik-Projekten** 2511215, SS 2021, 1 SWS, Language: German, Open in study portal	**Practice (Ü)** **Online**

Content

The general conditions, influencing factors and methods in the planning, execution and control of IT projects are dealt with. In particular, the following topics will be dealt with: Project environment, project organization, project structure plan, effort estimation, project infrastructure, project control, decision-making processes, negotiation, time management. The lecture is accompanied by exercises in the form of tutorials. The date of the exercise will be announced later.

T   6.198 Course: Managing New Technologies [T-WIWI-102612]

Responsible:	Dr. Thomas Reiß
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each summer term	2

Events					
ST 2021	2545003	Managing New Technologies	2 SWS	Lecture / 📱	Reiß

Legend: 📱 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✕ Cancelled

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 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Literature

- Hausschildt/Salomo: Innovationsmanagement; Borchert et al.: Innovations- und Technologiemanagement;
- Specht/Möhrle; Gabler Lexikon Technologiemanagement

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

T 6.199 Course: Market Engineering: Information in Institutions [T-WIWI-102640]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101409 - Electronic Markets
	M-WIWI-101411 - Information Engineering
	M-WIWI-101446 - Market Engineering
	M-WIWI-101453 - Applied Strategic Decisions
	M-WIWI-102754 - Service Economics and Management

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2540460	Market Engineering: Information in Institutions	2 SWS	Lecture / 🖥	Weinhardt, Straub
ST 2021	2540461	Übungen zu Market Engineering: Information in Institutions	1 SWS	Practice / 🖥	Golla

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✕ Cancelled

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 Market Engineering: Information in Institutions
2540460, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

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 6.200 Course: Market Research [T-WIWI-107720]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-EconMan - Economics & Management
	M-WIWI-101510 - Cross-Functional Management Accounting
	M-WIWI-101647 - Data Science: Evidence-based Marketing
	M-WIWI-105312 - Marketing and Sales Management
	M-WIWI-105714 - Consumer Research

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	3

Events					
ST 2021	2571150	Market Research	2 SWS	Lecture / 🖥	Klarmann
ST 2021	2571151	Market Research Tutorial	1 SWS	Practice / 🖥	Honold

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🎙 On-Site, ✗ Cancelled

Competence Certificate

The assessment of success takes place through a written exam (according to SPO § 4 Abs. 2, Pkt. 1) with additional aids in the sense of an open book exam.

In the winter term 2021/22, the written exam will either take place in the lecture hall or online, depending on further pandemic developments. Further details will be announced during the lecture.

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 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

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

The aim of this lecture is to give an overview of essential statistical methods. In the lecture students learn the practical use as well as the correct handling of different statistical survey methods and analysis procedures. In addition, emphasis is put on the interpretation of the results after the application of an empirical survey. The derivation of strategic options is an important competence that is required in many companies in order to react optimally to customer needs.

The assessment is carried out (according to §4(2), 3 SPO) in the form of a written open book exam.

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

Please note that this course has to be completed successfully by students interested in master thesis positions at the chair of marketing.

Literature

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T   6.201 Course: Marketing Analytics [T-WIWI-103139]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101647 - Data Science: Evidence-based Marketing

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	5

Events

WT 21/22	2572170	Marketing Analytics	2 SWS	Lecture / 🧩	Klarmann
WT 21/22	2572171		1 SWS	Practice / 🎤	Honold

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
Alternative (according to §4(2), 3 of the examination regulation) exam assessment (working on tasks in groups during the lecture).

Prerequisites
The prerequisite for taking the course is the successful completion of the course "Market Research".

Recommendation
It is strongly recommended to complete the course "Market Research" prior to taking the "Marketing Analytics" course.

Annotation
"Marketing Analytics" will be offered as a block course in the winter term 20/21 with an alternative exam assessment.
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 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)
Blended (On-Site/Online)

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.

Students

- receive based on the course market research an overview of advanced empirical methods
- learn in the course of the lecture to handle advanced data collection and data analysis methods
- are based on the acquired knowledge able to interpret results and derive strategic implications

Total workload for 4.5 ECTS: ca. 135 hours.

In order to attend Marketing Analytics, students are required to have passed the course Market Research.

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.

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

Organizational issues
Präsenztermine: 05.11.2021 / 19.11.2021 / 03.12.2021 / 17.12.2021

Die anderen Termine finden online statt.

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 6.202 Course: Marketing Strategy Business Game [T-WIWI-102835]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101510 - Cross-Functional Management Accounting
	M-WIWI-105312 - Marketing and Sales Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	1,5	Grade to a third	Each summer term	1

Events					
ST 2021	2571183	Marketing Strategy Business Game	1 SWS	Block / ▤	Klarmann, Mitarbeiter

Legend: ▤ Online, ⚙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
The assessment (alternative exam 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 courses from the election block can be chosen in the 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 points 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 2021, 1 SWS, Language: German, Open in study portal	**Block (B)** **Online**

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.

Students

- are able to operate the strategic marketing simulation software "Markstrat"

- are able to take strategic marketing decisions in groups

- know how to apply strategic marketing concepts to practical contexts (e.g. for market segmentation, product launches, coordination of the marketing mix, market research, choice of the distribution channel or competitive behavior)

- are capable to collect and to select information usefully with the aim of decision-making

- are able to react appropriately to predetermined market conditions

- know how to present their strategies in a clear and consistent way

- are able to talk about the success, problems, critical incidents, external influences and strategy changes during the experimental game and to reflect and present their learning success

Non exam assessment (following §4(2), 3 of the examination regulation).

The total workload for this course is approximately 45.0 hours.

- Please note that only one of the courses from the election block can be chosen in the 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.
- 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.

Organizational issues

Termine werden bekannt gegeben

Literature

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T 6.203 Course: Master Thesis [T-WIWI-103142]

Responsible: Studiendekan der KIT-Fakultät für Informatik
Dean of Students of the KIT study program
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101659 - Master Thesis

Type	Credits	Grading scale	Version
Final Thesis	30	Grade to a third	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

T   6.204 Course: Mathematics for High Dimensional Statistics [T-WIWI-111247]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-StatEcon - Statistics & Econometrics
M-WIWI-101473 - Mathematical Programming
M-WIWI-101637 - Analytics and Statistics
M-WIWI-103289 - Stochastic Optimization

Type	Credits	Grading scale	Recurrence	Version
Oral examination	4,5	Grade to a third	Irregular	1

Events					
ST 2021	2550562	Mathematische Grundlagen hochdimensionaler Statistik	2 SWS	Lecture / 🖥	Grothe
ST 2021	2550563	Übung zu Mathematische Grundlagen hochdimensionaler Statistik	2 SWS	Practice / 🖥	Rieger

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🔊 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of an oral exam (30 min.) taking place in the recess period.

Prerequisites
None

Recommendation
Basic knowledge of mathematics and statistics is assumed.
Knowledge in multivariate statistics is an advantage, but not necessary for the course.

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

V   Mathematische Grundlagen hochdimensionaler Statistik
2550562, SS 2021, 2 SWS, Open in study portal
Lecture (V)
Online

Content
Content:
The lecture focuses on modelling statistical objects (random vectors, random matrices and random graphs) in high dimensions. It deals with concentration inequalities that limit the fluctuations of such objects as well as complexity measures for quantities and functions. The theory is transferred to well-known and widespread applications such as neighbourhood detection in networks, statistical learning theory and LASSO.

Learning objectives:

Students are able to

- name and justify statistical properties of high-dimensional objects (vectors, matrices, functions).
- describe and explain differences in the behaviour between low- and high-dimensional random objects.
- name procedures for assess uncertainties in statistical models and apply them in simple examples.
- decide well-founded which modeling of high-dimensional structures is best suited in a specific situation.
- transform data into lower dimensions and quantify approximation errors.
- understand basic proofs in high-dimensional statistics using examples.
- develop, implement and evaluate smaller simulations in a programming language of their choice.

T   6.205 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 - Innovation Economics

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	1,5	Grade to a third	Each summer term	2

Events					
ST 2021	2560240	Methods in Economic Dynamics	1 SWS	Lecture / 📱	Ott, Scheu

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🔵 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment.

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	Lecture (V)
	2560240, SS 2021, 1 SWS, Language: German/English, Open in study portal	Online

Content
The economic exploitation of inventions is an important part of innovation economics. Intellectual property rights such as patents or trademarks play a central role. Within this workshop, the recording, processing and analysis of such intellectual property rights will be deepened, e.g. considering specific technologies. Students will learn how to work with relational databases, the econometric evaluation of recorded data, and methods for visualising them.

Learning objectives:

The student

- learns to query data sources.
- is able to analyse data with statistical methods.
- visualises and interprets data evaluations (e.g. using dashboards or methods of network analysis).

Recommendations:

An interest in working with data, basic knowledge on databases as well as basic knowledge in economics and statistics are advantageous.

Workload:

The total workload for this course is approximately 45 hours.

- Classes: ca. 5 h
- Self-study: ca. 40 h

Assessment:

Non exam assessment according to § 4 paragraph 3 of the examination regulation (SPO 2015).

Literature
Relevante Literatur wird in der Vorlesung bekanntgegeben.
(Relevant literature will be announced in the lecture.)

T 6.206 Course: Methods in Innovation Management [T-WIWI-110263]

Responsible:	Dr. Daniel Jeffrey Koch
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2545107	Methoden im Innovationsmanagement	2 SWS	Seminar / 📱	Koch

Legend: 📱 Online, ♻ Blended (On-Site/Online), 📍 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessments (§4(2), 3 SPO). The final grade is composed 75% of the grade of the written paper and 25% of the grade of the presentation.

Prerequisites
None.

Recommendation
Prior attendance of the course "Innovation Management: Concepts, Strategies and Methods" is recommended.

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

V Methoden im Innovationsmanagement
2545107, WS 21/22, 2 SWS, Language: German, Open in study portal

Seminar (S)
Online

Content
The seminar "Methods in Innovation Management" aims at the discussion and development of different methods for the structured generation of ideas in selected contexts. In a block seminar, methods and contexts are discussed, from which seminar topics are defined with the participants. These topics are to be worked on independently using methods and procedures. The results will be presented at a presentation date and then a written seminar paper will be prepared. This means that creativity methods and their combination will be presented and applied. The methods are worked on in a structured form and process-like sequence in order to clarify the advantages and disadvantages of different methods.

Literature
Werden in der ersten Veranstaltung bekannt gegeben.

T   6.207 Course: Mixed Integer Programming I [T-WIWI-102719]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming
	M-WIWI-102832 - Operations Research in Supply Chain Management
	M-WIWI-103289 - Stochastic Optimization
	M-WIWI-CompOpt - Computation & Optimization

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	1

Events					
WT 21/22	2550138	Mixed-integer Programming I	2 SWS	Lecture / 🎤	Stein
WT 21/22	2550139	Exercises Mixted Integer Programming I		Practice / 🎤	Stein, Beck, Neumann

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of *Mixed Integer Programming II* [25140]. In this case, the duration of the written examination takes 120 minutes.

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 (kop.ior.kit.edu).

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

V	**Mixed-integer Programming I**	Lecture (V)
	2550138, WS 21/22, 2 SWS, Language: German, Open in study portal	On-Site

Content

Many optimization problems from economics, engineering and natural sciences are modeled with continuous as well as with discrete variables. Examples are the energy minimal design of a chemical process in which several reactors may be switched on or off, and portfolio optimization with limitations on the number of securities. For the algorithmic identification of optimal points of such problems an interaction of ideas from discrete as well as continuous optimization is necessary.

The lecture focusses on mixed-integer *linear* optimization problems and is structured as follows:

- Introduction, solvability, and basic concepts
- LP relaxation and error bounds for roundings
- Branch-and-bound method
- Gomory's cutting plane method
- Benders decomposition

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of mixed-integer *nonlinear* optimization problems forms the contents of the lecture "Mixed-integer Programming II".

Learning objectives:

The student

- knows and understands the fundamentals of linear mixed integer programming,
- is able to choose, design and apply modern techniques of linear mixed integer programming in practice.

Literature

- C.A. Floudas, Nonlinear and Mixed-Integer Optimization: Fundamentals and Applications, Oxford University Press, 1995
- J. Kallrath: Gemischt-ganzzahlige Optimierung, Vieweg, 2002
- D. Li, X. Sun: Nonlinear Integer Programming, Springer, 2006
- G.L. Nemhauser, L.A. Wolsey, Integer and Combinatorial Optimization, Wiley, 1988
- M. Tawarmalani, N.V. Sahinidis, Convexification and Global Optimization in Continuous and Mixed-Integer Nonlinear Programming, Kluwer, 2002.

T 6.208 Course: Mixed Integer Programming II [T-WIWI-102720]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming
	M-WIWI-102832 - Operations Research in Supply Chain Management
	M-WIWI-103289 - Stochastic Optimization

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Irregular	**Version** 1

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.
The examination is held in the semester of the lecture and in the following semester.
The examination can also be combined with the examination of *Mixed Integer Programming I* [2550138]. In this case, the duration of the written examination takes 120 minutes.

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 (kop.ior.kit.edu).

T 6.209 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-WIWI-101448 - Service Management
	M-WIWI-101506 - Service Analytics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2540470	Modeling and Analyzing Consumer Behavior with R	2 SWS	Lecture / ▌	Knierim
ST 2021	2540471	Übung zu Modeling and Analyzing Consumer Behaviour with R	1 SWS	Practice / ▌	Knierim, Giebenhain

Legend: ▌Online, ⬙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations).

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**	Lecture (V)
	2540470, SS 2021, 2 SWS, Language: German, Open in study portal	Online

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   6.210 Course: Modeling and OR-Software: Advanced Topics [T-WIWI-106200]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-102808 - Digital Service Systems in Industry
	M-WIWI-102832 - Operations Research in Supply Chain Management

Type Examination of another type	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 2

Events					
WT 21/22	2550490	Modellieren und OR-Software: Fortgeschrittene Themen	3 SWS	Practical course / 🖳	Pomes

Legend: 🖳 Online, ⚃ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
The assessment is a 120 minutes examination, including a written and a practical part (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the software laboratory and the following term.

Prerequisites
None.

Recommendation
Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

Successful completion of the course *Modeling and OR-Software: Introduction*.

Annotation
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is held in every term. The planned lectures and courses for the next three years are announced online.

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

V   Modellieren und OR-Software: Fortgeschrittene Themen
2550490, WS 21/22, 3 SWS, Language: German, Open in study portal

Practical course (P)
Online

Content
The advanced course is designated for Master students that already attended the introductory course or gained equivalent experience elsewhere, e.g. during a seminar or bachelor thesis. We will work on advanced topics and methods in OR, among others cutting planes, column generation and constraint programming. The Software used for the exercises is IBM ILOG CPLEX Optimization Studio. The associated modelling progamming languages are OPL and ILOG Script.

Organizational issues
die genauen Termine werden auf der Homepage bekannt gegeben

Link zur Bewerbung:http://go.wiwi.kit.edu/OR_Bewerbung

01.09.2021 09:00 - 25.09.2021 23:55

T   6.211 Course: Multicriteria Optimization [T-WIWI-111587]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	1

Competence Certificate
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.
The examination is held in the semester of the lecture and in the following semester.

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 course is offered every second winter semester (starting WiSe 22/23). The curriculum of the next three years is available online (www.ior.kit.edu).

T 6.212 Course: Multivariate Statistical Methods [T-WIWI-103124]

Responsible:	Prof. Dr. Oliver Grothe
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-StatEcon - Statistics & Econometrics
	M-WIWI-101473 - Mathematical Programming
	M-WIWI-101637 - Analytics and Statistics
	M-WIWI-101639 - Econometrics and Statistics II
	M-WIWI-103289 - Stochastic Optimization

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2550554	Multivariate Verfahren	2 SWS	Lecture / 🗄	Grothe
ST 2021	2550555	Übung zu Multivariate Verfahren	2 SWS	Practice / 🗄	Kächele

Legend: 🗄 Online, ⬡ Blended (On-Site/Online), 🎙 On-Site, ✖ Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

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.

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

V Multivariate Verfahren
2550554, SS 2021, 2 SWS, Open in study portal

Lecture (V)
Online

### Literature
Skript zur Vorlesung

T 6.213 Course: Nature-Inspired Optimization Methods [T-WIWI-102679]

Responsible:	PD Dr. Pradyumn Kumar Shukla
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics
	M-WIWI-CompOpt - Computation & Optimization

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2511106	Nature-Inspired Optimization Methods	2 SWS	Lecture / ▯	Shukla
ST 2021	2511107	Übungen zu Nature-Inspired Optimization Methods	1 SWS	Practice / ▯	Shukla

Legend: ▯ Online, ⚙ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of a written exam (60 min) (according to Section 4(2), 1 of the examination regulation) and an additional written examination called "bonus exam", 60 min (according Section 4(2), 3 of the examination regulation) or a selection of exersices . The bonus exam may be split into several shorter written tests.

The grade of this course is the achieved grade in the written examination. If this grade is at least 4.0 and at most 1.3, a passed bonus exam will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites

None

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

V Nature-Inspired Optimization Methods
2511106, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content

Many optimization problems are too complex to be solved to optimality. A promising alternative is to use stochastic heuristics, based on some fundamental principles observed in nature. Examples include evolutionary algorithms, ant algorithms, or simulated annealing. These methods are widely applicable and have proven very powerful in practice. During the course, such optimization methods based on natural principles are presented, analyzed and compared. Since the algorithms are usually quite computational intensive, possibilities for parallelization are also investigated.

Learning objectives:

Students learn:

- Different nature-inspired methods: local search, simulated annealing, tabu search, evolutionary algorithms, ant colony optimization, particle swarm optimization
- Different aspects and limitation of the methods
- Applications of such methods
- Multi-objective optimization methods
- Constraint handling methods
- Different aspects in parallelization and computing platforms

Literature

* E. L. Aarts and J. K. Lenstra: 'Local Search in Combinatorial Optimization'. Wiley, 1997 * D. Corne and M. Dorigo and F. Glover: 'New Ideas in Optimization'. McGraw-Hill, 1999 * C. Reeves: 'Modern Heuristic Techniques for Combinatorial Optimization'. McGraw-Hill, 1995 * Z. Michalewicz, D. B. Fogel: How to solve it: Modern Heuristics. Springer, 1999 * E. Bonabeau, M. Dorigo, G. Theraulaz: 'Swarm Intelligence'. Oxford University Press, 1999 * A. E. Eiben, J. E. Smith: 'Introduction to Evolutionary Computation'. * M. Dorigo, T. Stützle: 'Ant Colony Optimization'. Bradford Book, 2004 Springer, 2003

T 6.214 Course: Non- and Semiparametrics [T-WIWI-103126]

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-StatEcon - Statistics & Econometrics
                      M-WIWI-101638 - Econometrics and Statistics I
                      M-WIWI-101639 - Econometrics and Statistics II

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	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 6.215 Course: Nonlinear Optimization I [T-WIWI-102724]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	4

Events

WT 21/22	2550111	Nonlinear Optimization I	2 SWS	Lecture / 🎤	Stein
WT 21/22	2550112	Exercises Nonlinear Optimization I + II		Practice / 🎤	Stein, Beck, Schwarze, Neumann

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam. The exam takes place in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of Nonlinear Optimization II [2550113]. In this case, the duration of the written examination takes 120 minutes.

Prerequisites

The module component exam T-WIWI-103637 "Nonlinear Optimization I and II" may not be selected.

