Module Handbook
Information Systems B.Sc.
SPO 2019
Summer term 2024
Date: 27/02/2024
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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 examination. If the module examination is subdivided into partial examinations, the content of each course will be examined in corresponding partial examinations. Registration for examinations can be done online at the campus management portal. The following functions can be accessed on https://campus.studium.kit.edu/:

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

For further and more detailed information, see https://campus.studium.kit.edu/faq.php.
1.5 Types of examinations
Examinations are split into written examinations, oral examinations and alternative exam assessments ("Prüfungsleistungen anderer Art"). Examinations are always graded. Non exam assessments ("Studienleistungen") can be repeated several times and are not graded.

1.6 Repeating examinations
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 losing the examination claim. 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 persons
for Bachelor students
Personal consultation: KIT Department of Informatics, Informatics Study Program Service
Informatics Building 50.34, EG, Rooms 001.2/.3
bachelor@wirtschaftsinformatik.kit.edu

editorial responsibility: Lena Coerd, KIT Department of Informatics
Phone: +49 721 608-48893
modulhandbuch@informatik.kit.edu

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

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

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

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

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

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

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

Figure 2: Recommended structure and subject structure of the bachelor’s programme in Information Systems (German)
3 Qualification goals

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

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

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

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

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

<table>
<thead>
<tr>
<th>Mandatory</th>
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<tbody>
<tr>
<td>Bachelor’s Thesis</td>
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<tr>
<td>Orientation Exam</td>
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</tr>
<tr>
<td></td>
<td>This field will not influence the calculated grade of its parent.</td>
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<tr>
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<tr>
<td>Informatics</td>
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<tr>
<td>Mathematics</td>
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<td>Economics and Management</td>
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<td>Law</td>
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4.1 Bachelor’s Thesis

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4.2 Orientation Exam

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4.3 Information Systems

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<tr>
<td>M-WIWI-104821</td>
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</table>
### 4.4 Informatics

**Election notes**
In Informatics, in addition to the compulsory modules, optional modules with a total of 9 or 18 credit points must be completed. If elective modules totalling 18 LP are chosen, only elective modules totalling 9 credit points can be taken in the subject of Economics and Management.
## 4 FIELD OF STUDY STRUCTURE

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### Compulsory Elective Modules in Informatics (Election: between 9 and 18 credits)

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<tr>
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<td>M-INFO-101184</td>
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<td>M-INFO-100833</td>
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### 4.5 Mathematics

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<td>M-WIWI-101432 Introduction to Statistics</td>
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<tr>
<td>M-MATH-104914 Mathematics I</td>
<td>8 CR</td>
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<tr>
<td>M-MATH-104915 Mathematics II</td>
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### 4.6 Economics and Management

**Election notes**
In addition to the compulsory modules, one or two modules of 9 credit points each in Business Administration, Economics, Operations Research and Statistics must be completed. If two optional modules with a total of 18 credit points are chosen, only optional modules with a total of 9 credit points can be completed in Informatics.

<table>
<thead>
<tr>
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<tr>
<td>M-WIWI-105267 Business Administration</td>
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</tr>
<tr>
<td>M-WIWI-101418 Introduction to Operations Research</td>
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<td>M-WIWI-101431 Economics</td>
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**Business Administration (Election: )**

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<tr>
<td>M-WIWI-101434 eBusiness and Service Management</td>
<td>9 CR</td>
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<tr>
<td>M-WIWI-101402 eFinance</td>
<td>9 CR</td>
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<tr>
<td>M-WIWI-101464 Energy Economics</td>
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<td>M-WIWI-101435 Essentials of Finance</td>
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<td>M-WIWI-103120 Financial Economics</td>
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<td>M-WIWI-102752 Fundamentals of Digital Service Systems</td>
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<td>M-WIWI-101424 Foundations of Marketing</td>
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<td>M-WIWI-105928 HR Management &amp; Digital Workplace</td>
<td>9 CR</td>
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<td>M-WIWI-101437 Industrial Production I</td>
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<td>M-WIWI-105981 Information Systems &amp; Digital Business</td>
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<tr>
<td>M-WIWI-105482 Machine Learning and Data Science</td>
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<td>M-WIWI-101513 Human Resources and Organizations</td>
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<td>M-WIWI-105414 Statistics and Econometrics II</td>
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<td>M-WIWI-101425 Strategy and Organization</td>
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<td>M-WIWI-101421 Supply Chain Management</td>
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<tr>
<td>M-WIWI-101465 Topics in Finance I</td>
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<tr>
<td>M-WIWI-101423 Topics in Finance II</td>
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**Operations Research (Election: )**