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

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

V Nonlinear Optimization I
2550111, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality condtions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

Weiterführende Literatur:

- 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 6.216 Course: Nonlinear Optimization I and II [T-WIWI-103637]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming

Type Written examination	**Credits** 9	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 6

Events					
WT 21/22	2550111	Nonlinear Optimization I	2 SWS	Lecture / 🎤	Stein
WT 21/22	2550112	Exercises Nonlinear Optimization I + II		Practice / 🎤	Stein, Beck, Schwarze, Neumann
WT 21/22	2550113	Nonlinear Optimization II	2 SWS	Lecture / 🎤	Stein

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

The assessment consits of a written exam (120 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

Prerequisites

None.

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

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

V Nonlinear Optimization I
2550111, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality condtions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

V	**Nonlinear Optimization II** 2550113, WS 21/22, 2 SWS, Language: German, Open in study portal	**Lecture (V)** **On-Site**

Content

The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

Weiterführende Literatur:

- 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 6.217 Course: Nonlinear Optimization II [T-WIWI-102725]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	3

Events					
WT 21/22	2550112	Exercises Nonlinear Optimization I + II		Practice / 🍃	Stein, Beck, Schwarze, Neumann
WT 21/22	2550113	Nonlinear Optimization II	2 SWS	Lecture / 🍃	Stein

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🍃 On-Site, ✗ Cancelled

Competence Certificate

The assessment consits of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

The exam can also be combined with the examination of *Nonlinear Optimization I* [2550111]. In this case, the duration of the written exam takes 120 minutes.

Prerequisites
None.

Annotation
Part I and II of the lecture are held consecutively in the same semester.

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

V Nonlinear Optimization II
2550113, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
On-Site

Content

The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

Weiterführende Literatur:

- 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   6.218 Course: Open Science & Reproducibility [T-WIWI-111394]

Responsible: Prof. Dr. Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-105714 - Consumer Research

Type	Credits	Grading scale	Recurrence	Expansion	Version
Examination of another type	4,5	Grade to a third	Each summer term	1 terms	1

Competence Certificate
Alternative exam assessment. Details will be communicated at the first day of the class.

Annotation
This course introduces the current debates around Open Science and Reproducibility. Since 2011, the social sciences are confronted with the replication crisis. Many study results, for example from psychology and economics, cannot be replicated. This calls into question the validity of research results in these fields. In this course, we discuss possible reasons for this crisis, ranging from the incentive structure in the publication process over questionable research practices to fraud. We will discuss possible solutions that have been developed to improve science such as replication projects, pre-registration, registered reports and open peer review. The students will develop an understanding of current debates and evolve a critical perspective on their own research practices.

The number of participants is limited. The registration will take place via the Wiwi-Portal.

The workload of the class is 4.5 ECTS. This consists of active participation in regular sessions, smaller presentations by the students during the semester, preparation of the literature, and an exam ("Prüfungsleistung anderer Art"). Details will be communicated at the first day of the class.

T 6.219 Course: Operations Research in Health Care Management [T-WIWI-102884]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-102805 - Service Operations

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	2

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 6.220 Course: Operations Research in Supply Chain Management [T-WIWI-102715]

Responsible:	Prof. Dr. Stefan Nickel
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming
	M-WIWI-102805 - Service Operations
	M-WIWI-102832 - Operations Research in Supply Chain Management
	M-WIWI-103289 - Stochastic Optimization

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	2

Competence Certificate

The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

Prerequisites

None

Recommendation

Basic knowledge as conveyed in the module Introduction to Operations Research and in the lectures Facility Location and Strategic SCM, Tactical and operational SCM is assumed.

Annotation

The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

T 6.221 Course: Optimization Models and Applications [T-WIWI-110162]

Responsible:	Dr. Nathan Sudermann-Merx
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming
	M-WIWI-102832 - Operations Research in Supply Chain Management
	M-WIWI-103289 - Stochastic Optimization

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	1

Competence Certificate

The examination will take place for the last time in the winter semester 2020/2021.

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

The prerequisite for participation in the exam is the achievement of a minimum number of points in delivery sheets. Details will be announced at the beginning of the course.

Prerequisites

None.

Annotation

The course will take place for the last time in the winter semester 20/21.

T   6.222 Course: Optimization Under Uncertainty [T-WIWI-106545]

Responsible:	Prof. Dr. Steffen Rebennack
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103289 - Stochastic Optimization
	M-WIWI-CompOpt - Computation & Optimization

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	3

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 6.223 Course: Panel Data [T-WIWI-103127]

Responsible: apl. Prof. Dr. Wolf-Dieter Heller
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-StatEcon - Statistics & Econometrics
M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2520320	Panel Data	2 SWS	Lecture / 📱	Heller
ST 2021	2520321	Übungen zu Paneldaten	2 SWS	Practice / 📱	Heller

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Prerequisites
None

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

V Panel Data
2520320, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content
Content:

Fixed-Effects-Models, Random-Effects-Models, Time-Demeaning

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Literature

Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge and London: MIT Press.

Wooldridge, J. M. (2009). *Introductory Econometrics: A Modern Approach* (5th ed.). Mason, Ohio: South-Western Cengage Learning.

T 6.224 Course: Parametric Optimization [T-WIWI-102855]

Responsible:	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101473 - Mathematical Programming

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Irregular	**Version** 1

Competence Certificate

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

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 6.225 Course: Personalization and Services [T-WIWI-102848]

Responsible:	Andreas Sonnenbichler
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	1

Competence Certificate

The exam is currently not offered.

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.

Prerequisites

None

Recommendation

None

Annotation

The course is currently not offered.

T 6.226 Course: Planning and Management of Industrial Plants [T-WIWI-102631]

Responsible:	Prof. Dr. Frank Schultmann
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101471 - Industrial Production II

Type	Credits	Grading scale	Recurrence	Version
Written examination	5,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2581952	Planning and Management of Industrial Plants	2 SWS	Lecture / 🗔	Glöser-Chahoud, Schultmann
WT 21/22	2581953	Übungen Anlagenwirtschaft	2 SWS	Practice / 🗔	Heck, Heinzmann, Glöser-Chahoud

Legend: 🗔 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✕ Cancelled

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites
None

Recommendation
None

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

V Planning and Management of Industrial Plants
2581952, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

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.

Literature
Wird in der Veranstaltung bekannt gegeben.

T 6.227 Course: Portfolio and Asset Liability Management [T-WIWI-103128]

Responsible: Dr. Mher Safarian
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101639 - Econometrics and Statistics II

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2520357	Portfolio and Asset Liability Management	2 SWS	Lecture / 🖥	Safarian
ST 2021	2520358	Übungen zu Portfolio and Asset Liability Management	2 SWS	Practice / 🖥	Safarian

Legend: 🖥 Online, ⚄ Blended (On-Site/Online), 🔵 On-Site, ✗ Cancelled

Competence Certificate
The assessment of this course consists of a written examination (following §4(2), 1 SPOs, 180 min.).

Prerequisites
None

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

V Portfolio and Asset Liability Management
2520357, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content
Learning objectives:

Knowledge of various portfolio management techniques in the financial industry.

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:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Organizational issues
Blockveranstaltung

Literature
To be announced in the lecture

T   6.228 Course: Practical Seminar Digital Service Systems [T-WIWI-106563]

Responsible: Prof. Dr. Alexander Mädche
                     Prof. Dr. Gerhard Satzger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-102808 - Digital Service Systems in Industry

Type Examination of another type	Credits 4,5	Grading scale Grade to a third	Recurrence Irregular	Version 1

Events					
ST 2021	2540554	Practical Seminar: Information Systems & Service Design (Master)	3 SWS	Lecture / 📱	Mädche
WT 21/22	2540554	Practical Seminar: Information Systems & Service Design	3 SWS	Lecture	Mädche

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🖥 On-Site, ✗ Cancelled

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 (Master)
2540554, SS 2021, 3 SWS, Open in study portal

Lecture (V)
Online

Content
In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

Prerequisites
Profound skills in software development are required

Literature
Further literature will be made available in the seminar.

V   Practical Seminar: Information Systems & Service Design
2540554, WS 21/22, 3 SWS, Language: English, Open in study portal

Lecture (V)

T 6.229 Course: Practical Seminar: Data-Driven Information Systems [T-WIWI-106207]

Responsible:	Prof. Dr. Alexander Mädche
	Prof. Dr. Gerhard Satzger
	Prof.Dr. Thomas Setzer
	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103117 - Data Science: Data-Driven Information Systems

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Irregular	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   6.230 Course: Practical Seminar: Health Care Management (with Case Studies) [T-WIWI-102716]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-102805 - Service Operations

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each term	2

Events					
ST 2021	2550498	Practical seminar: Health Care Management	3 SWS	Practical course / ▯	Nickel, Mitarbeiter
WT 21/22	2500008	Practical seminar: Health Care Management	3 SWS	Practical course / ◉	Nickel, Mitarbeiter

Legend: ▯ Online, ❖ Blended (On-Site/Online), ◉ On-Site, ✗ Cancelled

Competence Certificate

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

The assessment 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.

T 6.231 Course: Practical Seminar: Information Systems and Service Design [T-WIWI-108437]

Responsible:	Prof. Dr. Alexander Mädche
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-102806 - Service Innovation, Design & Engineering
	M-WIWI-104068 - Information Systems in Organizations
	M-WIWI-104080 - Designing Interactive Information Systems

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each term	2

Events					
ST 2021	2540554	Practical Seminar: Information Systems & Service Design (Master)	3 SWS	Lecture / 🗖	Mädche

Legend: 🗖 Online, ⚘ Blended (On-Site/Online), ◗ On-Site, ✗ Cancelled

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 (Master)
2540554, SS 2021, 3 SWS, Open in study portal

Lecture (V)
Online

Content

In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

Prerequisites

Profound skills in software development are required

Literature

Further literature will be made available in the seminar.

T 6.232 Course: Practical Seminar: Service Innovation [T-WIWI-110887]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-102806 - Service Innovation, Design & Engineering

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Irregular	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 pracitical components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites

None

Recommendation

Knowledge of Service Innovation Methods is assumed. Therefore it is recommended to attend the course Service Innovation [2540468] beforehand.

Annotation

Due to the project work, the number of participants is limited and participation requires knowledge about models, concepts and approaches that are taught in the Service Innovation lecture. Having taken the Service Innovation lecture or demonstrating equivalent knowledge is a prerequisite for participating in this Practical Seminar. Details for registration will be announced on the web pages for this course.

The seminar is not offered regularly.

T 6.233 Course: Predictive Mechanism and Market Design [T-WIWI-102862]

Responsible:	Prof. Dr. Johannes Philipp Reiß
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101453 - Applied Strategic Decisions
	M-WIWI-101505 - Experimental Economics
	M-WIWI-DigEcon - Digital Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	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   6.234 Course: Predictive Modeling [T-WIWI-110868]

Responsible: Jun.-Prof. Dr. Fabian Krüger

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-StatEcon - Statistics & Econometrics
M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2521311	Predictive Modeling	2 SWS	Lecture / 🖥	Krüger
ST 2021	2521312	Predictive Modeling (Tutorial)	2 SWS	Practice / 🖥	Krüger, Koster

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate

Open Book exam, online

Prerequisites

None

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

V	**Predictive Modeling**	**Lecture (V)**
	2521311, SS 2021, 2 SWS, Language: English, Open in study portal	**Online**

Content
Contents

This course presents methods for making and evaluating statistical predictions based on data. We consider various types of predictions (mean, probability, quantile, and full distribution), all of which are practically relevant. In each case, we discuss selected modeling approaches and their implementation using R software. We consider various economic case studies. Furthermore, we present methods for absolute evaluation (assessing whether a given model is compatible with the data) and relative evaluation (comparing the predictive performance of alternative models).

Learning objectives

Students have a good conceptual understanding of statistical prediction methods. They are able to implement these methods using statistical software, and can assess which method is suitable in a given situation.

Prerequisites

Students should know econometrics on the level of the course `Applied Econometrics' [2520020]

Literature

- Elliott, G., und A. Timmermann (Hrsg.): "Handbook of Economic Forecasting", vol. 2A und 2B, 2013.
- Gneiting, T., und M. Katzfuss: "Probabilistic Forecasting", Annual Review of Statistics and Its Application 1, 125-151, 2014.
- Hastie, T., Tibshirani, R., and J. Friedman: "The Elements of Statistical Learning", 2. Ausgabe, Springer, 2009.
- Weitere Literatur wird in der Vorlesung bekanntgegeben.

| V	**Predictive Modeling (Tutorial)**	**Practice (Ü)**
	2521312, SS 2021, 2 SWS, Language: English, Open in study portal	**Online**

T 6.235 Course: Price Management [T-WIWI-105946]

Responsible:	Prof. Dr. Andreas Geyer-Schulz
	Dr Paul Glenn
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101409 - Electronic Markets

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2540529	Price Management	2 SWS	Lecture / ▯	Glenn
ST 2021	2540530	Exercise Price Management	1 SWS	Practice / ▯	Glenn

Legend: ▯ Online, ✡ Blended (On-Site/Online), ◆ On-Site, ✗ Cancelled

Competence Certificate

Lecture and exam will not be offered in summer semester 2019. The next examination is in the summer semester 2020.

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.

Prerequisites
None

Recommendation
None

Annotation
The lecture is offered for the first time in summer term 2016.

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

V Price Management
2540529, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Literature

- H. Simon and M. Fassnacht, *Preismanagement*, vol. 4. Wiesbaden: Springer Gabler, 2016.
- T. T. Nagle, J. E. Hogan, und J. Zalee, *The Strategy and Tactics of Pricing: A guide to growing more profitably*. New Jersey: Prentice Hall, 2010.

T 6.236 Course: Price Negotiation and Sales Presentations [T-WIWI-102891]

Responsible: Prof. Dr. Martin Klarmann
                     Mark Schröder

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-105312 - Marketing and Sales Management

Type Examination of another type	**Credits** 1,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 3

Events					
WT 21/22	2572198	Price Negotiation and Sales Presentations	1 SWS	Block / 🎤	Klarmann, Schröder

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

This alternative exam 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, participation for a specific course can not be guaranteed. For further information please contact the Marketing and Sales Research Group (marketing.iism.kit.edu). Please note that only one of the courses from the election block can be attended in the module.

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

V Price Negotiation and Sales Presentations
2572198, WS 21/22, 1 SWS, Language: German, Open in study portal

Block (B)
On-Site

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.

Students

- gain a clear impression of the theoretical knowledge about price negotiations and sales presentations
- improve their own negotiation abilities

Non exam assessment (following §4(2), 3 of the examination regulation).

The total workload for this course is approximately 45.0 hours.

- In order to participate in this course, you need to apply. Applications usually start with the lecture period in the winter term. Detailed information on the application process is 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 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.

Organizational issues

Blockveranstaltung

T 6.237 Course: Pricing Excellence [T-WIWI-111246]

Responsible:	Fabian Bill
	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-105312 - Marketing and Sales Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	1,5	Grade to a third	Each summer term	1

Events					
ST 2021	2571175	Pricing Excellence	1 SWS	Others (sons / 🖥	Bill

Legend: 🖥 Online, ⚅ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment (team presentation of a case study with a duration of about 25 minutes and a subsequent discussion).

Prerequisites
None.

Annotation
Please note that only one of the courses in the module´s supplementary offering can be counted. This event has a restriction on participation. The Marketing and Sales Research Group typically allows all students to attend a 1.5 credit course in the corresponding module. A guarantee for the attendance of a certain event cannot be given. An application is required for participation in this event. The application phase usually takes place at the beginning of the lecture period in the summer semester. More information on the application process is usually available on the Marketing and Sales Research Group website (marketing.iism.kit.edu) shortly before the start of the lecture period in the summer semester.

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

V Pricing Excellence
2571175, SS 2021, 1 SWS, Language: English, Open in study portal

Others (sonst.)
Online

Content
In a theoretical part at the beginning of the course, students are taught the theoretical foundations of pricing. This includes an introduction to (1) price setting of product prices as well as (2) price setting of customer net prices (development of discount systems). Furthermore, theoretical foundations of price implementation and price monitoring are discussed.

Theoretical contents are applied and presented by teams within a case study format.

The learning objectives are as follows:
- Getting to know the theoretical foundations of price setting
- Getting to know the theoretical foundations of price execution and price monitoring
- Application of the acquired knowledge in a case study format
- Concise and structured presentation of the results

Alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation (presentation of a case study with subsequent discussion).

Total time required for 1.5 credit points: approx. 45.0 hours

Attendance time: 15 hours

Preparation and wrap-up of the course: 22.5 hours

Exam and exam preparation: 7.5 hours

Organizational issues
Blockveranstaltung, Raum 115, Geb. 20.21, Termine werden noch bekannt gegeben

T 6.238 Course: Probabilistic Time Series Forecasting Challenge [T-WIWI-111387]

Responsible: Jun.-Prof. Dr. Fabian Krüger

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-StatEcon - Statistics & Econometrics
M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II

Type Examination of another type	Credits 4,5	Grading scale Grade to a third	Recurrence Irregular	Version 1

Events					
WT 21/22	00080	Probabilistic Time Series Forecasting Challenge		Project (P / 🗎	Bracher, Koster, Krüger, Lerch, Wolffram

Legend: 🗎 Online, ⧉ Blended (On-Site/Online), ◗ On-Site, ✗ Cancelled

Competence Certificate

The assessment of this course is an alternative exam assessment. In order to pass the course, students are required to submit forecasts for each week of the semester (excluding the Christmas break). At the end of the course, students are required to write a report (10-15 pages) that describes the forecasting methods as well as their performance. This report is the basis for the final course grade.

Prerequisites

The course requires good basic knowledge in statistics and data science as well as knowledge in R, Python, Matlab or similar. Knowledge in time series analysis is helpful but not mandatory.

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

V Probabilistic Time Series Forecasting Challenge
00080, WS 21/22, SWS, Language: English, Open in study portal

Project (PRO)
Online

Content

Statistical forecasts are relevant across all fields of society. In this data science project, students make, evaluate and communicate their own statistical forecasts in a real-time setting. We consider probabilistic forecasts that involve a measure of uncertainty in addition to a point forecast. Students are asked to make forecasts of several real-world time series (including energy demand and the DAX stock market index). Historical data on all series are available from public sources that are updated as time proceeds. While the time series differ from each other in important ways, statistical methods can meaningfully be used for prediction in all cases. We focus on quantile forecasts which are useful to measure forecast uncertainty in a relatively simple way.

Organizational issues
Short description

In this data science project, students make and evaluate statistical forecasts in a realistic setup (involving real-time predictions and real-world time series data). In mid October, we'll have a kick-off meeting and several lectures covering relevant background knowledge. During the semester, there will be a weekly meeting in which students and instructors discuss the current state of the forecasting challenge. Details on the logistics (precise dates, online versus offline format) are TBA.

Prerequisites

Students should have a good working knowledge of statistics and data science, including proficiency in a programming language like R, Python, or Matlab. Knowledge of time series analysis is helpful but not strictly required. Motivation and curiosity are particularly important in this new course format that requires regular, active participation over the whole semester.

Examination rules

The project seminar counts for 4.5 credit points (Leistungspunkte). The examination rules are as follows:

- In order to pass the course, students are required to submit forecasts for each week of the semester (excluding the Christmas break). Each week's submission is due on Wednesday, 6 p.m., and covers the seven following days (Thursday to Wednesday).
- At the end of the course, students are required to write a report (10-15 pages) that describes the forecasting methods as well as their performance. This report is the basis for the final course grade.

T 6.239 Course: Process Mining [T-WIWI-109799]

Responsible:	Prof. Dr. Andreas Oberweis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-InfoML - Informatics & Machine Learning
	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2511204	Process Mining	2 SWS	Lecture / 🖥	Oberweis
ST 2021	2511205	Exercise Process Mining	1 SWS	Practice / 🖥	Oberweis, Schreiber

Legend: 🖥 Online, ♟ Blended (On-Site/Online), 🌑 On-Site, ✖ Cancelled

Competence Certificate
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites
None

Annotation
Former name (up to winter semester 2018/1019) "Workflow Management".

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

V Process Mining
2511204, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content
The area of process mining covers approaches which aim at deducting new knowledge on the basis of logfiles generated by information systems. Such information systems are e.g., workflow-management-systems which are used for an efficient control of processes in enterprises and organisations. The lecture introduces the foundations of processes and respective modeling and analysis techniques. In the following, the foundations of process mining and the three classical types of approaches - discovery, conformance and enhancement - will be taught. In addition to the theoretical basics, tools, application scenarios in practice and open research questions are covered as well.

Learning objectives:
Students

- understand the concepts and approaches of process mining and know how they are applied,
- create and evaluate business process models,
- analyze static and dynamic properties of workflows,
- apply approaches and tools of process mining.

Recommendations:
Knowledge of course Applied Informatics - Modelling is expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- W. van der Aalst, H. van Kees: Workflow Management: Models, Methods and Systems, Cambridge, The MIT Press, 2002.
- W. van der Aalst: Process Mining: Data Science in Action. Springer, 2016.
- J. Carmona, B. van Dongen, A. Solti, M. Weidlich: Conformance Checking: Relating Processes and Models. Springer, 2018.
- A. Drescher, A. Koschmider, A. Oberweis: Modellierung und Analyse von Geschäftsprozessen: Grundlagen und Übungsaufgaben mit Lösungen. De Gruyter Studium, 2017.
- A. Oberweis: Modellierung und Ausführung von Workflows mit Petri-Netzen. Teubner-Reihe Wirtschaftsinformatik, B.G. Teubner Verlag, 1996.
- R. Peters, M. Nauroth: Process-Mining: Geschäftsprozesse: smart, schnell und einfach, Springer, 2019.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer, 2012.
- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer, 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T 6.240 Course: Product and Innovation Management [T-WIWI-109864]

Responsible:	Prof. Dr. Martin Klarmann
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101510 - Cross-Functional Management Accounting
	M-WIWI-101514 - Innovation Economics
	M-WIWI-105312 - Marketing and Sales Management

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each summer term	3

Events					
ST 2021	2571154	Product and Innovation Management	2 SWS	Lecture / 🖥	Klarmann

Legend: 🖥 Online, ⚭ Blended (On-Site/Online), 🔊 On-Site, ✗ Cancelled

Competence Certificate

The assessment of success takes place through a written exam (according to SPO § 4 Abs. 2, Pkt. 1) with additional aids in the sense of an open book exam.

In the winter term 2021/22, the written exam will either take place in the lecture hall or online, depending on further pandemic developments. Further details will be announced during the lecture.

Prerequisites

None

Annotation

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

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

V Product and Innovation Management
2571154, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

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.

Students

- know the most important terms of the product and innovation concept

- understand the models of product choice behavior (e.g., the Markov model, the Luce model)

- are familiar with the basics of network theory (e.g. the Triadic Closure concept)

- know the central strategic concepts of innovation management (especially the market driving approach, pioneer and successor, Miles/Snow typology, blockbuster strategy)

- master the most important methods and sources of idea generation (e.g. open innovation, lead user method, crowdsourcing, creativity techniques, voice of the customer, innovation games, conjoint analysis, quality function deployment, online toolkits)

- are capable of defining and evaluating new product concepts and know the associated instruments like focus groups, product testing, speculative sales, test market simulation Assessor, electronic micro test market

- have advanced knowledge about market introduction (e.g. adoption and diffusion models Bass, Fourt/Woodlock, Mansfield)

- understand important connections of the innovation process (cluster formation, innovation culture, teams, stage-gate process)

The assessment is carried out (according to §4(2), 3 SPO) in the form of a written open book exam.

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

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

Literature
Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T 6.241 Course: Production and Logistics Management [T-WIWI-102632]

Responsible: Dr.-Ing. Simon Glöser-Chahoud
Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101412 - Industrial Production III

Type Written examination	Credits 5,5	Grading scale Grade to a third	Recurrence Each summer term	Version 1

Events					
ST 2021	2581954	Production and Logistics Management	2 SWS	Lecture / ▯	Schultmann, Glöser-Chahoud
ST 2021	2581955	Übung zu Produktions- und Logistikmanagement	2 SWS	Practice / ▯	Zimmer, Huster

Legend: ▯ Online, ⚯ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites

None

Recommendation

None

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

V Production and Logistics Management
2581954, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content

This course covers central tasks and challenges of operative production and logistics management. Students get to know the set-up and mode of planning systems such as production planning and control systems, enterprise resource planning systems and advanced planning systems to cope with the accompanying planning tasks in supply chain management. Methods to solve these tasks from the field of operational research will be explored with respect to manufacturing program planning, material requirement planning, lot size problems and scheduling. Alongside to MRP II (Manufacturing Resources Planning), students will be introduced to integrated supply chain management approaches. Finally, commercially available planning systems will be presented and discussed.

Literature

Wird in der Veranstaltung bekannt gegeben.

| **T** | **6.242 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-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| **Type**
Examination of another type | **Credits**
4,5 | **Grading scale**
Grade to a third | **Recurrence**
Each winter term | **Version**
2 |

Events					
ST 2021	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar / ▯	Zöllner
WT 21/22	2512501	Practical Course Cognitive automobiles and robots (Master)	3 SWS	Practical course / ▯	Zöllner, Daaboul

Legend: ▯ Online, ✿ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

Competence Certificate
The alternative exam assessment 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

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

| **V** | **Cognitive Automobiles and Robots**
2513500, SS 2021, 2 SWS, Language: German/English, Open in study portal | **Seminar (S)**
Online |

Content
The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:
Attendance of the lecture machine learning

Workload:
The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

| **V** | **Practical Course Cognitive automobiles and robots (Master)**
2512501, WS 21/22, 3 SWS, Language: German/English, Open in study portal | **Practical course (P)**
Online |

Content

The lab is intended as a practical supplement to lectures such as "Machine Learning". The theoretical basics are applied in the lab course. The aim of the lab course is that the participants work together to design, develop and evaluate a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

In addition to the scientific objectives involved in the investigation and application of the methods, aspects of project-specific teamwork in research (from specification to presentation of the results) are also developed in this practical course.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and implementation and evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

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

Recommendations:

Attendance of the lecture machine learning, C/C++ knowledge, Python knowledge

Workload:

The workload of 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

T   6.243 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-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2512500	Project Lab Machine Learning	3 SWS	Practical course / 🧩	Zöllner

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate

The alternative exam assessment 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

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

V   Project Lab Machine Learning
2512500, SS 2021, 3 SWS, Language: German/English, Open in study portal

Practical course (P)
Blended (On-Site/Online)

Content

The lab is intended as a practical supplement to lectures such as "Machine Learning". The theoretical basics are applied in the lab course. The aim of the lab course is that the participants work together to design, develop and evaluate a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

In addition to the scientific objectives involved in the investigation and application of the methods, aspects of project-specific teamwork in research (from specification to presentation of the results) are also developed in this practical course.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and implementation and evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

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

Recommendations:

Attendance of the lecture machine learning, C/C++ knowledge, Python knowledge

Workload:

The workload of 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

T   6.244 Course: Project Management [T-WIWI-103134]

Responsible:	Prof. Dr. Frank Schultmann
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101412 - Industrial Production III
	M-WIWI-101471 - Industrial Production II

Type	Credits	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2581963	Project Management	2 SWS	Lecture / 🖥	Schultmann, Volk, Rosenberg, Gehring
WT 21/22	2581964	Übung zu Project Management	1 SWS	Practice / 🖥	Volk, Rosenberg, Wehrle, Gehring

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🌑 On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (examination of another type, following §4(2), 3 of the examination regulation).

Prerequisites

None

Recommendation

None

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

V   Project Management
2581963, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

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
11. Agile Project Management

Literature

Wird in der Veranstaltung bekannt gegeben.

T 6.245 Course: Public Management [T-WIWI-102740]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101504 - Collective Decision Making
M-WIWI-101511 - Advanced Topics in Public Finance

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Each winter term	Version 1

Events					
WT 21/22	2561127	Public Management	3 SWS	Lecture / Practice (/ 🖥	Wigger

Legend: 🖥 Online, ⚃ Blended (On-Site/Online), 🔈 On-Site, ✗ Cancelled

Competence Certificate

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

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 21/22, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
Online

Literature
Weiterführende Literatur:

- Damkowski, W. und C. Precht (1995): Public Management; Kohlhammer
- Richter, R. und E.G. Furubotn (2003): Neue Institutionenökonomik; 3. Auflage, Mohr
- Schedler, K. und I. Proeller (2003): New Public Management; 2. Auflage; UTB
- Mueller, D.C. (2009): Public Choice III; Cambridge University Press
- Wigger, B.U. (2006): Grundzüge der Finanzwissenschaft; 2. Auflage; Springer

T   6.246 Course: Public Revenues [T-WIWI-102739]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101511 - Advanced Topics in Public Finance

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2560120	Public Revenues	2 SWS	Lecture / ▤	Wigger
ST 2021	2560121	Übung zu Öffentliche Einnahmen	1 SWS	Practice / ▤	Wigger

Legend: ▤ Online, ⬡ Blended (On-Site/Online), ◗ On-Site, ✗ Cancelled

Competence Certificate
Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

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 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

Content
The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Learning goals:
See German version.

Workload:
The total workload for this course is approximately 135.0 hours.

Literature
Literatur:

- Homburg, S.(2000): *Allgemeine Steuerlehre*, Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4. Aufl., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* und *Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2. Aufl., Springer

T	**6.247 Course: Quantitative Methods in Energy Economics [T-WIWI-107446]**

Responsible:	Dr. Patrick Plötz
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101451 - Energy Economics and Energy Markets

Type Oral examination	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 2

Events					
WT 21/22	2581007	Quantitative Methods in Energy Economics	2 SWS	Lecture	Plötz, Dengiz, Yilmaz
WT 21/22	2581008	Übung zu Quantitative Methods in Energy Economics	1 SWS	Practice	Plötz, Dengiz, Yilmaz

Competence Certificate

The assessment consists of an oral (30 minutes) exam (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

Prerequisites

None

Recommendation

None

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

V	**Quantitative Methods in Energy Economics** 2581007, WS 21/22, 2 SWS, Language: English, Open in study portal	**Lecture (V)**

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.

Learning Goals:

The student

- knows and understands selected quantitative methods of energy economics
- is able to use selected quantitative methods of energy economics
- understands they range of usage, limits and is autonomously able to adress new problems by them.

Literature

Wird in der Vorlesung bekannt gegeben.

T 6.248 Course: Recommender Systems [T-WIWI-102847]

|	
Responsible:	Prof. Dr. Andreas Geyer-Schulz
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2540506	Recommender Systems	2 SWS	Lecture / 🔳	Geyer-Schulz
ST 2021	2540507	Exercise Recommender Systems	1 SWS	Practice / 🔳	Nazemi
WT 21/22	2540506	Recommender Systems	2 SWS	Lecture / 🔳	Geyer-Schulz
WT 21/22	2540507	Exercise Recommender Systems	1 SWS	Practice / 🔳	Geyer-Schulz, Nazemi

Legend: 🔳 Online, ⚃ Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

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.

Prerequisites

None

Recommendation

None

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

V	**Recommender Systems**	Lecture (V)
	2540506, SS 2021, 2 SWS, Language: German, Open in study portal	**Online**

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.

Learning objectives:

The student

- is proficient in different statistical, data-mining, and game theory methods of computing implicit and explicit recommendations
- evaluates recommender systems and compares these with related services

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

Exam:

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.

The course is considered successfully taken, if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from excersise work will be added.

Grade: Minimum points

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

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.

Weiterführende Literatur:

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.

V	**Recommender Systems** 2540506, WS 21/22, 2 SWS, Language: German, Open in study portal	**Lecture (V)** **Online**

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.

Learning objectives:

The student

- is proficient in different statistical, data-mining, and game theory methods of computing implicit and explicit recommendations
- evaluates recommender systems and compares these with related services

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

Exam:

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.

The course is considered successfully taken, if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from excersise work will be added.

Grade: Minimum points

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

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.

Weiterführende Literatur:

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 6.249 Course: Regulation Theory and Practice [T-WIWI-102712]

Responsible:	Prof. Dr. Kay Mitusch
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101406 - Network Economics
	M-WIWI-101451 - Energy Economics and Energy Markets

Type	**Credits**	**Grading scale**	**Recurrence**	**Version**
Oral examination	4,5	Grade to a third	see Annotations	2

Competence Certificate

The lecture is not offered for an indefinite period of time.

Result of success is made by a 20-30 minutes oral examination. 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 6.250 Course: Responsible Artificial Intelligence [T-WIWI-111385]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-103117 - Data Science: Data-Driven Information Systems

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2545164	Responsible Artificial Intelligence	2 SWS	Lecture	Staudt, Hoffmann

Competence Certificate

The final grade is based on an examination of other type according to § 4 Par. 2 No. 3. It consists of

- The completion of an exercise including a short presentation (15 min)(max. 30 points)
- The completion of a case study including an oral exam (max. 60 points).

Further details are explained during the lecture.

Prerequisites

Readings will be provided to work through before the lecture.

T 6.251 Course: Risk Management in Industrial Supply Networks [T-WIWI-102826]

Responsible:	Prof. Dr. Frank Schultmann PD Dr. Marcus Wiens
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101412 - Industrial Production III M-WIWI-101471 - Industrial Production II

Type Written examination	Credits 3,5	Grading scale Grade to a third	Recurrence Each winter term	Version 1

Events					
WT 21/22	2581992	Risk Management in Industrial Supply Networks	2 SWS	Lecture / 🖥	Klein
WT 21/22	2581993	Übung zu Risk Management in Industrial Supply Networks	1 SWS	Practice / 🖥	Klein

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (examination of another type, following §4(2), 3 of the examination regulation).

Prerequisites
None

Recommendation
None

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

V Risk Management in Industrial Supply Networks
2581992, WS 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content
Students learn methods and tools to manage risks in complex and dynamically evolving supply chain networks. Students learn the key terms and concepts of risk management and decision theory, in particular expected utility theory. Based on the theoretic prerequisites, students are able to determine and analyze risk diversification, risk pooling, insurance mechanisms and get an overview on statistical risk measures and real options. These approaches are adapted to analyze supply chain risks in a network context. In this manner, students gain knowledge in basic notions of network theory, network metrics and network-strategies for supply chain decisions.

- Introduction
- Risks in decisions under uncertainty: Expected Utility Theory & risk preferences
- The newsvendor model; multivariate risks and insurance
- Risk measures & evaluation techniques: Value-at-Risk, Conditional Value at Risk, Monte Carlo and Real Options
- Transparency in complex supply chains
- Network risk: network basics and criticality
- Risk in supply networks: empirical approaches and insights

Literature
Wird in der Veranstaltung bekannt gegeben.

T 6.252 Course: Roadmapping [T-WIWI-102853]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101488 - Entrepreneurship (EnTechnon)
                        M-WIWI-101507 - Innovation Management
                        M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

Events					
ST 2021	2545102	Roadmapping	2 SWS	Seminar / 📱	Koch

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 👤 On-Site, ✗ Cancelled

Competence Certificate
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO).

Prerequisites
None

Recommendation
Prior attendance of the course Innovation Management is recommended.

Annotation
See German version.

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

V Roadmapping
2545102, SS 2021, 2 SWS, Language: German, Open in study portal

**Seminar (S)
Online**

Content
Technology Assessment can play a role at different points in the innovation process and can be considered as decision support for or against certain technological options. The seminar Technology Assessment will focus on the early phase "fuzzy front end" in innovation management. The technology assessment will take place here under a high degree of uncertainty regarding future technological developments. The evaluation of technologies can be done with methods such as Technology Readiness, Technology Lifecycle Analysis, Portfolio Analysis, etc.. The early evaluation of technologies is particularly important against the background of limited resources in companies and uncertainty about future developments.

T   6.253 Course: Selected Issues in Critical Information Infrastructures [T-WIWI-109251]

Responsible:	Prof. Dr. Ali Sunyaev
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type Examination of another type	Credits 4,5	Grading scale Grade to a third	Recurrence Each summer term	Version 2

Events					
ST 2021	2512403	Advanced Lab Blockchain Hackathon (Master)		Practical course / 🖳	Sunyaev, Beyene, Kannengießer
WT 21/22	2513401	Seminar Selected Issues in Critical Information Infrastructures (Master)		Seminar	Sunyaev, Lins

Legend: 🖳 Online, ⚄ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO). Details will be announced in the respective course.

Prerequisites
None.

Annotation
T-WIWI-109251 "Selected Issues in Critical Information Infrastructures" serves to credit an extracurricular course in the module "Critical Digital Infrastructures".

T 6.254 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 - Intellectual Property Law

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each summer term	1

Events					
ST 2021	24821	Selected legal issues of Internet law	2 SWS	Colloquium (K / 🖥	Dreier

Legend: 🖥 Online, ⚃ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

T 6.255 Course: Semantic Web Technologies [T-WIWI-110848]

Responsible:	Tobias Christof Käfer
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-InfoML - Informatics & Machine Learning
	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2511310	Semantic Web Technologies	2 SWS	Lecture / ▯	Färber, Käfer, Heling
ST 2021	2511311	Exercises to Semantic Web Technologies	1 SWS	Practice / ▯	Färber, Käfer, Heling

Legend: ▯ Online, ⚬ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

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**	**Lecture (V)**
2511310, SS 2021, 2 SWS, Language: English, Open in study portal	**Online**

Content

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.

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

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Workload:

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

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.

Weitere Literatur

- 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 2021, 1 SWS, Language: English, Open in study portal	**Practice (Ü)** **Online**

Content

The exercises are related to the lecture Semantic Web Technologies.

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.

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

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

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.