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<tr>
<td>M-WIWI-101413 Applications of Operations Research</td>
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<tr>
<td>M-WIWI-101936 Methodical Foundations of OR</td>
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<td>M-WIWI-103278 Optimization under Uncertainty</td>
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**Statistics (Election: )**

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<td>M-WIWI-101599 Statistics and Econometrics</td>
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**Economics (Election: )**

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<tr>
<td>M-WIWI-106472 Advanced Macroeconomics</td>
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<tr>
<td>M-WIWI-101499 Applied Microeconomics</td>
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<tr>
<td>M-WIWI-101403 Public Finance</td>
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<tr>
<td>M-WIWI-101599 Statistics and Econometrics</td>
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<tr>
<td>M-WIWI-101668 Economic Policy I</td>
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<td>M-WIWI-101501 Economic Theory</td>
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4.7 Law

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<td>M-INFO-101191</td>
<td>Commercial Law</td>
<td>9 CR</td>
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<tr>
<td>M-INFO-105247</td>
<td>Constitutional and Administrative Law</td>
<td>6 CR</td>
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<tr>
<td>M-INFO-101253</td>
<td>Intellectual Property and Data Protection</td>
<td>6 CR</td>
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**4.8 Seminars**

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<tbody>
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<td>3 CR</td>
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<tr>
<td>M-INFO-101218</td>
<td>Seminar Module Law</td>
<td>3 CR</td>
</tr>
<tr>
<td>M-WIWI-101826</td>
<td>Seminar Module Economic Sciences</td>
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</table>
5 Modules

5.1 Module: Advanced Macroeconomics [M-WIWI-106472]

**Responsibility:** Prof. Dr. Johannes Brumm

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

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

<table>
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<th>Duration</th>
<th>Language</th>
<th>Level</th>
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<td>9</td>
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<td>Each term</td>
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**Mandatory**

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<td>Macroeconomic Theory</td>
<td>4,5 CR</td>
<td>Brumm</td>
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**Competence Certificate**

The module examination is carried out in the form of partial examinations of the courses of the module. The assessment procedures of each course of this module is defined for each course separately.

**Competence Goal**

The student

- acquires knowledge of modern macroeconomic models
- is able to analyze and discuss fiscal and monetary policy issues
- understands algorithms for solving dynamic, stochastic models
- is able to apply learned numerical methods independently

**Content**

The module focuses on teaching both theoretical foundations and solution procedures for macroeconomic models.

**Annotation**

The two courses can be taken in any order. They complement each other, but do not build on each other.

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

Annotation
The module is offered irregularly.

Workload
approx. 150 h
### 5.3 Module: Algorithms I [M-INFO-100030]

**Responsible:** TT-Prof. Dr. Thomas Bläsius  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (mandatory)

<table>
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<tbody>
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5.4 Module: Algorithms II [M-INFO-101173]

**Responsible:** Prof. Dr. Peter Sanders

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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<tr>
<th>Credits</th>
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<th>Recurrence</th>
<th>Duration</th>
<th>Language</th>
<th>Level</th>
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**Mandatory**

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<th>ECTS</th>
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<tbody>
<tr>
<td>T-INFO-102020 Algorithms II</td>
<td>6</td>
<td>Sanders</td>
</tr>
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</table>