Weitere Literatur

- 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 6.256 Course: Seminar in Business Administration A (Master) [T-WIWI-103474]

Responsible: Professors of the subject Betriebswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101808 - Seminar Module

Type Examination of another type	Credits 4.5	Grading scale Grade to a third	Recurrence Each term	Version 1

Events					
ST 2021	2400121	Interactive Analytics Seminar	2 SWS	/ 🖥	Beigl, Mädche, Pescara
ST 2021	2500007	Food Choice	2 SWS	Seminar / 🖥	Seidler, Scheibehenne
ST 2021	2500043	Collaborative Development of Conversational Agents	3 SWS	Seminar / 🖥	Mädche, Gnewuch
ST 2021	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar / ⚙	Mädche
ST 2021	2530372	Advances in Financial Machine Learning	2 SWS	Seminar / 🖥	Ulrich
ST 2021	2530580	Seminar in Finance (Master) - Corona crisis and the financial markets		Seminar / 🖥	Uhrig-Homburg
ST 2021	2540472	Digital Citizen Science	2 SWS	Seminar / 🖥	Weinhardt, Volkamer, Mayer, Knierim, Greif-Winzrieth, Mädche, Nieken, Scheibehenne, Szech, Woll
ST 2021	2540473	Business Data Analytics	2 SWS	Seminar / 🖥	Dann, Stoeckel, Grote, Badewitz
ST 2021	2540475	Electronic Markets & User Behavior		Seminar / 🖥	Knierim
ST 2021	2540477	Digital Experience & Participation	2 SWS	Seminar / 🖥	Peukert, Greif-Winzrieth
ST 2021	2540478	Smart Grid Economics & Energy Markets	2 SWS	Seminar / 🖥	Staudt, Huber, Richter, vom Scheidt, Golla, Henni, Schmidt, Meinke, Qu
ST 2021	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar / 🖥	Geyer-Schulz
ST 2021	2540553	Interactive Analytics Seminar	2 SWS	Seminar / 🖥	Mädche, Beigl, Toreini, Pescara
ST 2021	2540557	Information Systems and Service Design Seminar	3 SWS	Seminar / 🖥	Mädche
ST 2021	2540559	Digital Service Design Seminar	3 SWS	Seminar / 🖥	Mädche
ST 2021	2540588	Economic Psychology in Action	2 SWS	Seminar / 🖥	Liu
ST 2021	2545002	Entrepreneurship Research	2 SWS	Seminar / 🖥	Henn, Manthey, Terzidis
ST 2021	2550493	Hospital Management	2 SWS	Block / 🖥	Hansis
ST 2021	2571180	Seminar in Marketing und Vertrieb (Master)	2 SWS	Seminar / 🖥	Klarmann, Mitarbeiter
ST 2021	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / 🖥	Nieken, Mitarbeiter
ST 2021	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / 🖥	Nieken, Mitarbeiter
ST 2021	2579909	Seminar Management Accounting	2 SWS	Seminar / 🖥	Wouters, Hammann, Disch

ST 2021	2579910	Entrepreneurial Strategy and Financing of Start-Ups	2 SWS	Seminar / ▯	Burkardt
ST 2021	2579919	Seminar in Management Accounting - Special Topics	2 SWS	Seminar / ▯	Ebinger
ST 2021	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar / ▯	Plötz
ST 2021	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar / ▯	Volk, Schultmann
ST 2021	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar / ▯	Fichtner
ST 2021	2581990		2 SWS	Seminar / ▯	Schultmann
WT 21/22	2500019	Digital Citizen Science	2 SWS	Seminar	Mädche, Nieken
WT 21/22	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar / ✿	Mädche
WT 21/22	2530293		2 SWS	Seminar / ▯	Ruckes, Hoang, Benz, Strych, Luedecke, Silbereis, Wiegratz
WT 21/22	2530372	Advances in Financial Machine Learning	2 SWS	Seminar / ▯	Ulrich
WT 21/22	2540473	Data Science in Service Management	2 SWS	Seminar	Stoeckel, Badewitz
WT 21/22	2540475	Electronic Markets & User behavior	2 SWS	Seminar / ▯	Knierim
WT 21/22	2540477	Digital Experience and Participation	2 SWS	Seminar	Peukert, Fegert, Greif-Winzrieth, Hoffmann
WT 21/22	2540478	Smart Grids and Energy Markets	2 SWS	Seminar	Dinther, Staudt, Richter, vom Scheidt, Golla, Schmidt, Henni, Bluhm, Klimm
WT 21/22	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz, Nazemi, Schweizer
WT 21/22	2540557	Information Systems and Design (ISSD) Seminar	2 SWS	Seminar	Mädche
WT 21/22	2545107	Methoden im Innovationsmanagement	2 SWS	Seminar / ▯	Koch
WT 21/22	2571180	Seminar in Marketing und Vertrieb (Bachelor)	2 SWS	Seminar / ♟	Klarmann, Mitarbeiter
WT 21/22	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / ♟	Nieken, Mitarbeiter
WT 21/22	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / ♟	Nieken, Mitarbeiter
WT 21/22	2579910	Entrepreneurial Strategy and Financing of Start-Ups	2 SWS	Seminar / ▯	Burkardt
WT 21/22	2579919	Seminar Management Accounting - Special Topics	2 SWS	Seminar	Wouters, Ebinger
WT 21/22	2581030	Seminar Energiewirtschaft IV: Aktuelle Themen der Energiepolitik	2 SWS	Seminar	Dehler-Holland, Fichtner, Britto
WT 21/22	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar	Glöser-Chahoud, Schultmann
WT 21/22	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar	Volk, Schultmann
WT 21/22	2581980	Seminar Energy Economics II: Current Trends on European Energy Markets	2 SWS	Seminar / ▯	Fichtner, Fraunholz, Kraft, Zimmermann
WT 21/22	2581981		2 SWS	Seminar	Ardone, Finck, Fichtner, Slednev

Legend: ▯ Online, ✿ Blended (On-Site/Online), ♟ On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

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

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

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

V	**Interactive Analytics Seminar**	**Online**
	2400121, SS 2021, 2 SWS, Language: English, Open in study portal	

Content
Providing new and innovative ways for interacting with data is becoming increasingly important. In this seminar, an interdisciplinary team of students engineers a running software prototype of an advanced interactive system leveraging state-of-the-art hardware and software focusing on an analytical use case. The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (Research Group ISSD, Prof. Mädche). This seminar follows an interdisciplinary approach. Students the fields of computer science, information systems and industrial engineering work together in teams.

Learning Objectives

- Explore and specify a data-driven interaction challenge
- Suggest and evaluate different design solutions for addressing the identified problem
- Build interactive analytics prototypes using advanced interaction concepts and pervasive computing technologies

Prerequisites

Strong analytic abilities and profound skills in SQL as wells as Python and/or R are required.

Literature

Further literature will be made available in the seminar.

Organizational issues
nach Vereinbarung

V	**Collaborative Development of Conversational Agents**	**Seminar (S)** **Online**
	2500043, SS 2021, 3 SWS, Language: English, Open in study portal	

Content

This course focuses on the design, development, deployment, and evaluation of conversational agents (e.g., chatbots or voice assistants) for a given problem domain (e.g., customer service, team collaboration). The aim of the course is to introduce conceptual and technical foundations of conversational agents, relevant theories of human-computer interaction, and design guidelines for different classes of conversational agents. In addition, the course will introduce the human-centered design approach adapted to the design of conversational agents, including several qualitative and quantitative evaluation approaches.

The entire course is held virtually with no physical meetings, providing a first experience for future workplace scenarios. The course is a joint offering together with Saarland University (Prof. Stefan Morana) and Technische Universität Dresden (Prof. Benedikt Brendel). Students will work collaboratively in virtual teams with students from the other universities (i.e., one student per university in one team). Each student team will iteratively design, develop, and evaluate a conversational agent using contemporary technology tools (e.g., Google Dialogflow, Microsoft Bot Framework, Rasa). The teams document their activities and results in a project report. The project report as well as the conversational agent prototype are the basis for the grading of the course.

The entire course is limited to 15 participants (5 per university) and requires a short registration. More details will be made available on our website.

After completing this course, the course participants will be able to:

- explain conceptual and technical foundations of conversational agents
- perform the human-centered design approach to design, develop, and evaluate a conversational agent
- develop conversational agents using state-of-the-art tools and frameworks
- apply qualitative and quantitative methods to evaluate conversational agent prototypes

Requirements

- Programming skills are beneficial
- Experience or general interest in human-computer interaction
- English communication skills

Literature

Relevant literature will be made available in the seminar.

V	**Advances in Financial Machine Learning** 2530372, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

Machine learning (ML) is changing virtually every aspect of our lives. Today ML algorithms accomplish tasks that until recently only expert humans could perform. As it relates to finance, this is the most exciting time to adopt a disruptive technology that will transform how everyone invests for generations.

In this seminar we will apply modern machine learning techniques hands on to important computational risk and asset management problems. In particular we will use the state of the art Python programming language to implement investment related applications and/ or Finance 4.0 risk management solutions.

In a bi-weekly schedule you and your supervisor will first learn and discuss important machine learning concepts and then apply it within a practical FinTech project to real-world data. As a prerequisite students should already have some basic Python and data science skills.

Organizational issues

14-tägig, tba

Literature

Literatur wird in der ersten Vorlesung bekannt gegeben.

V	**Master Seminar in Data Science and Machine Learning** 2540510, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

V	**Information Systems and Service Design Seminar** 2540557, SS 2021, 3 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group ISSD (Prof. Mädche). The research group "Information Systems & Service Design" (ISSD) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites

No specific prerequisites are required for the seminar.

Literature

Further literature will be made available in the seminar.

Organizational issues

Termine werden bekannt gegeben

V	**Digital Service Design Seminar** 2540559, SS 2021, 3 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content
Description

In this seminar, a team of students addresses a real-world design challenge of an IISM cooperation partner. Students learn and apply design methods, techniques, and tools to explore the problem and deliver a solution in the form of an innovative prototype

Learningobjectives

The students

- explore a real-world digital service design challenge
- understand the human-centered design process and apply selected design techniques & tools
- deliver a digital service prototype as a potential solution for the challenge

Prerequisites

No specific prerequisites are required for the seminar

Literature

Further literature will be made available in the seminar.

Organizational issues

Termine werden bekannt gegeben

V	**Economic Psychology in Action** 2540588, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content
Description

This blocked event contains 3 stages.

In Stage 1, students meet online for one day and experience recent economic psychology research as participants. The research topics will mainly consist of novel economic games with certain level of strategic depth (i.e., we will not play simple games like rock paper scissors, nor we will play games that many people are familiar with like the prisoner's dilemma).

In Stage 2, students will receive the data from the games they played in Stage 1 along with a few journal articles assigned by the instructor on related topics. Based on reading, they choose one of the datasets from Stage 1 to write up a short report.

In Stage 3, students will try to design and conduct a study on a related topic themselves based on what they have learned in the previous stages. They will collect their own data and write a research report. The nature of this project is to be determined together by the students and instructor. It would either be ideas generated by the students themselves, or something assigned by the instructor.

English will be the language used in all discussions, course materials, and assessments.

Competence Certificate

The assessment is based on the short report in Stage 2 and the research report in Stage 3.

Workload

Students are expected to spend a total of 90 hours (30 hours per ECTS), including meeting and assignments, on this seminar.

Organizational issues
Blockveranstaltung, Temrine werden bekanntgegeben

V	**Entrepreneurship Research** 2545002, SS 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

Organizational issues
Block am 21.04., 05.05., 14.07.

Literature
Wird im Seminar bekannt gegeben.

V	**Hospital Management** 2550493, SS 2021, 2 SWS, Language: German, Open in study portal	**Block (B)** **Online**

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.

The assessment consists of attendance and a presentation or a case study.

Organizational issues
von Montag, 17. Mai bis Samstag, 22. Mai jeweils von 7:30 bis 9:15 Uhr

V	**Seminar Human Resource Management (Master)** 2573012, SS 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

V	**Seminar Human Resources and Organizations (Master)** 2573013, SS 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

V	**Seminar Management Accounting** 2579909, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

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.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Workload:

- The total workload for this course is approximately 90 hours.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Note:

- Maximum of 16 students.

Organizational issues

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature

Will be announced in the course.

V	**Seminar in Management Accounting - Special Topics** 2579919, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

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 several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Workload:

- The total workload for this course is approximately 90 hours.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Note:

- Maximum of 16 students.

Organizational issues

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature

Will be announced in the course.

V	**Digital Citizen Science** 2500019, WS 21/22, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)**

Content

Digital Citizen Science is an innovative approach to conduct field research - interactively and in the real world. Especially in times of social distancing measures essential questions about how private lives are changing are investigated. Who is experiencing more stress during HomeOffice hours? Who is flourishing while learning at home because flow is experienced more often? Which formats of digital cooperation are fostering social contacts and bonding? These and other questions that target the main topic: Well-being @Home are focused in these seminar projects.

The seminar theses are supervised by academics from multiple institutes that are working together on the topic of Digital Citizen Science arbeiten. Involved are the research groups of Prof. Mädche, Prof. Nieken, Prof. Scheibehenne, Prof. Szech, Prof. Volkamer, Prof. Weinhardt and Prof. Woll.

V	**Advances in Financial Machine Learning** 2530372, WS 21/22, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

Machine learning (ML) is changing virtually every aspect of our lives. Today ML algorithms accomplish tasks that until recently only expert humans could perform. As it relates to finance, this is the most exciting time to adopt a disruptive technology that will transform how everyone invests for generations.

In this seminar we will apply modern machine learning techniques hands on to important computational risk and asset management problems. In particular we will use the state of the art Python programming language to implement investment related applications and/ or Finance 4.0 risk management solutions.

In a bi-weekly schedule you and your supervisor will first learn and discuss important machine learning concepts and then apply it within a practical FinTech project to real-world data. As a prerequisite students should already have some basic Python and data science skills.

Organizational issues
14-tägig, tba

Literature
Literatur wird in der ersten Vorlesung bekannt gegeben.

V	**Data Science in Service Management** 2540473, WS 21/22, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)**

Content
wird auf deutsch und englisch gehalten

Organizational issues
Blockveranstaltung, siehe WWW

V	**Master Seminar in Data Science and Machine Learning** 2540510, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)**

V	**Methoden im Innovationsmanagement** 2545107, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

Content

The seminar "Methods in Innovation Management" aims at the discussion and development of different methods for the structured generation of ideas in selected contexts. In a block seminar, methods and contexts are discussed, from which seminar topics are defined with the participants. These topics are to be worked on independently using methods and procedures. The results will be presented at a presentation date and then a written seminar paper will be prepared. This means that creativity methods and their combination will be presented and applied. The methods are worked on in a structured form and process-like sequence in order to clarify the advantages and disadvantages of different methods.

Literature
Werden in der ersten Veranstaltung bekannt gegeben.

| V | **Seminar Human Resource Management (Master)**
2573012, WS 21/22, 2 SWS, Language: German, Open in study portal | **Seminar (S)**
On-Site |

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

| V | **Seminar Human Resources and Organizations (Master)**
2573013, WS 21/22, 2 SWS, Language: German, Open in study portal | **Seminar (S)**
On-Site |

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

| V | **Seminar Management Accounting - Special Topics**
2579919, WS 21/22, 2 SWS, Language: English, Open in study portal | **Seminar (S)** |

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 several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Workload:

- The total workload for this course is approximately 90 hours.

Note:

- Maximum of 16 students.

Literature

Will be announced in the course.

T   6.257 Course: Seminar in Business Administration B (Master) [T-WIWI-103476]

Responsible: Professors of the subject Betriebswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101808 - Seminar Module

Type Examination of another type	Credits 4.5	Grading scale Grade to a third	Recurrence Each term	Version 1

Events					
ST 2021	2500007	Food Choice	2 SWS	Seminar / 📄	Seidler, Scheibehenne
ST 2021	2500043	Collaborative Development of Conversational Agents	3 SWS	Seminar / 📄	Mädche, Gnewuch
ST 2021	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar / ⚙	Mädche
ST 2021	2530372	Advances in Financial Machine Learning	2 SWS	Seminar / 📄	Ulrich
ST 2021	2530580	Seminar in Finance (Master) - Corona crisis and the financial markets		Seminar / 📄	Uhrig-Homburg
ST 2021	2540472	Digital Citizen Science	2 SWS	Seminar / 📄	Weinhardt, Volkamer, Mayer, Knierim, Greif-Winzrieth, Mädche, Nieken, Scheibehenne, Szech, Woll
ST 2021	2540473	Business Data Analytics	2 SWS	Seminar / 📄	Dann, Stoeckel, Grote, Badewitz
ST 2021	2540475	Electronic Markets & User Behavior		Seminar / 📄	Knierim
ST 2021	2540477	Digital Experience & Participation	2 SWS	Seminar / 📄	Peukert, Greif-Winzrieth
ST 2021	2540478	Smart Grid Economics & Energy Markets	2 SWS	Seminar / 📄	Staudt, Huber, Richter, vom Scheidt, Golla, Henni, Schmidt, Meinke, Qu
ST 2021	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar / 📄	Geyer-Schulz
ST 2021	2540553	Interactive Analytics Seminar	2 SWS	Seminar / 📄	Mädche, Beigl, Toreini, Pescara
ST 2021	2540557	Information Systems and Service Design Seminar	3 SWS	Seminar / 📄	Mädche
ST 2021	2540559	Digital Service Design Seminar	3 SWS	Seminar / 📄	Mädche
ST 2021	2540588	Economic Psychology in Action	2 SWS	Seminar / 📄	Liu
ST 2021	2545002	Entrepreneurship Research	2 SWS	Seminar / 📄	Henn, Manthey, Terzidis
ST 2021	2550493	Hospital Management	2 SWS	Block / 📄	Hansis
ST 2021	2571180	Seminar in Marketing und Vertrieb (Master)	2 SWS	Seminar / 📄	Klarmann, Mitarbeiter
ST 2021	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / 📄	Nieken, Mitarbeiter
ST 2021	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / 📄	Nieken, Mitarbeiter
ST 2021	2579909	Seminar Management Accounting	2 SWS	Seminar / 📄	Wouters, Hammann, Disch
ST 2021	2579910	Entrepreneurial Strategy and Financing of Start-Ups	2 SWS	Seminar / 📄	Burkardt

ST 2021	2579919	Seminar in Management Accounting - Special Topics	2 SWS	Seminar / 🖥	Ebinger
ST 2021	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar / 🖥	Plötz
ST 2021	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar / 🖥	Volk, Schultmann
ST 2021	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar / 🖥	Fichtner
ST 2021	2581990		2 SWS	Seminar / 🖥	Schultmann
WT 21/22	2500019	Digital Citizen Science	2 SWS	Seminar	Mädche, Nieken
WT 21/22	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar / 🧩	Mädche
WT 21/22	2530293		2 SWS	Seminar / 🖥	Ruckes, Hoang, Benz, Strych, Luedecke, Silbereis, Wiegratz
WT 21/22	2530372	Advances in Financial Machine Learning	2 SWS	Seminar / 🖥	Ulrich
WT 21/22	2540473	Data Science in Service Management	2 SWS	Seminar	Stoeckel, Badewitz
WT 21/22	2540475	Electronic Markets & User behavior	2 SWS	Seminar / 🖥	Knierim
WT 21/22	2540477	Digital Experience and Participation	2 SWS	Seminar	Peukert, Fegert, Greif-Winzrieth, Hoffmann
WT 21/22	2540478	Smart Grids and Energy Markets	2 SWS	Seminar	Dinther, Staudt, Richter, vom Scheidt, Golla, Schmidt, Henni, Bluhm, Klimm
WT 21/22	2540510	Master Seminar in Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz, Nazemi, Schweizer
WT 21/22	2540557	Information Systems and Design (ISSD) Seminar	2 SWS	Seminar	Mädche
WT 21/22	2545107	Methoden im Innovationsmanagement	2 SWS	Seminar / 🖥	Koch
WT 21/22	2571180	Seminar in Marketing und Vertrieb (Bachelor)	2 SWS	Seminar / 🎤	Klarmann, Mitarbeiter
WT 21/22	2573012	Seminar Human Resource Management (Master)	2 SWS	Seminar / 🎤	Nieken, Mitarbeiter
WT 21/22	2573013	Seminar Human Resources and Organizations (Master)	2 SWS	Seminar / 🎤	Nieken, Mitarbeiter
WT 21/22	2579910	Entrepreneurial Strategy and Financing of Start-Ups	2 SWS	Seminar / 🖥	Burkardt
WT 21/22	2579919	Seminar Management Accounting - Special Topics	2 SWS	Seminar	Wouters, Ebinger
WT 21/22	2581030	Seminar Energiewirtschaft IV: Aktuelle Themen der Energiepolitik	2 SWS	Seminar	Dehler-Holland, Fichtner, Britto
WT 21/22	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar	Glöser-Chahoud, Schultmann
WT 21/22	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar	Volk, Schultmann
WT 21/22	2581980	Seminar Energy Economics II: Current Trends on European Energy Markets	2 SWS	Seminar / 🖥	Fichtner, Fraunholz, Kraft, Zimmermann
WT 21/22	2581981		2 SWS	Seminar	Ardone, Finck, Fichtner, Slednev

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

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

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

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

V	**Collaborative Development of Conversational Agents** 2500043, SS 2021, 3 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content
This course focuses on the design, development, deployment, and evaluation of conversational agents (e.g., chatbots or voice assistants) for a given problem domain (e.g., customer service, team collaboration). The aim of the course is to introduce conceptual and technical foundations of conversational agents, relevant theories of human-computer interaction, and design guidelines for different classes of conversational agents. In addition, the course will introduce the human-centered design approach adapted to the design of conversational agents, including several qualitative and quantitative evaluation approaches.