**Competence Certificate**
See partial achievements (Teilleistung)

**Prerequisites**
See partial achievements (Teilleistung)

**Competence Goal**
The student has an in-depth insight into the theoretical and practical aspects of algorithms and is able to identify and formally formulate algorithmic problems in various application areas. Furthermore, they know advanced algorithms and data structures from the areas of graph algorithms, algorithmic geometry, string matching, algebraic algorithms, combinatorial optimization, and external memory algorithms. They are able to independently understand algorithms they are unfamiliar with, associate them with the above areas, apply them, determine their running time, evaluate them, and select appropriate algorithms for given applications. Furthermore, the student is able to adapt existing algorithms to related problems. In addition to algorithms for concrete problems, the student knows advanced techniques of algorithmic design. This includes parameterized algorithms, approximation algorithms, online algorithms, randomized algorithms, parallel algorithms, linear programming, and algorithm engineering techniques. For given algorithms, the student is able to identify techniques used to better understand these algorithms. In addition, they are able to select appropriate techniques for a given problem and use them to design their own algorithms.

**Content**
This module is designed to provide students with the basic theoretical and practical aspects of algorithm design, analysis, and engineering. It teaches general methods for designing and analyzing algorithms for basic algorithmic problems, as well as the basic principles of general algorithmic methods such as approximation algorithms, linear programming, randomized algorithms, parallel algorithms, and parameterized algorithms.

**Workload**
Lecture with 3 semester hours + 1 semester hour exercise
6 ECTS correspond to about 180 hours
about 45h visiting the lectures
about 15h visiting the exercises
about 90h follow-up of lectures and solving the exercise sheets
about 30h preparation for the exam
### 5.5 Module: Applications of Operations Research [M-WIWI-101413]

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

<table>
<thead>
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<th>Credits</th>
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<th>Language</th>
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#### Compulsory Elective Courses (Election: between 1 and 2 items)

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<td>Nickel</td>
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<tr>
<td>T-WIWI-102714</td>
<td>Tactical and Operational Supply Chain Management</td>
<td>4,5</td>
<td>Nickel</td>
</tr>
</tbody>
</table>

#### Supplementary Courses (Election: at most 1 item)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>CR</th>
<th>Lecturer</th>
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</thead>
<tbody>
<tr>
<td>T-WIWI-102726</td>
<td>Global Optimization I</td>
<td>4,5</td>
<td>Stein</td>
</tr>
<tr>
<td>T-WIWI-106199</td>
<td>Modeling and OR-Software: Introduction</td>
<td>4,5</td>
<td>Nickell</td>
</tr>
<tr>
<td>T-WIWI-106545</td>
<td>Optimization under Uncertainty</td>
<td>4,5</td>
<td>Rebennack</td>
</tr>
</tbody>
</table>

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

#### Prerequisites

At least one of the courses *Facility Location and Strategic Supply Chain Management* and *Tactical and Operational Supply Chain Management* has to be taken.

#### Competence Goal

The student

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

#### Content

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

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

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

#### Annotation

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

#### Workload

The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.
Recommendation
The courses Introduction to Operations Research I and II are helpful.
5.6 Module: Applied Informatics [M-WIWI-101430]

Responsible: Prof. Dr. Andreas Oberweis
Prof. Dr. Ali Sunyaev

Organisation: KIT Department of Economics and Management

Part of: Informatics (mandatory)

Credits | 8
Grading scale | Grade to a tenth
Recurrence | Each term
Duration | 2 terms
Language | German
Level | 2
Version | 3

Mandatory

<table>
<thead>
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<th>Grade</th>
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<tbody>
<tr>
<td>T-WIWI-110338</td>
<td>Applied Informatics – Modelling</td>
<td>4 CR</td>
<td>Oberweis</td>
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</table>

Competence Certificate

The learning control for both courses takes the form of a written examination (60 minutes) in accordance with § 4(2), 1 SPO. The module grade consists of the credit-weighted average of the grades for both courses.

Prerequisites

None.

Competence Goal

The student should:

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

Content

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

The course Applied Informatics - Internet Computing [2511032] provides insights into fundamental concepts and future technologies of distributed systems and Internet computing. Students should be able to select, design and apply the presented concepts and technologies. The course first introduces basic concepts of distributed systems (e.g. design of architectures for distributed systems, internet architectures, web services, middleware).

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

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

Workload

See german version.