The entire course is held virtually with no physical meetings, providing a first experience for future workplace scenarios. The course is a joint offering together with Saarland University (Prof. Stefan Morana) and Technische Universität Dresden (Prof. Benedikt Brendel). Students will work collaboratively in virtual teams with students from the other universities (i.e., one student per university in one team). Each student team will iteratively design, develop, and evaluate a conversational agent using contemporary technology tools (e.g., Google Dialogflow, Microsoft Bot Framework, Rasa). The teams document their activities and results in a project report. The project report as well as the conversational agent prototype are the basis for the grading of the course.

The entire course is limited to 15 participants (5 per university) and requires a short registration. More details will be made available on our website.

After completing this course, the course participants will be able to:

- explain conceptual and technical foundations of conversational agents
- perform the human-centered design approach to design, develop, and evaluate a conversational agent
- develop conversational agents using state-of-the-art tools and frameworks
- apply qualitative and quantitative methods to evaluate conversational agent prototypes

Requirements

- Programming skills are beneficial
- Experience or general interest in human-computer interaction
- English communication skills

Literature
Relevant literature will be made available in the seminar.

V	**Advances in Financial Machine Learning** 2530372, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

Machine learning (ML) is changing virtually every aspect of our lives. Today ML algorithms accomplish tasks that until recently only expert humans could perform. As it relates to finance, this is the most exciting time to adopt a disruptive technology that will transform how everyone invests for generations.

In this seminar we will apply modern machine learning techniques hands on to important computational risk and asset management problems. In particular we will use the state of the art Python programming language to implement investment related applications and/ or Finance 4.0 risk management solutions.

In a bi-weekly schedule you and your supervisor will first learn and discuss important machine learning concepts and then apply it within a practical FinTech project to real-world data. As a prerequisite students should already have some basic Python and data science skills.

Organizational issues

14-tägig, tba

Literature

Literatur wird in der ersten Vorlesung bekannt gegeben.

V	**Master Seminar in Data Science and Machine Learning** 2540510, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

V	**Information Systems and Service Design Seminar** 2540557, SS 2021, 3 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group ISSD (Prof. Mädche). The research group "Information Systems & Service Design" (ISSD) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

Learning Objectives

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

Prerequisites

No specific prerequisites are required for the seminar.

Literature

Further literature will be made available in the seminar.

Organizational issues

Termine werden bekannt gegeben

V	**Digital Service Design Seminar** 2540559, SS 2021, 3 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content
Description

In this seminar, a team of students addresses a real-world design challenge of an IISM cooperation partner. Students learn and apply design methods, techniques, and tools to explore the problem and deliver a solution in the form of an innovative prototype

Learningobjectives

The students

- explore a real-world digital service design challenge
- understand the human-centered design process and apply selected design techniques & tools
- deliver a digital service prototype as a potential solution for the challenge

Prerequisites

No specific prerequisites are required for the seminar

Literature

Further literature will be made available in the seminar.

Organizational issues
Termine werden bekannt gegeben

| V | **Economic Psychology in Action** | **Seminar (S)** |
| | 2540588, SS 2021, 2 SWS, Language: English, Open in study portal | **Online** |

Content
Description

This blocked event contains 3 stages.

In Stage 1, students meet online for one day and experience recent economic psychology research as participants. The research topics will mainly consist of novel economic games with certain level of strategic depth (i.e., we will not play simple games like rock paper scissors, nor we will play games that many people are familiar with like the prisoner's dilemma).

In Stage 2, students will receive the data from the games they played in Stage 1 along with a few journal articles assigned by the instructor on related topics. Based on reading, they choose one of the datasets from Stage 1 to write up a short report.

In Stage 3, students will try to design and conduct a study on a related topic themselves based on what they have learned in the previous stages. They will collect their own data and write a research report. The nature of this project is to be determined together by the students and instructor. It would either be ideas generated by the students themselves, or something assigned by the instructor.

English will be the language used in all discussions, course materials, and assessments.

Competence Certificate

The assessment is based on the short report in Stage 2 and the research report in Stage 3.

Workload

Students are expected to spend a total of 90 hours (30 hours per ECTS), including meeting and assignments, on this seminar.

Organizational issues
Blockveranstaltung, Temrine werden bekanntgegeben

| V | **Entrepreneurship Research** | **Seminar (S)** |
| | 2545002, SS 2021, 2 SWS, Language: German, Open in study portal | **Online** |

Organizational issues
Block am 21.04., 05.05., 14.07.

Literature
Wird im Seminar bekannt gegeben.

| V | **Hospital Management** | **Block (B)** |
| | 2550493, SS 2021, 2 SWS, Language: German, Open in study portal | **Online** |

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.

The assessment consists of attendance and a presentation or a case study.

Organizational issues

von Montag, 17. Mai bis Samstag, 22. Mai jeweils von 7:30 bis 9:15 Uhr

V	**Seminar Human Resource Management (Master)** 2573012, SS 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues

Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

V	**Seminar Human Resources and Organizations (Master)** 2573013, SS 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

V	**Seminar Management Accounting** 2579909, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

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.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Workload:

- The total workload for this course is approximately 90 hours.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Note:

- Maximum of 16 students.

Organizational issues
Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature
Will be announced in the course.

V	**Seminar in Management Accounting - Special Topics** 2579919, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

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 several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Workload:

- The total workload for this course is approximately 90 hours.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Note:

- Maximum of 16 students.

Organizational issues
Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

Literature
Will be announced in the course.

V	**Digital Citizen Science**	**Seminar (S)**
	2500019, WS 21/22, 2 SWS, Language: German/English, Open in study portal	

Content

Digital Citizen Science is an innovative approach to conduct field research - interactively and in the real world. Especially in times of social distancing measures essential questions about how private lives are changing are investigated. Who is experiencing more stress during HomeOffice hours? Who is flourishing while learning at home because flow is experienced more often? Which formats of digital cooperation are fostering social contacts and bonding? These and other questions that target the main topic: Well-being @Home are focused in these seminar projects.

The seminar theses are supervised by academics from multiple institutes that are working together on the topic of Digital Citizen Science arbeiten. Involved are the research groups of Prof. Mädche, Prof. Nieken, Prof. Scheibehenne, Prof. Szech, Prof. Volkamer, Prof. Weinhardt and Prof. Woll.

V	**Advances in Financial Machine Learning**	**Seminar (S)** **Online**
	2530372, WS 21/22, 2 SWS, Language: English, Open in study portal	

Content

Machine learning (ML) is changing virtually every aspect of our lives. Today ML algorithms accomplish tasks that until recently only expert humans could perform. As it relates to finance, this is the most exciting time to adopt a disruptive technology that will transform how everyone invests for generations.

In this seminar we will apply modern machine learning techniques hands on to important computational risk and asset management problems. In particular we will use the state of the art Python programming language to implement investment related applications and/ or Finance 4.0 risk management solutions.

In a bi-weekly schedule you and your supervisor will first learn and discuss important machine learning concepts and then apply it within a practical FinTech project to real-world data. As a prerequisite students should already have some basic Python and data science skills.

Organizational issues
14-tägig, tba

Literature
Literatur wird in der ersten Vorlesung bekannt gegeben.

V	**Data Science in Service Management**	**Seminar (S)**
	2540473, WS 21/22, 2 SWS, Language: German/English, Open in study portal	

Content
wird auf deutsch und englisch gehalten

Organizational issues
Blockveranstaltung, siehe WWW

V	**Master Seminar in Data Science and Machine Learning**	**Seminar (S)**
	2540510, WS 21/22, 2 SWS, Language: German, Open in study portal	

V	**Methoden im Innovationsmanagement**	**Seminar (S)** **Online**
	2545107, WS 21/22, 2 SWS, Language: German, Open in study portal	

Content

The seminar "Methods in Innovation Management" aims at the discussion and development of different methods for the structured generation of ideas in selected contexts. In a block seminar, methods and contexts are discussed, from which seminar topics are defined with the participants. These topics are to be worked on independently using methods and procedures. The results will be presented at a presentation date and then a written seminar paper will be prepared. This means that creativity methods and their combination will be presented and applied. The methods are worked on in a structured form and process-like sequence in order to clarify the advantages and disadvantages of different methods.

Literature
Werden in der ersten Veranstaltung bekannt gegeben.

V	**Seminar Human Resource Management (Master)** 2573012, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **On-Site**

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim
The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

V	**Seminar Human Resources and Organizations (Master)** 2573013, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **On-Site**

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim
The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

Literature

Selected journal articles and books.

Organizational issues
Blockveranstaltung siehe Homepage

V	**Seminar Management Accounting - Special Topics** 2579919, WS 21/22, 2 SWS, Language: English, Open in study portal	**Seminar (S)**

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 several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Workload:

- The total workload for this course is approximately 90 hours.

Note:

- Maximum of 16 students.

Literature

Will be announced in the course.

T 6.258 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 - Innovation Economics

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

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 scored 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.

| T | **6.259 Course: Seminar in Economics A (Master) [T-WIWI-103478]** |

Responsible: Professors of the subject Volkswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101808 - Seminar Module

Type Examination of another type	Credits 4.5	Grading scale Grade to a third	Recurrence Each term	Version 1

Events					
ST 2021	2500004	Introduction to Statistical Machine Learning	2 SWS	Seminar / 📱	Schienle, Lerch
ST 2021	2521310	Advanced Topics in Econometrics	2 SWS	Seminar / 📱	Schienle, Krüger, Görgen, Koster
ST 2021	2560233	Seminar zur Luftverkehrspoltik		Seminar / 📱	Mitusch, Wisotzky
ST 2021	2560282	Wirtschaftspolitisches Seminar	2 SWS	Seminar / 📱	Ott, Assistenten
ST 2021	2560552	Overcoming the Corona Crisis, Seminar Morals and Social Behavior (Master)	2 SWS	Seminar / 📱	Szech, Zhao
ST 2021	2560555	Markets for Attention and the Digital Economy Seminar on Topics in Political Economy (Bachelor)	2 SWS	Seminar / 📱	Szech, Huber
ST 2021	2560556	Social Preferences in Behavioral Economics /„Seminar on Topics in Political Economy"		Seminar / 📱	Szech, Rau
WT 21/22	2560142	Disruption and the Digital Economy - Topics in Political Economy (Master)	2 SWS	Seminar	Szech, Huber, Rosar
WT 21/22	2560143	Overcoming the Corona Crisis - Morals & Social Behavior (Master)	2 SWS	Seminar	Szech, Zhao, Huber
WT 21/22	2560282	Wirtschaftspolitisches Seminar	2 SWS	Seminar	Ott, Assistenten
WT 21/22	2561208	Selected aspects of European transport planning and -modelling	1 SWS	Seminar	Szimba

Legend: 📱 Online, ⚅ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

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

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

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

V	**Introduction to Statistical Machine Learning** 2500004, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V	**Advanced Topics in Econometrics** 2521310, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

V	**Overcoming the Corona Crisis, Seminar Morals and Social Behavior (Master)** 2560552, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content
Participation will be limited to 12 students.

Organizational issues
Blockveranstaltung

V	**Markets for Attention and the Digital Economy Seminar on Topics in Political Economy (Bachelor)** 2560555, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content
For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Digital Economics or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Blockveranstaltung

V	**Disruption and the Digital Economy - Topics in Political Economy (Master)** 2560142, WS 21/22, 2 SWS, Language: English, Open in study portal	**Seminar (S)**

Content
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Digital Economics or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

V	**Overcoming the Corona Crisis - Morals & Social Behavior (Master)** 2560143, WS 21/22, 2 SWS, Language: English, Open in study portal	**Seminar (S)**

Content

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Digital Economics or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues

Application is possible via https://portal.wiwi.kit.edu/Seminare

T 6.260 Course: Seminar in Economics B (Master) [T-WIWI-103477]

Responsible: Professors of the subject Volkswirtschaftslehre
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101808 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4.5	Grade to a third	Each term	1

| Events					
ST 2021	2500004	Introduction to Statistical Machine Learning	2 SWS	Seminar / 🖥	Schienle, Lerch
ST 2021	2521310	Advanced Topics in Econometrics	2 SWS	Seminar / 🖥	Schienle, Krüger, Görgen, Koster
ST 2021	2560233	Seminar zur Luftverkehrspoltik		Seminar / 🖥	Mitusch, Wisotzky
ST 2021	2560282	Wirtschaftspolitisches Seminar	2 SWS	Seminar / 🖥	Ott, Assistenten
ST 2021	2560552	Overcoming the Corona Crisis, Seminar Morals and Social Behavior (Master)	2 SWS	Seminar / 🖥	Szech, Zhao
ST 2021	2560555	Markets for Attention and the Digital Economy Seminar on Topics in Political Economy (Bachelor)	2 SWS	Seminar / 🖥	Szech, Huber
ST 2021	2560556	Social Preferences in Behavioral Economics /„Seminar on Topics in Political Economy"		Seminar / 🖥	Szech, Rau
WT 21/22	2560142	Disruption and the Digital Economy - Topics in Political Economy (Master)	2 SWS	Seminar	Szech, Huber, Rosar
WT 21/22	2560282	Wirtschaftspolitisches Seminar	2 SWS	Seminar	Ott, Assistenten
WT 21/22	2561208	Selected aspects of European transport planning and -modelling	1 SWS	Seminar	Szimba

Legend: 🖥 Online, ❀ Blended (On-Site/Online), ♣ On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation

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

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

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

| V | **Introduction to Statistical Machine Learning**
 2500004, SS 2021, 2 SWS, Language: German/English, Open in study portal | **Seminar (S)**
 Online |

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

| V | **Advanced Topics in Econometrics**
 2521310, SS 2021, 2 SWS, Language: German/English, Open in study portal | **Seminar (S)**
 Online |

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

| V | **Overcoming the Corona Crisis, Seminar Morals and Social Behavior (Master)**
 2560552, SS 2021, 2 SWS, Language: English, Open in study portal | **Seminar (S)**
 Online |

Content
Participation will be limited to 12 students.

Organizational issues
Blockveranstaltung

| V | **Markets for Attention and the Digital Economy Seminar on Topics in Political Economy (Bachelor)**
 2560555, SS 2021, 2 SWS, Language: English, Open in study portal | **Seminar (S)**
 Online |

Content
For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Digital Economics or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

Organizational issues
Blockveranstaltung

| V | **Disruption and the Digital Economy - Topics in Political Economy (Master)**
 2560142, WS 21/22, 2 SWS, Language: English, Open in study portal | **Seminar (S)** |

Content
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Digital Economics or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

T 6.261 Course: Seminar in Engineering Science Master (approval) [T-WIWI-108763]

Responsible: Fachvertreter ingenieurwissenschaftlicher Fakultäten
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101808 - Seminar Module

Type Examination of another type	Credits 4.5	Grading scale Grade to a third	Recurrence Each term	Version 1

Events					
ST 2021	2119100	Fördertechnik und Logistiksysteme		Seminar / ✵	Furmans, Pagani
WT 21/22	2115009	Seminar for Rail System Technology	1 SWS	Seminar / ▯	Gratzfeld, Tesar, Geimer
WT 21/22	2119100	Fördertechnik und Logistiksysteme		Seminar / ✵	Furmans, Pagani

Legend: ▯ Online, ✵ Blended (On-Site/Online), ◖ On-Site, ✗ Cancelled

Competence Certificate
See German version.

Prerequisites
See module description.

Recommendation
None

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

V Fördertechnik und Logistiksysteme
2119100, SS 2021, SWS, Open in study portal

Seminar (S)
Blended (On-Site/Online)

Content
The goal of the seminar is to deal with different topics related to the materials handling and logistics. The students can work on the topic either alone or in a group work. At the end the results are presented and discussed with a final presentation. The prepare the work for the seminar an introductory event is scheduled at the beginning.

Organizational issues
Ort: Gebäude 50.38, Raum 0.22, Termine siehe homepage

V Seminar for Rail System Technology
2115009, WS 21/22, 1 SWS, Language: German/English, Open in study portal

Seminar (S)
Online

Content

- Railway system: railway as system, subsystems and interdependencies, definitions, laws, rules, railway and environment, economic impact, history, challenges and future developments in the context of mega trends
- Operation: Transportation, public/regional/long-distance transport, freight service, scheduling
- System structure of railway vehicles: Tasks and classification, main systems
- Project management: definitions, project management, main and side processes, transfer to practice
- Scientific working: structuring and writing of scientific papers, literature research, scheduling (mile stones), self-management, presentation skills, using the software Citavi for literature and knowledge management, working with templates in Word, giving and taking feedback
- The learnt knowledge regarding scientific writing is used to elaborate a Seminararbeit. To this the students create a presentation, train and reflect it and finally present it to an auditorium.

Organizational issues

Teilnehmerzahl ist auf 10 begrenzt. Die Prüfung besteht aus einer schriftlichen Ausarbeitung (Seminararbeit) und einem Vortrag über die Ausarbeitung. Weitere Infos siehe Institutshomepage.

Max. 10 participants. Examination: Writing a Seminararbeit, final presentation. Please check the homepage for further information.

Literature

Eine Literaturliste steht den Studierenden auf der Ilias-Plattform zum Download zur Verfügung.

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

T 6.262 Course: Seminar in Informatics A (Master) [T-WIWI-103479]

Responsible:	Professorenschaft des Instituts AIFB
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101808 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4.5	Grade to a third	Each term	1

Events					
ST 2021	2513211	Seminar Business Information Systems (Master)	2 SWS	Seminar / 🔀	Oberweis, Fritsch, Frister, Schreiber, Schüler, Ullrich
ST 2021	2513309	Seminar Knowledge Discovery and Data Mining (Master)	3 SWS	Seminar / 📱	Färber, Nguyen, Noullet, Saier, Bartscherer
ST 2021	2513311	Seminar Data Science & Real-time Big Data Analytics (Master)	2 SWS	Seminar / 📱	Färber, Riemer, Heyden , Käfer
ST 2021	2513403	Seminar Emerging Trends in Internet Technologies (Master)	2 SWS	Seminar / 📱	Lins, Sunyaev, Thiebes
ST 2021	2513405	Seminar Emerging Trends in Digital Health (Master)	2 SWS	Seminar / 📱	Lins, Sunyaev, Thiebes
ST 2021	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar / 📱	Zöllner
WT 21/22	2400125	Security and Privacy Awareness	2 SWS	Seminar	Boehm, Seidel-Saul, Volkamer, Aldag
WT 21/22	2513313	Seminar Linked Data and the Semantic Web (Master)	3 SWS	Seminar / 🗣	Färber, Käfer
WT 21/22	2513314	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)	3 SWS	/ 📱	Nickel, Weinhardt, Färber, Brandt, Kulbach
WT 21/22	2513315	Seminar Real-World Challenges in Data Science and Analytics (Master)	3 SWS	/ 📱	Nickel, Weinhardt, Färber, Brandt, Kulbach
WT 21/22	2513500	Seminar Cognitive Automobiles and Robots (Master)	2 SWS	Seminar / 📱	Zöllner, Daaboul
WT 21/22	2513605	Seminar Representation Learning on Knowledge Graphs (Master)	2 SWS	Seminar / 🔀	Sack, Alam, Biswas

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation

Placeholder for seminars offered by the Institute AIFB.

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

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

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

V	**Seminar Knowledge Discovery and Data Mining (Master)** 2513309, SS 2021, 3 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

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

Organizational issues

Die Anmeldung erfolgt über das WiWi Portal https://portal.wiwi.kit.edu/.

Für weitere Fragen bezüglich des Seminar und der behandelten Themen wenden Sie sich bitte an die entsprechenden Verantwortlichen.

Literature

Detaillierte Referenzen werden zusammen mit den jeweiligenThemen angegeben. Allgemeine Hintergrundinformationen ergeben sich z.B.aus den folgenden Lehrbüchern:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

V	**Seminar Data Science & Real-time Big Data Analytics (Master)** 2513311, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

In this seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the practical seminar is given under the following Link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

Organizational issues

Further information as well as the registration form can be found under the following link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

V	**Cognitive Automobiles and Robots** 2513500, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V	**Security and Privacy Awareness** 2400125, WS 21/22, 2 SWS, Open in study portal	**Seminar (S)**

Content

Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

Note: The link to enrol is for every student, regardless of the study background!

Dates:

- Kick-Off : 22.10.21, 14:00 o'clock
- Final version: 23.01.2022
- Presentation: 04.02.2022, 13:00 o'clock

Topics will be assigned after the enrolment deadline, before the Kick-Off.

Consider that legal focused topics require you to speak and understand german legal texts.

Topics:

- Phishing for Difference: How Does Phishing Impact Visually-Impaired Users?
- Wann wird Marketing im Security-Kontext ethisch bedenklich?
- Untersuchung der Wahrnehmung von (technischen) Backdoors zur Strafverfolgung.
- Data-Governance-Act – Fluch oder Segen für den Datenschutz?
- Würde lieber kein Thema anbieten, notfalls "Was ist der Wert von Privatheit?"
- Massenüberwachung von Kommunikationsknotenpunkten und Chilling Effects -- Eine rechtliche und ethische Auseinandersetzung
- Verletzt algorithmische Analyse von personenbezogenen Daten durch KI Privatheit -- und wenn ja, wie schlimm ist das?

ATTENTION: The seminar is only for MASTER students!

V	**Seminar Linked Data and the Semantic Web (Master)** 2513313, WS 21/22, 3 SWS, Language: German/English, Open in study portal	**Seminar (S)** **On-Site**

Content

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

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

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

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

Topics of interest include, but are not limited to:

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

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

V	**Seminar Real-World Challenges in Data Science and Analytics (Bachelor)** 2513314, WS 21/22, 3 SWS, Language: German/English, Open in study portal	**Online**

Content

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

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

V	**Seminar Real-World Challenges in Data Science and Analytics (Master)** 2513315, WS 21/22, 3 SWS, Language: German/English, Open in study portal	**Online**

Content

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

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

V	**Seminar Cognitive Automobiles and Robots (Master)** 2513500, WS 21/22, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V	**Seminar Representation Learning on Knowledge Graphs (Master)** 2513605, WS 21/22, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Blended (On-Site/Online)**

Content

Data representation or feature representation plays a key role in the performance of machine learning algorithms. In recent years, rapid growth has been observed in Representation Learning (RL) of words and Knowledge Graphs (KG) into low dimensional vector spaces and its applications to many real-world scenarios. Word embeddings are a low dimensional vector representation of words that are capable of capturing the context of a word in a document, semantic similarity as well as its relation with other words. Similarly, KG embeddings are a low dimensional vector representation of entities and relations from a KG preserving its inherent structure and capturing the semantic similarity between the entities.

KG representation learning algorithms (a.k.a. KG embedding models) could be either unimodal where a single source is used or multimodal where multiple sources are explored. The sources of information could be relations between entities, text literals, numeric literals, images, and etc. It is important to capture the information present in each of these sources in order to learn representations which are rich in semantics. Multimodal KG embeddings learn either multiple representations simultaneously based on each source of information in a non-unified space or learn a single representation for each element of the KG in a unified space. Representation of entities and relations learnt using both unimodal and multimodal KG embedding models could be used in various downstream applications such as clustering, classification, and so on. On the other hand, language models such as BERT, ELMo, GPT, etc. learn the probability of word occurrence based on text corpus and learn representation of words in a low-dimensional embedding space. Representation of the words generated by the language models are often used for various KG completion tasks such as link prediction, entity classification, and so on.

In this seminar, we would like to study the different state of the art algorithms for multimodal embeddings, applications of KG embeddings, or the use of language models for KG representation.

Contributions of the students:

Each student will be assigned 1 paper on the topic. The student will have to

1. give a seminar presentation,
2. write a seminar report paper of 15 pages explaining the method from the assigned paper, in their own words, and
3. implementation. If code is available from the authors, then re-implementation of it for small scale experiments using Google Colab or make it available via GitHub.

T   6.263 Course: Seminar in Informatics B (Master) [T-WIWI-103480]

Responsible:	Professorenschaft des Instituts AIFB
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101808 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4.5	Grade to a third	Each term	1

Events					
ST 2021	2513211	Seminar Business Information Systems (Master)	2 SWS	Seminar / ✦	Oberweis, Fritsch, Frister, Schreiber, Schüler, Ullrich
ST 2021	2513309	Seminar Knowledge Discovery and Data Mining (Master)	3 SWS	Seminar / ▤	Färber, Nguyen, Noullet, Saier, Bartscherer
ST 2021	2513311	Seminar Data Science & Real-time Big Data Analytics (Master)	2 SWS	Seminar / ▤	Färber, Riemer, Heyden , Käfer
ST 2021	2513403	Seminar Emerging Trends in Internet Technologies (Master)	2 SWS	Seminar / ▤	Lins, Sunyaev, Thiebes
ST 2021	2513405	Seminar Emerging Trends in Digital Health (Master)	2 SWS	Seminar / ▤	Lins, Sunyaev, Thiebes
ST 2021	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar / ▤	Zöllner
WT 21/22	2400125	Security and Privacy Awareness	2 SWS	Seminar	Boehm, Seidel-Saul, Volkamer, Aldag
WT 21/22	2513313	Seminar Linked Data and the Semantic Web (Master)	3 SWS	Seminar / 🗣	Färber, Käfer
WT 21/22	2513314	Seminar Real-World Challenges in Data Science and Analytics (Bachelor)	3 SWS	/ ▤	Nickel, Weinhardt, Färber, Brandt, Kulbach
WT 21/22	2513315	Seminar Real-World Challenges in Data Science and Analytics (Master)	3 SWS	/ ▤	Nickel, Weinhardt, Färber, Brandt, Kulbach
WT 21/22	2513500	Seminar Cognitive Automobiles and Robots (Master)	2 SWS	Seminar / ▤	Zöllner, Daaboul
WT 21/22	2513605	Seminar Representation Learning on Knowledge Graphs (Master)	2 SWS	Seminar / ✦	Sack, Alam, Biswas

Legend: ▤ Online, ✦ Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation

Placeholder for seminars offered by the Institute AIFB.

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 Knowledge Discovery and Data Mining (Master)** 2513309, SS 2021, 3 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

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

Organizational issues

Die Anmeldung erfolgt über das WiWi Portal https://portal.wiwi.kit.edu/.

Für weitere Fragen bezüglich des Seminar und der behandelten Themen wenden Sie sich bitte an die entsprechenden Verantwortlichen.

Literature

Detaillierte Referenzen werden zusammen mit den jeweiligenThemen angegeben. Allgemeine Hintergrundinformationen ergeben sich z.B.aus den folgenden Lehrbüchern:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

V	**Seminar Data Science & Real-time Big Data Analytics (Master)** 2513311, SS 2021, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Online**

Content

In this seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the practical seminar is given under the following Link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

Organizational issues

Further information as well as the registration form can be found under the following link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

V	**Cognitive Automobiles and Robots** 2513500, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

| V | **Security and Privacy Awareness** 2400125, WS 21/22, 2 SWS, Open in study portal | **Seminar (S)** |

Content

Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

Note: The link to enrol is for every student, regardless of the study background!

Dates:

- Kick-Off : 22.10.21, 14:00 o'clock
- Final version: 23.01.2022
- Presentation: 04.02.2022, 13:00 o'clock

Topics will be assigned after the enrolment deadline, before the Kick-Off.

Consider that legal focused topics require you to speak and understand german legal texts.

Topics:

- Phishing for Difference: How Does Phishing Impact Visually-Impaired Users?
- Wann wird Marketing im Security-Kontext ethisch bedenklich?
- Untersuchung der Wahrnehmung von (technischen) Backdoors zur Strafverfolgung.
- Data-Governance-Act – Fluch oder Segen für den Datenschutz?
- Würde lieber kein Thema anbieten, notfalls "Was ist der Wert von Privatheit?"
- Massenüberwachung von Kommunikationsknotenpunkten und Chilling Effects -- Eine rechtliche und ethische Auseinandersetzung
- Verletzt algorithmische Analyse von personenbezogenen Daten durch KI Privatheit -- und wenn ja, wie schlimm ist das?

ATTENTION: The seminar is only for MASTER students!

| V | **Seminar Linked Data and the Semantic Web (Master)** 2513313, WS 21/22, 3 SWS, Language: German/English, Open in study portal | **Seminar (S) On-Site** |

Content

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

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

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

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

Topics of interest include, but are not limited to:

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

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

| V | **Seminar Real-World Challenges in Data Science and Analytics (Bachelor)**
2513314, WS 21/22, 3 SWS, Language: German/English, Open in study portal | **Online** |

Content

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

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

| V | **Seminar Real-World Challenges in Data Science and Analytics (Master)**
2513315, WS 21/22, 3 SWS, Language: German/English, Open in study portal | **Online** |

Content

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

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

| V | **Seminar Cognitive Automobiles and Robots (Master)**
2513500, WS 21/22, 2 SWS, Language: German/English, Open in study portal | **Seminar (S)**
Online |

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

Organizational issues

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

V	**Seminar Representation Learning on Knowledge Graphs (Master)** 2513605, WS 21/22, 2 SWS, Language: English, Open in study portal	**Seminar (S)** **Blended (On-Site/Online)**

Content

Data representation or feature representation plays a key role in the performance of machine learning algorithms. In recent years, rapid growth has been observed in Representation Learning (RL) of words and Knowledge Graphs (KG) into low dimensional vector spaces and its applications to many real-world scenarios. Word embeddings are a low dimensional vector representation of words that are capable of capturing the context of a word in a document, semantic similarity as well as its relation with other words. Similarly, KG embeddings are a low dimensional vector representation of entities and relations from a KG preserving its inherent structure and capturing the semantic similarity between the entities.

KG representation learning algorithms (a.k.a. KG embedding models) could be either unimodal where a single source is used or multimodal where multiple sources are explored. The sources of information could be relations between entities, text literals, numeric literals, images, and etc. It is important to capture the information present in each of these sources in order to learn representations which are rich in semantics. Multimodal KG embeddings learn either multiple representations simultaneously based on each source of information in a non-unified space or learn a single representation for each element of the KG in a unified space. Representation of entities and relations learnt using both unimodal and multimodal KG embedding models could be used in various downstream applications such as clustering, classification, and so on. On the other hand, language models such as BERT, ELMo, GPT, etc. learn the probability of word occurrence based on text corpus and learn representation of words in a low-dimensional embedding space. Representation of the words generated by the language models are often used for various KG completion tasks such as link prediction, entity classification, and so on.

In this seminar, we would like to study the different state of the art algorithms for multimodal embeddings, applications of KG embeddings, or the use of language models for KG representation.

Contributions of the students:

Each student will be assigned 1 paper on the topic. The student will have to

1. give a seminar presentation,
2. write a seminar report paper of 15 pages explaining the method from the assigned paper, in their own words, and
3. implementation. If code is available from the authors, then re-implementation of it for small scale experiments using Google Colab or make it available via GitHub.

T 6.264 Course: Seminar in Operations Research A (Master) [T-WIWI-103481]

Responsible:	Prof. Dr. Stefan Nickel
	Prof. Dr. Steffen Rebennack
	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101808 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4.5	Grade to a third	Each term	1

Events					
ST 2021	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar / 📱	Stein, Beck, Neumann, Schwarze
ST 2021	2550473	Seminar on Power Systems Optimization (Master)	2 SWS	Seminar / 📱	Rebennack, Warwicker, Sinske
ST 2021	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 📱	Nickel, Mitarbeiter
WT 21/22	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 🎤	Stein, Beck, Neumann, Schwarze
WT 21/22	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar	Nickel, Mitarbeiter

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites
None.

Recommendation
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

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

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

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

V	**Seminar: Modern OR and Innovative Logistics**	**Seminar (S)**
	2550491, SS 2021, 2 SWS, Language: German, Open in study portal	**Online**

Content

The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

The topics of the seminar will be announced at the beginning of the term in a preliminary meeting. Attendance is compulsory for the preliminary meeting as well for all seminar presentations.

Exam:

The assessment consists of a written seminar thesis of 20-25 pages and a presentation of 35-40 minutes (according to §4(2), 3 of the examination regulation).

The final mark for the seminar consists of the seminar thesis, the seminar presentation, the handout, and if applicable further material such as programming code.

The seminar can be attended both by Bachelor and Master students. A differentiation will be achieved by different valuation standards for the seminar thesis and presentation.

Requirements:

If possible, at least one module of the institute should be taken before attending the seminar.

Objectives:

The student

- illustrates and evaluates classic and current research questions in discrete optimization,
- applies optimization models and algorithms in discrete optimization, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management),
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Organizational issues

wird auf der Homepage dol.ior.kit.edu bzw. auf dem WiWi-Portal bekannt gegeben

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V	**Seminar on Methodical Foundations of Operations Research (B)** 2550131, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **On-Site**

Content

The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours.

Literature

Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V	**Seminar: Modern OR and Innovative Logistics** 2550491, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)**

Content

The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues

wird auf der Homepage bekannt gegeben

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

| **T** | **6.265 Course: Seminar in Operations Research B (Master) [T-WIWI-103482]** |

Responsible:	Prof. Dr. Stefan Nickel
	Prof. Dr. Steffen Rebennack
	Prof. Dr. Oliver Stein
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101808 - Seminar Module

Type Examination of another type	**Credits** 4.5	**Grading scale** Grade to a third	**Recurrence** Each term	**Version** 1

Events					
ST 2021	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar / 📱	Stein, Beck, Neumann, Schwarze
ST 2021	2550473	Seminar on Power Systems Optimization (Master)	2 SWS	Seminar / 📱	Rebennack, Warwicker, Sinske
ST 2021	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 📱	Nickel, Mitarbeiter
WT 21/22	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar / 🎤	Stein, Beck, Neumann, Schwarze
WT 21/22	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar	Nickel, Mitarbeiter

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation

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

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

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

| **V** | **Seminar: Modern OR and Innovative Logistics**
2550491, SS 2021, 2 SWS, Language: German, Open in study portal | **Seminar (S)**
Online |

Content

The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

The topics of the seminar will be announced at the beginning of the term in a preliminary meeting. Attendance is compulsory for the preliminary meeting as well for all seminar presentations.

Exam:

The assessment consists of a written seminar thesis of 20-25 pages and a presentation of 35-40 minutes (according to §4(2), 3 of the examination regulation).

The final mark for the seminar consists of the seminar thesis, the seminar presentation, the handout, and if applicable further material such as programming code.

The seminar can be attended both by Bachelor and Master students. A differentiation will be achieved by different valuation standards for the seminar thesis and presentation.

Requirements:

If possible, at least one module of the institute should be taken before attending the seminar.

Objectives:

The student

- illustrates and evaluates classic and current research questions in discrete optimization,
- applies optimization models and algorithms in discrete optimization, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management),
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Organizational issues

wird auf der Homepage dol.ior.kit.edu bzw. auf dem WiWi-Portal bekannt gegeben

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

V	**Seminar on Methodical Foundations of Operations Research (B)** 2550131, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **On-Site**

Content

The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours.

Literature

Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V	**Seminar: Modern OR and Innovative Logistics** 2550491, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)**

Content

The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Organizational issues

wird auf der Homepage bekannt gegeben

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

## T 6.266 Course: Seminar in Statistics A (Master) [T-WIWI-103483]

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

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101808 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4.5	Grade to a third	Each term	1

Events					
ST 2021	2500004	Introduction to Statistical Machine Learning	2 SWS	Seminar / 🖥	Schienle, Lerch
ST 2021	2521310	Advanced Topics in Econometrics	2 SWS	Seminar / 🖥	Schienle, Krüger, Görgen, Koster
ST 2021	2550561	Spezielle fortgeschrittene Themen der Datenanalyse und Statistik	2 SWS	Seminar / 🖥	Grothe, Kaplan, Kächele

Legend: 🖥 Online, ⬡ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation

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

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

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

V	**Introduction to Statistical Machine Learning**	**Seminar (S)**
	2500004, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Online**

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

V	**Advanced Topics in Econometrics**	**Seminar (S)**
	2521310, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Online**

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

T 6.267 Course: Seminar in Statistics B (Master) [T-WIWI-103484]

Responsible:	Prof. Dr. Oliver Grothe
	Prof. Dr. Melanie Schienle
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101808 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4.5	Grade to a third	Each term	1

Events					
ST 2021	2500004	Introduction to Statistical Machine Learning	2 SWS	Seminar / 🖥	Schienle, Lerch
ST 2021	2521310	Advanced Topics in Econometrics	2 SWS	Seminar / 🖥	Schienle, Krüger, Görgen, Koster
ST 2021	2550561	Spezielle fortgeschrittene Themen der Datenanalyse und Statistik	2 SWS	Seminar / 🖥	Grothe, Kaplan, Kächele

Legend: 🖥 Online, ⚄ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Annotation

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

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

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

V	**Introduction to Statistical Machine Learning** 2500004, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

V	**Advanced Topics in Econometrics** 2521310, SS 2021, 2 SWS, Language: German/English, Open in study portal	**Seminar (S)** **Online**

Organizational issues

Blockveranstaltung, Termine werden bekannt gegeben

| T | **6.268 Course: Seminar Methods along the Innovation process [T-WIWI-110987]** |

Responsible:	Dr. Daniela Beyer
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Irregular	**Version** 1

Competence Certificate
Alternative exam assessment.

Recommendation
Prior attendance of the course Innovation Management [2545015] is recommended.

T 6.269 Course: Seminar: Commercial and Corporate Law in the IT Industry [T-INFO-111405]

Responsible: Prof. Dr. Thomas Dreier
                     Dr. Georg Nolte
Organisation: KIT Department of Informatics
Part of: M-INFO-101216 - Private Business Law

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 21/22	2400165	Seminar Commercial and Corporate Law in Information Technology	2 SWS	Seminar / ▯	Nolte

Legend: ▯ Online, ⚙ Blended (On-Site/Online), ◖ On-Site, ✗ Cancelled

T 6.270 Course: Seminar in Digital Economics [T-WIWI-[SemDE]]

Responsible: Prof. Dr. Nora Szech
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-DigEcon - Digital Economics

Type	ECTS	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Every semester	1

Competence Certificate
The examination takes the form of an oral presentation with an accompanying written paper.

Prerequisites
None

T   6.271 Course: Seminar: IT- Security Law [T-INFO-111404]

Responsible: Martin Schallbruch
Organisation: KIT Department of Informatics
Part of: M-INFO-101217 - Public Business Law

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 21/22	24389	Seminar "IT-Sicherheitsrecht"	2 SWS	Seminar	Schallbruch

T 6.272 Course: Seminar: Legal Studies I [T-INFO-101997]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-WIWI-101808 - Seminar Module

Type Examination of another type	Credits 4.5	Grading scale Grade to a third	Recurrence Each term	Version 1

Events					
ST 2021	2400041	Governance, Risk & Compliance	2 SWS	Seminar / ▯	Herzig
ST 2021	2400061	Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung	2 SWS	Seminar / ▯	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart, Volkamer
ST 2021	2400065	"Die Corona-Krise aus der Sicht des Verfassungsrechts"	2 SWS	Seminar / ▯	Eichenhofer
ST 2021	2400082	"Verfassungsrechtliche Fragen staatlicher Öffentlichkeitsarbeit"	2 SWS	Seminar / ▯	Eichenhofer
ST 2021	2400127	Aktuelle Probleme des Datenschutzrechts		Seminar / ▯	Eichenhofer
ST 2021	2400153	Technische Aspekte der DSGVO und deren Umsetzung in der Praxis	2 SWS	Seminar / ▯	Boehm, Dimitrova
ST 2021	24820	Current Issues in Patent Law	2 SWS	Seminar / ▯	Melullis
WT 21/22	2400311	Seminar "Aktuelle Probleme des Markenrechts"	2 SWS	Seminar	Matz

Legend: ▯ Online, ⚙ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

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

V Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung
2400061, SS 2021, 2 SWS, Open in study portal

Seminar (S)
Online

Content

- Registration via https://portal.wiwi.kit.edu/ys/4516

Organizational issues
nach Vereinbarung

T 6.273 Course: Seminar: Legal Studies II [T-INFO-105945]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: M-WIWI-101808 - Seminar Module

Type Examination of another type	Credits 4.5	Grading scale Grade to a third	Version 1

Events					
ST 2021	2400061	Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung	2 SWS	Seminar / ▯	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart, Volkamer
ST 2021	2400065	"Die Corona-Krise aus der Sicht des Verfassungsrechts"	2 SWS	Seminar / ▯	Eichenhofer
ST 2021	2400082	"Verfassungsrechtliche Fragen staatlicher Öffentlichkeitsarbeit"	2 SWS	Seminar / ▯	Eichenhofer
ST 2021	2400127	Aktuelle Probleme des Datenschutzrechts		Seminar / ▯	Eichenhofer
ST 2021	2400153	Technische Aspekte der DSGVO und deren Umsetzung in der Praxis	2 SWS	Seminar / ▯	Boehm, Dimitrova
WT 21/22	2400014	Current Issues in Patent Law	2 SWS	Seminar / 🗣	Melullis
WT 21/22	2400125	Security and Privacy Awareness	2 SWS	Seminar	Boehm, Seidel-Saul, Volkamer, Aldag
WT 21/22	2400311	Seminar "Aktuelle Probleme des Markenrechts"	2 SWS	Seminar	Matz
WT 21/22	2513214	Seminar Information security and Data protection (Bachelor)	2 SWS	Seminar / ▯	Oberweis, Volkamer, Raabe, Alpers, Düzgün, Dietmann, Hennig, Schiefer, Wagner

Legend: ▯ Online, ⚃ Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

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

V	**Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung** 2400061, SS 2021, 2 SWS, Open in study portal	**Seminar (S) Online**

Content

- Registration via https://portal.wiwi.kit.edu/ys/4516

Organizational issues
nach Vereinbarung

V	**Security and Privacy Awareness** 2400125, WS 21/22, 2 SWS, Open in study portal	**Seminar (S)**

Content
Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

Note: The link to enrol is for every student, regardless of the study background!

Dates:

- Kick-Off : 22.10.21, 14:00 o'clock
- Final version: 23.01.2022
- Presentation: 04.02.2022, 13:00 o'clock

Topics will be assigned after the enrolment deadline, before the Kick-Off.

Consider that legal focused topics require you to speak and understand german legal texts.

Topics:

- Phishing for Difference: How Does Phishing Impact Visually-Impaired Users?
- Wann wird Marketing im Security-Kontext ethisch bedenklich?
- Untersuchung der Wahrnehmung von (technischen) Backdoors zur Strafverfolgung.
- Data-Governance-Act – Fluch oder Segen für den Datenschutz?
- Würde lieber kein Thema anbieten, notfalls "Was ist der Wert von Privatheit?"
- Massenüberwachung von Kommunikationsknotenpunkten und Chilling Effects -- Eine rechtliche und ethische Auseinandersetzung
- Verletzt algorithmische Analyse von personenbezogenen Daten durch KI Privatheit -- und wenn ja, wie schlimm ist das?

ATTENTION: The seminar is only for MASTER students!

T 6.274 Course: Seminar: Patent Law [T-INFO-111403]

Responsible:	Markus Dammler
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101215 - Intellectual Property Law

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 21/22	24186	Seminar Patent Law	2 SWS	Seminar / 📱	Dammler

Legend: 📱 Online, ⚙ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

T   6.275 Course: Service Design Thinking [T-WIWI-102849]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101503 - Service Design Thinking

Type	**Credits**	**Grading scale**	**Recurrence**	**Version**
Examination of another type	12	Grade to a third	Irregular	4

Competence Certificate

Alternative exam assessment.

Prerequisites

None

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 6.276 Course: Service Innovation [T-WIWI-102641]

Responsible:	Prof. Dr. Gerhard Satzger
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101448 - Service Management
	M-WIWI-102806 - Service Innovation, Design & Engineering

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2595468	Service Innovation	2 SWS	Lecture / 📱	Satzger

Legend: 📱 Online, ♻ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of a written exam (60 min.).

Prerequisites
None

Recommendation
None

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

V Service Innovation
2595468, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content
Continuous innovation is a prerequisite for firms to stay competitive. While innovation in manufacturing or agriculture can build on a considerable body of research, experience and best practices, innovation in services has not reached the same level of maturity.

This course takes a close look at the topic of service innovation. We will lay the foundations with an initial overview of service innovation including the basic concepts, challenges and innovation processes. We will compare product and service innovation and understand how innovation diffusion works.

The second part focuses on applicable methods and tools for service innovation: we will cover possible sources of innovations, ways to identify opportunities for innovations and the potential of service innovations built on data. For example, open and closed innovation approaches will be contrasted, the benefits of leveraging user communities to drive innovation will be explored and the human-centric innovation approach (Service) Design Thinking will be introduced. We will also look into the opportunities that technology offers for service innovation.

The last part of the lecture covers the management of service innovation and insights from practice. You will understand obstacles and enablers, and learn how to manage, incentivize and foster service innovation.

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), 155-175.
- Christensen, Clayton M. (2013). 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.
- Chesbrough, H. (2011). Open services innovation: Rethinking your business to grow and compete in a new era. John Wiley & Sons.
- 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 (2nd ed.). Amsterdam: Academic Press.

T 6.277 Course: SIL Entrepreneurship Emphasis [T-WIWI-110287]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-105010 - Student Innovation Lab (SIL) 1

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Events					
WT 21/22	2500002	SIL Entrepreneurship Emphasis	2-4 SWS	Seminar	Mitarbeiter

Competence Certificate

Alternative exam assessment (§4(2), 3 SPO). 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. In addition, smaller, ungraded tasks are provided in the course to monitor progress.

Prerequisites

None

Recommendation

None

T   6.278 Course: SIL Entrepreneurship Project [T-WIWI-110166]

Responsible:	Prof. Dr. Orestis Terzidis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-105010 - Student Innovation Lab (SIL) 1

Type Examination of another type	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2545082	SIL Entrepreneurship Project	2-4 SWS	Seminar	Mitarbeiter

Competence Certificate

Alternative exam assessment (§4(2), 3 SPO). 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. In addition, smaller, ungraded tasks are provided in the course to monitor progress.

Prerequisites

None

Recommendation

None

T 6.279 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 - Energy Economics and Energy Markets

Type Examination of another type	Credits 3	Grading scale Grade to a third	Recurrence Each summer term	Version 1

Events					
ST 2021	2581025	Simulation Game in Energy Economics	3 SWS	Lecture / Practice (/ 📱	Genoese, Zimmermann

Legend: 📱 Online, ⬥ Blended (On-Site/Online), 🔲 On-Site, ✘ Cancelled

Competence Certificate
Examination as written assignment and oral presentation (§4 (2), 1 SPO).

Prerequisites
None

Recommendation
Visiting the course "Introduction to Energy Economics"

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

V Simulation Game in Energy Economics
2581025, SS 2021, 3 SWS, Language: German, Open in study portal

Lecture / Practice (VÜ)
Online

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.

Assessment: presentation and written summary

Prerequisites: Basics in Energy economics ad markets are advantageous.

Organizational issues
CIP-Pool West, Raum 102, Geb. 06.41 - siehe Institutsaushang

Literature
Weiterführende Literatur:

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 6.280 Course: Smart Energy Infrastructure [T-WIWI-107464]

Responsible:	Dr. Armin Ardone
	Dr. Dr. Andrej Marko Pustisek
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-EconMan - Economics & Management
	M-WIWI-101452 - Energy Economics and Technology

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	1

Events					
WT 21/22	2581023	(Smart) Energy Infrastructure	2 SWS	Lecture	Ardone, Pustisek

Competence Certificate

The assessment consists of a written exam (60 minutes). 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 (Smart) Energy Infrastructure
2581023, WS 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)

Content

- Basic terms and concepts
- Meaning of infrastructure
- Excursus: regulation of infrastructure
- Natural gas transportation
- Natural gas storage
- Electricity transmission
- (Overview) Crude oil and oil product transportation

T 6.281 Course: Smart Grid Applications [T-WIWI-107504]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101446 - Market Engineering
	M-WIWI-103720 - eEnergy: Markets, Services and Systems

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Each winter term	Version 2

Events					
WT 21/22	2540452	Smart Grid Applications	2 SWS	Lecture	Staudt, van Dinther
WT 21/22	2540453	Übung zu Smart Grid Applications	1 SWS	Lecture	Staudt, Henni

Competence Certificate

The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations).

Prerequisites

None

Recommendation

None

Annotation

The lecture will be read for the first time in winter term 2018/19.

T   6.282 Course: Social Choice Theory [T-WIWI-102859]

Responsible:	Prof. Dr. Clemens Puppe
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101500 - Microeconomic Theory
	M-WIWI-101504 - Collective Decision Making
	M-WIWI-DigEcon - Digital Economics

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2520537	Social Choice Theory	2 SWS	Lecture / 📱	Puppe, Kretz
ST 2021	2520539	Übung zu Social Choice Theory	1 SWS	Practice / 📱	Kretz, Puppe

Legend: 📱 Online, ⚄ Blended (On-Site/Online), 🔊 On-Site, ✗ Cancelled

Competence Certificate
The assessment consists of an alternative exam assessment (open book exam). The exam takes place in every summer semester.

Prerequisites
None

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

V   Social Choice Theory
2520537, SS 2021, 2 SWS, Language: English, Open in study portal

Lecture (V)
Online

Content
How should (political) candidates be elected? What are good ways of merging individual judgments into collective judgments? Social Choice Theory is the systematic study and comparison of how groups and societies can come to collective decisions.

The course offers a rigorous and comprehensive treatment of judgment and preference aggregation as well as voting theory. It is divided into two parts. The first part deals with (general binary) aggregation theory and builds towards a general impossibility result that has the famous Arrow theorem as a corollary. The second part treats voting theory. Among other things, it includes prooving the Gibbard-Satterthwaite theorem.

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   6.283 Course: Sociotechnical Information Systems Development [T-WIWI-109249]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each term	2

Events					
ST 2021	2512400	Advanced Lab Development of Sociotechnical Information Systems (Bachelor)	3 SWS	Practical course / 📱	Sunyaev, Pandl
ST 2021	2512401	Development of Sociotechnical Information Systems (Master)	3 SWS	Practical course / 📱	Sunyaev, Pandl

Legend: 📱 Online, 🎨 Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate
The alternative exam assessment 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   Advanced Lab Development of Sociotechnical Information Systems (Bachelor)   Practical course (P) Online
2512400, SS 2021, 3 SWS, Language: German/English, Open in study portal

Content
The aim of the lab is to get to know the development of socio-technical information systems in different application areas. In the event framework, you should develop a suitable solution strategy for your problem alone or in group work, collect requirements, and implement a software artifact based on it (for example, web platform, mobile apps, desktop application). Another focus of the lab is on the subsequent quality assurance and documentation of the implemented software artifact.

Registration information will be announced on the course page.

V   Development of Sociotechnical Information Systems (Master)   Practical course (P) Online
2512401, SS 2021, 3 SWS, Language: German/English, Open in study portal

Content
The aim of the lab is to get to know the development of socio-technical information systems in different application areas. In the event framework, you should develop a suitable solution strategy for your problem alone or in group work, collect requirements, and implement a software artifact based on it (for example, web platform, mobile apps, desktop application). Another focus of the lab is on the subsequent quality assurance and documentation of the implemented software artifact.

Registration information will be announced on the course page.

T   6.284 Course: Software Quality Management [T-WIWI-102895]

Responsible:	Prof. Dr. Andreas Oberweis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each summer term	**Version** 2

Events					
ST 2021	2511208	Software Quality Management	2 SWS	Lecture / 🖥	Oberweis
ST 2021	2511209	Übungen zu Software-Qualitätsmanagement	1 SWS	Practice / 🖥	Oberweis, Frister

Legend: 🖥 Online, ⚉ Blended (On-Site/Online), 🗣 On-Site, ✘ Cancelled

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   Software Quality Management
2511208, SS 2021, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

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.

Learning objectives:

Students

- explain the relevant quality models,
- apply methods to evaluate the software quality and evaluate the results,
- know the mail models of sofware certification, compare and evaluate these models,
- write scientific theses in the area of software quality management and find own solutions for given problems.

Recommendations:

Programming knowledge in Java and basic knowledge of computer science are expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

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

Weitere Literatur wird in der Vorlesung bekanntgegeben.

T 6.285 Course: Spatial Economics [T-WIWI-103107]

Responsible:	Prof. Dr. Ingrid Ott
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101485 - Transport Infrastructure Policy and Regional Development
	M-WIWI-101496 - Growth and Agglomeration
	M-WIWI-101497 - Agglomeration and Innovation

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2561260	Spatial Economics	2 SWS	Lecture / ✗	Ott
WT 21/22	2561261		1 SWS	Practice / ✗	Ott, Assistenten

Legend: 📱 Online, ✾ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

Depending on further pandemic developments, the examination will be offered either as an open-book examination, or as a 60-minute written examination.

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 will not be offered in the winter semester 2021/22. The exam will take place. Preparation materials can be found in ILIAS.

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

V	**Spatial Economics** 2561260, WS 21/22, 2 SWS, Language: English, Open in study portal	**Lecture (V)** **Cancelled**

Content

The course covers the following topics:

- Geography, trade and development
- Geography and economic theory
- Core models of economic geography and empirical evidence
- Agglomeration, home market effect, and spatial wages
- Applications and extensions

Learning objectives:

The student

- analyses how spatial distribution of economic activity is determined.
- uses quantitative methods within the context of economic models.
- has basic knowledge of formal-analytic methods.
- understands the link between economic theory and its empirical applications.
- understands to what extent concentration processes result from agglomeration and dispersion forces.
- is able to determine theory based policy recommendations.

Recommendations:

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. An interest in mathematical modeling is advantageous.

Workload:

The total workload for this course is approximately 135 hours.

- Classes: ca. 30 h
- Self-study: ca. 45 h
- Exam and exam preparation: ca. 60 h

Assessment:

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Organizational issues

Die Vorlesung wird im WiSe 2021 aufgrund eines Forschungssemesters nicht gelesen. Die Prüfung findet statt. Vorbereitungsmaterialien finden Sie im ILIAS.

Literature

Steven Brakman, Harry Garretsen, Charles van Marrewijk (2009): The New Introduction to Geographical Economics, 2nd ed, Cambridge University Press.

Weitere Literatur wird in der Vorlesung bekanntgegeben.
(Further literature will be announced in the lecture.)

T 6.286 Course: Special Topics in Information Systems [T-WIWI-109940]

Responsible:	Prof. Dr. Christof Weinhardt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101410 - Business & Service Engineering
	M-WIWI-101411 - Information Engineering
	M-WIWI-101506 - Service Analytics
	M-WIWI-103720 - eEnergy: Markets, Services and Systems

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each term	2

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted pracitical components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites

see below

Recommendation

None

Annotation

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: www.iism.kit.edu/im/lehre.

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Systems" so far. With this course students majoring in "Industrial Engineering and Management" and "Digital Economics" 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 6.287 Course: Startup Experience [T-WIWI-111561]

Responsible: Prof. Dr. Orestis Terzidis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101488 - Entrepreneurship (EnTechnon)

Type Examination of another type	Credits 6	Grading scale Grade to a third	Recurrence Each term	Version 1

Events					
WT 21/22	2545004	Startup Experience	4 SWS	Seminar / 🗗	González

Legend: 🗔 Online, 🗗 Blended (On-Site/Online), 🗭 On-Site, ✗ Cancelled

Competence Certificate

Alternative exam assessment. Details on the design of the examination performance of other types will be announced in the course.The grade is composed of a presentation and a written paper (plus any specified documentation, e.g. work results, experience diary, reflection).

Recommendation

Lecture Entrepreneurship already completed

Annotation

The language in the seminar is English. The seminar contents will be published on the chair homepage.

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

V	**Startup Experience** 2545004, WS 21/22, 4 SWS, Language: English, Open in study portal	**Seminar (S) Blended (On-Site/Online)**

Content

In the Startup Experience course, you develop entrepreneurial competences that enable you to develop a new venture. In an entrepreneurial project, you have three main goals:

1. Identify and develop an opportunity. Who is your target customer and what problem or task does he or she have? How attractive and how big is this market?

2. How will you provide value for them? How can you use specific resources, including technology to develop a solution?

3. How can you conceive and set up a viable organization? Which business model do you suggest to create, deliver, and capture value?

After the teams have been formed, they start with an analysis of the personal values and competences of the team members. This will create a basis for their common project.

The focus of the seminar is on technology-based venturing. In this context, we will use the TAS (Technology-Application-Selection) approach developed at the EnTechnon. By default, we start from KIT patents (but you can also 'bring with you' other new technologies). We analyze the technology and use creativity techniques to find potential applications. Among other approaches, we will systematically explore applications around the UN sustainable development goals. Prototyping, business model development, and pitching are part of the seminar.

Learning Objectives

You will be able to explore deep technology venturing opportunities and create new products and services. The pedagogical approach is that of action learning. In a team, you will experience typical challenges and processes related to setting up a new business and develop the corresponding entrepreneurial competences.

After completing this course, the course participants will be able to:

- Characterize the core process of Deep Tech Venturing,
- Describe their personal core values and competences, and the relationship to the entrepreneur-opportunity nexus,
- Use a technology characterization canvas to extract the core characteristics of a technology,
- Apply creativity techniques to ideate potential applications,
- Use utility analysis approaches to select a promising technology application,
- Develop a value proposition based on techniques like the value proposition canvas or the jobs-to-be-done method,
- Use approaches of technology impact assessment to implement responsible innovation processes,
- Apply advanced business modeling methods to develop a sound business concept,
- Develop and deliver a concise presentation ("pitch") to communicate you project.

Additional information:

Alternative exam assessment. The grade consists of the presentation and the written elaboration. Potentially, a 'project diary' of the seminar progress may be part of the deliverables (depends on tutor and will be communicated at the kick-off).

For a successful course completion, we expect you to submit a Business Plan with the following features:

- Scope: 9000 words,
- Sound and clear structure,
- Expression and spelling are correct
- Complete and correct references, quotations, etc.
- Visual elements are chosen appropriately
- Documentation and traceability of data acquisition, analysis and evaluation,
- Content is developed according to the course instructions.

Furthermore, we expect you to deliver a team Pitch.

- Duration: will be communicated (typically 7 minutes)
- Content: Introduction/Purpose; Problem; Solution; Business Model; Prototype; Competition; Management Team; Current Status and next steps,
- Layout and form: appropriate choice,
- Appearance: appropriate amount of visual elements,
- Data: well researched and organized visually
- Story Line: is sound; clear and convincing.

Organizational issues

The seminar will be conducted in Zoom and/or face-to-face (Detailed information will be available in ILIAS). In the seminar you will work on a project in teams of max. 5 persons. Team applications are welcome but not a prerequisite for participation. The seminars will be held in English.

T 6.288 Course: Statistical Modeling of Generalized Regression Models [T-WIWI-103065]

Responsible:	apl. Prof. Dr. Wolf-Dieter Heller
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-StatEcon - Statistics & Econometrics
	M-WIWI-101638 - Econometrics and Statistics I
	M-WIWI-101639 - Econometrics and Statistics II

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2521350	Statistical Modeling of Generalized Regression Models	2 SWS	Lecture	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 Statistical Modeling of Generalized Regression Models
2521350, WS 21/22, 2 SWS, Open in study portal

Lecture (V)

Content
Learning objectives:

The student has profound knowledge of generalized regression models.

Requirements:

Knowledge of the contents covered by the course *Economics III: Introduction in Econometrics" [2520016].*

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

T 6.289 Course: Stochastic Calculus and Finance [T-WIWI-103129]

Responsible:	Dr. Mher Safarian
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101639 - Econometrics and Statistics II

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2521331	Stochastic Calculus and Finance	2 SWS	Lecture	Safarian

Competence Certificate

The assessment of this course consists of a written examination (§4(2), 1 SPOs, 180 min.).

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 21/22, 2 SWS, Language: English, Open in study portal

Lecture (V)

Content
Learning objectives:

After successful completion of the course students will be familiar with many common methods of pricing and portfolio models in finance. Emphasis we be put on both finance and the theory behind it.

Content:

The course will provide rigorous yet focused training in stochastic calculus and mathematical finance. Topics to be covered:

1. Stochastic Calculus: Stochastic Processes, Brownian Motion and Martingales, Entropy, Stopping Times, Local martingales, Doob-Meyer Decomposition, Quadratic Variation, Stochastic Integration, Ito Formula, Girsanov Theorem, Jump-diffusion Processes, Stable and 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), Incomplete Markets, Markets with Transaction Costs, Optimal Portfolio and Consumption Choice (Stochastic Control and Merton continuous time optimization problem, CAPM), Equilibrium models, Numerical Methods.

Workload:

Total workload for 4.5 CP: approx. 135 hours
Attendance: 30 hours
Preparation and follow-up: 65 hours

Organizational issues
Blockveranstaltung, Termine werden über Ilias bekannt gegeben

Literature

- Dynamic Asset Pricing Theory, Third Edition by D. Duffie, Princeton University Press, 1996
- Stochastic Calculus for Finance II: Continuous-Time Models by S. E. Shreve, Springer, 2003
- Stochastic Finance: An Introduction in Discrete Time by H. Föllmer, A. Schied, de Gruyter, 2011
- Methods of Mathematical Finance by I. Karatzas, S. E. Shreve, Springer, 1998
- Markets with Transaction Costs by Yu. Kabanov, M. Safarian, Springer, 2010
- Introduction to Stochastic Calculus Applied to Finance by D.Lamberton, B. Lapeyre, Chapman&Hall,1996

T 6.290 Course: Strategic Finance and Technoloy Change [T-WIWI-110511]

Responsible:	Prof. Dr. Martin Ruckes
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101480 - Finance 3
	M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	1,5	Grade to a third	Each summer term	1

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The exam is offered each semester. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.

Prerequisites

None

Recommendation

Attending the lecture "Financial Management" is strongly recommended.

T 6.291 Course: Strategic Foresight China [T-WIWI-110986]

Responsible:	Prof. Dr. Marion Weissenberger-Eibl
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	1

Competence Certificate
Alternative exam assessment.

Recommendation
Prior attendance of the course Innovation Management [2545015] is recommended.

T   6.292 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 - Advanced Topics in Strategy and Management

Type Examination of another type	Credits 3	Grading scale Grade to a third	Recurrence Irregular	Version 1

Events					
ST 2021	2577921	Strategy and Management Theory: Developments and "Classics" (Master)	2 SWS	Seminar / 📱	Lindstädt
WT 21/22	2577921	Strategy and Management Theory: Developments and "Classics" (Master)	2 SWS	Seminar	Lindstädt

Legend: 📱 Online, 💠 Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate

The control of success according to § 4(2), 3 SPO takes place by writing a scientific work and a presentation of the results of the work in the context of a conclusion meeting. Details on the design of the performance review will be announced during the lecture.

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" (Master)** 2577921, SS 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

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.

Learning Objectives:

Students

- are able to explain and evaluate theoretical approaches and models in the field of strategic management and can illustrate them by tangible examples
- learn to express their position in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

The control of success according to § 4(2), 3 SPO takes place by writing a scientific work and a presentation of the results of the work in the context of a final meeting. Details on the design of the success control will be announced during the lecture.

Note:

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. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues
siehe Homepage

V	**Strategy and Management Theory: Developments and "Classics" (Master)** 2577921, WS 21/22, 2 SWS, Language: German, Open in study portal	**Seminar (S)**

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.

Learning Objectives:

Students

- are able to explain and evaluate theoretical approaches and models in the field of strategic management and can illustrate them by tangible examples
- learn to express their position in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

The control of success according to § 4(2), 3 SPO takes place by writing a scientific work and a presentation of the results of the work in the context of a final meeting. Details on the design of the success control will be announced during the lecture.

Note:

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. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues
siehe Homepage

T 6.293 Course: Supplement Enterprise Information Systems [T-WIWI-110346]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101628 - Emphasis in Informatics
                M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each term	1

Competence Certificate
The assessment of this course is a written or (if necessary) oral examination.

Prerequisites
None

Annotation
This course can be used in particular for the acceptance of external courses whose content is in the broader area of applied informatics, but is not equivalent to another course of this topic.

T 6.294 Course: Supplement Software- and Systemsengineering [T-WIWI-110372]

Responsible:	Prof. Dr. Andreas Oberweis
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type	**Credits**	**Grading scale**	**Recurrence**	**Version**
Written examination	4,5	Grade to a third	Each term	1

Competence Certificate

The assessment of this course is a written or (if necessary) oral examination.

Prerequisites

None

Annotation

This course can be used in particular for the acceptance of external courses whose content is in the broader area of software and systems engineering, but cannot assigned to another course of this topic.

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-WIWI-101412 - Industrial Production III
	M-WIWI-101471 - Industrial Production II

Type	Credits	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2581957	Supply Chain Management in the automotive industry	2 SWS	Lecture / 🖥	Heupel, Lang

Legend: 🖥 Online, ⚄ Blended (On-Site/Online), ◕ On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (examination of another type, following §4(2), 3 of the examination regulation).

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 21/22, 2 SWS, Language: German, Open in study portal

Lecture (V)
Online

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

Organizational issues

Blockveranstaltung, siehe Homepage

Literature

Wird in der Veranstaltung bekannt gegeben.

T   6.296 Course: Supply Chain Management with Advanced Planning Systems [T-WIWI-102763]

Responsible:	Claus J. Bosch
	Dr. Mathias Göbelt
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101412 - Industrial Production III
	M-WIWI-101471 - Industrial Production II

Type	Credits	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each summer term	1

Events					
ST 2021	2581961	Supply Chain Management with Advanced Planning Systems	2 SWS	Lecture / 🖥	Göbelt, Bosch

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🔊 On-Site, ✖ Cancelled

Competence Certificate

The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

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 2021, 2 SWS, Language: English, Open in study portal	Lecture (V) **Online**

Content

This lecture deals with supply chain management from a practitioner's perspective with a special emphasis Advanced Planning Systems (APS) and the planning domain. The software solution SAP SCM, one of the most widely used Advanced Planning Systems, is used as an example to show functionality and application of an APS in practice.

First, the term supply chain management is defined and its scope is determined. Methods to analyze supply chains as well as indicators to measure supply chains are derived. Second, the structure of an APS (advanced planning system) is discussed in a generic way. Later in the lecture, the software solution SAP SCM is mapped to this generic structure. The individual planning tasks and software modules (demand planning, supply network planning / sales & operations planning, production planning / detailed scheduling, deployment, transportation planning, global available-to-promise) are presented by discussing the relevant business processes, providing academic background, describing typical planning processes and showing the user interface and user-related processes in the software solution. At the end of the lecture, implementation methodologies and project management approaches for SAP SCM are covered.

Contents

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 / Sales & Operations Planning

3.4.   Production Planning and Detailed Scheduling

3.5.   Deployment

3.6.   Transportation Planning / Global Available to Promise

3.7.   Cloud-based Supply Chain Planning

4. SAP SCM in Practice

4.1.   Project Management and Implementation

4.2.   SAP Implementation Methodology

Literature

will be announced in the course

T   6.297 Course: Tax Law [T-INFO-111437]

Responsible:	Detlef Dietrich
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101216 - Private Business Law

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each summer term	1

T   6.298 Course: Technologies for Innovation Management [T-WIWI-102854]

Responsible:	Dr. Daniel Jeffrey Koch
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101507 - Innovation Management
	M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each winter term	2

Events					
WT 21/22	2545106	Technologies for Innovation Management	2 SWS	Block / 🖥	Koch

Legend: 🖥 Online, ♻ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
Presentation and individual paper (ca. 15 pages) as alternative exam assessment.

Prerequisites
None

Recommendation
Prior attendance of the course Innovationsmanagement: Konzepte, Strategien und Methoden is recommended.

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

V   Technologies for Innovation Management
2545106, WS 21/22, 2 SWS, Language: German, Open in study portal

Block (B)
Online

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
Werden in der ersten Veranstaltung bekannt gegeben.

T   6.299 Course: Technology Assessment [T-WIWI-102858]

Responsible: Dr. Daniel Jeffrey Koch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101507 - Innovation Management
                    M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	see Annotations	1

Competence Certificate
Alternative exam assessment.

Prerequisites
None

Recommendation
Prior attendance of the course Innovation Management
is recommended.

Annotation
See German version.

T 6.300 Course: Telecommunication and Internet Economics [T-WIWI-102713]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101406 - Network Economics
M-WIWI-101409 - Electronic Markets
M-WIWI-DigEcon - Digital Economics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2561232	Telecommunication and Internet Economics	2 SWS	Lecture	Mitusch
WT 21/22	2561233	Übung zu Telekommunikations- und Internetökonomie	1 SWS	Practice	Mitusch, Wisotzky, Corbo

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.

Annotation
Due to the research semester of Prof. Mitusch the course for partial performance will not be offered in the winter semester 2020/2021. An examination will be offered in each semester.

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

V Telecommunication and Internet Economics
2561232, WS 21/22, 2 SWS, Language: German, Open in study portal
Lecture (V)

Literature
J.-J. Laffont, J. Tirole (2000): Competition in Telecommunications, MIT Press.

Zarnekow, Wulf, Bronstaedt (2013): Internetwirtschaft: Das Geschäft des Datentransports im Internet.

Weitere Literatur wird in den einzelnen Veranstaltungen angegeben

T	**6.301 Course: Telecommunications Law [T-INFO-101309]**

Responsible: Dr. Yoan Hermstrüwer
Organisation: KIT Department of Informatics
Part of: M-INFO-101217 - Public Business Law

Type Written examination	Credits 3	Grading scale Grade to a third	Recurrence Each summer term	Version 1

Events					
ST 2021	24632	Telekommunikationsrecht	2 SWS	Lecture / 📱	Hermstrüwer

Legend: 📱 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

T 6.302 Course: The negotiation of open innovation [T-WIWI-110867]

Responsible: Dr. Daniela Beyer
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101507 - Innovation Management
M-WIWI-101507 - Innovation Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Once	1

Competence Certificate
Non exam assessment.

The following aspects are included in the evaluation:

- Exposé of the seminar paper (15%)
- Preparation of the methodology (15%) (interview guide, quantitative survey, etc.)
- informed participation and preparation of the simulation game (20%)
- written elaboration (50%).

Prerequisites
None

Recommendation
Prior attendance of the course Innovation Management [2545015] is recommended.

T	**6.303 Course: Topics in Experimental Economics [T-WIWI-102863]**

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101505 - Experimental Economics

Type Written examination	Credits 4,5	Grading scale Grade to a third	Recurrence Irregular	Version 1

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.

T 6.304 Course: Trademark and Unfair Competition Law [T-INFO-101313]

Responsible:	Dr. Yvonne Matz
Organisation:	KIT Department of Informatics
Part of:	M-INFO-101215 - Intellectual Property Law

Type Written examination	**Credits** 3	**Grading scale** Grade to a third	**Recurrence** Each term	**Version** 1

Events					
WT 21/22	24136	Trademark and Unfair Competition Law	2 SWS	Lecture / 🗣	Matz

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

T 6.305 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 - Network Economics
           M-WIWI-101468 - Environmental Economics
           M-WIWI-101485 - Transport Infrastructure Policy and Regional Development

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2560230	Transport Economics		Lecture / 🖥	Mitusch, Szimba
ST 2021	2560231	Übung zu Transportökonomie	1 SWS	Practice / 🖥	Mitusch, Szimba, Wisotzky

Legend: 🖥 Online, ✿ Blended (On-Site/Online), ● On-Site, ✗ Cancelled

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 2021, SWS, Language: German, Open in study portal

Lecture (V)
Online

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

Literature
Literatur:

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   6.306 Course: Valuation [T-WIWI-102621]

Responsible:	Prof. Dr. Martin Ruckes
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-DigFinEcon - Digital Financial Economics
	M-WIWI-101480 - Finance 3
	M-WIWI-101482 - Finance 1
	M-WIWI-101483 - Finance 2
	M-WIWI-101510 - Cross-Functional Management Accounting

Type Written examination	**Credits** 4,5	**Grading scale** Grade to a third	**Recurrence** Each winter term	**Version** 1

Events					
WT 21/22	2530212	Valuation	2 SWS	Lecture / 🖥	Ruckes
WT 21/22	2530213	Übungen zu Valuation	1 SWS	Practice / 🖥	Ruckes, Luedecke

Legend: 🖥 Online, ⚙ Blended (On-Site/Online), 🎤 On-Site, ✗ Cancelled

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

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

V	**Valuation** 2530212, WS 21/22, 2 SWS, Language: English, Open in study portal	Lecture (V) Online

Literature
Weiterführende Literatur

Titman/Martin (2013): *Valuation - The Art and Science of Corporate Investment Decisions*, 2nd. ed. Pearson International.

T 6.307 Course: Web App Programming for Finance [T-WIWI-110933]

Responsible: Jun.-Prof. Dr. Julian Thimme
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Once	1

Competence Certificate
Non exam assessment according to § 4 paragraph 3 of the examination regulation. (Anmerkung: gilt nur für SPO 2015). The grade is made up as follows: 50% result of the project (R-code), 50% presentation of the project.

Prerequisites
None

Recommendation
The content of the bachelor course Investments is assumed to be known and necessary to follow the course.

T 6.308 Course: Web Science [T-WIWI-103112]

Responsible:	Michael Färber
Organisation:	KIT Department of Economics and Management
Part of:	M-WIWI-101628 - Emphasis in Informatics
	M-WIWI-101630 - Electives in Informatics

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	2

Competence Certificate

The exam will be offered for the last time for first-time takers in the summer semester 2021. The last opportunity to take the exam (for repeaters only) is in the winter semester 2021/22.

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

The lecture is no longer offered.

T   6.309 Course: Wildcard Seminar Module Master [T-WIWI-110215]

Organisation: University
Part of: M-WIWI-101808 - Seminar Module

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4.5	Grade to a third	see Annotations	1

T   6.310 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 - Advanced Topics in Strategy and Management

Type Examination of another type	Credits 3	Grading scale Grade to a third	Recurrence Irregular	Version 1

Events					
ST 2021	2577922	Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)	2 SWS	Seminar / 📱	Lindstädt

Legend: 📱 Online, ⚭ Blended (On-Site/Online), 🌐 On-Site, ✗ Cancelled

Competence Certificate
In this course, real conflict situations are simulated and analyzed using various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

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 - Analyse strategischer Interaktionen (Master)** 2577922, SS 2021, 2 SWS, Language: German, Open in study portal	**Seminar (S)** **Online**

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.

Learning Objectives:

Students

- are able to analyze business strategies and derive recommendations for the management
- learn to express their position through compelling reasoning in structured discussions

Recommendations:

Basic knowledge as conveyed in the bachelor module "Strategy and Organization" is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Lecture: 15 hours

Preparation of lecture: 75 hours

Exam preparation: n/a

Assessment:

In this course, real conflict situations are simulated and analyzed using various methods from business wargaming. Details on the design of the success control will be announced during the lecture.

Note:

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. Further information on the application process can be found on the IBU website.

The examinations are offered at least every second semester, so that the entire module can be completed in two semesters.

Organizational issues
4 Blöcke mittwochs nachmittags

siehe Institutshomepage

T   6.311 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 - Advanced Topics in Strategy and Management

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Irregular	1

Competence Certificate

The evaluation of the performance takes place through the active participation in the discussion rounds; an appropriate preparation is expressed here and a clear understanding of the topic and framework becomes recognizable. Further details on the design of the performance review will be announced during the lecture.

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.