Recommendation

Knowledge of the module Basic Notions of Computer Science as well as Algorithms I is expected.
5.7 Module: Applied Microeconomics [M-WIWI-101499]

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

<table>
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Compulsory Elective Courses (Election: at least 9 credits)

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<td>4.5 CR</td>
<td>Szech</td>
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<tr>
<td>T-WIWI-112228</td>
<td>Digital Markets and Market Design</td>
<td>4.5 CR</td>
<td>Hillenbrand</td>
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<tr>
<td>T-WIWI-102892</td>
<td>Economics and Behavior</td>
<td>4.5 CR</td>
<td>Szech</td>
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<tr>
<td>T-WIWI-102850</td>
<td>Introduction to Game Theory</td>
<td>4.5 CR</td>
<td>Puppe, Reiß</td>
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<td>T-WIWI-102792</td>
<td>Decision Theory</td>
<td>4.5 CR</td>
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<td>T-WIWI-102844</td>
<td>Industrial Organization</td>
<td>4.5 CR</td>
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<td>T-WIWI-102739</td>
<td>Public Revenues</td>
<td>4.5 CR</td>
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<td>T-WIWI-102736</td>
<td>Economics III: Introduction in Econometrics</td>
<td>5 CR</td>
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<td>T-WIWI-100005</td>
<td>Competition in Networks</td>
<td>4.5 CR</td>
<td>Mitusch</td>
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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.

Prerequisites
None.

Competence Goal
Students

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

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

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

Recommendation
Completion of the module Economics is strongly recommended.
# 5.8 Module: Basic Notions of Computer Science [M-INFO-101170]

**Responsible:** Dr. rer. nat. Mattias Ulbrich  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (mandatory)

<table>
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<th>Credits</th>
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<th>Duration</th>
<th>Language</th>
<th>Level</th>
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<td>Each winter term</td>
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**Mandatory**

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<tbody>
<tr>
<td>T-INFO-101965</td>
<td>Basic Notions of Computer Science Pass</td>
<td>0 CR</td>
<td>Ulbrich</td>
</tr>
<tr>
<td>T-INFO-101964</td>
<td>Basic Notions of Computer Science</td>
<td>6 CR</td>
<td>Ulbrich</td>
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</table>

**Competition Goal**

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

**Content**

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

**Workload**

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

**Responsible:** TT-Prof. Dr. Thomas Bläsius

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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<th>Language</th>
<th>Level</th>
<th>Version</th>
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<tbody>
<tr>
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<td>1 term</td>
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Mandatory

| T-INFO-101991 | Basic Practical Course for the ICPC-Programming Contest | 4 CR | Bläsius, Goetze, Ueckerdt, Zündorf |
Module: Business Administration [M-WIWI-105267]

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

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

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

<table>
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**Mandatory**

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<th>Teacher(s)</th>
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<tr>
<td>T-WIWI-111632</td>
<td>Production and Logistics</td>
<td>3 CR</td>
<td>Fichtner, Nickel, Schultmann</td>
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**Compulsory Elective Courses (Election: 1 item)**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Teacher(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-WIWI-111594</td>
<td>Management and Marketing</td>
<td>5 CR</td>
<td>Klarmann, Lindstädt, Nieken, Terzidis</td>
</tr>
<tr>
<td>T-WIWI-112820</td>
<td>Introduction to Finance and Accounting</td>
<td>5 CR</td>
<td>Luedecke, Ruckes, Strych, Uhrig-Homburg, Wouters</td>
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</table>

**Competence Certificate**
The assessments of the courses are written examinations.

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

**Prerequisites**
None

**Competence Goal**
The student should be able to

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

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

**Workload**
The total workload for this module is approximately 240 hours (8 credits). The distribution is done according to the credit points of the courses of the module.

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 to achieve the learning objectives of the module for an average student for an average performance.
5.11 Module: Business Processes and Information Systems [M-WIWI-101476]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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<th>Grading scale</th>
<th>Recurrence</th>
<th>Duration</th>
<th>Language</th>
<th>Level</th>
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<tbody>
<tr>
<td>9</td>
<td>Grade to a tenth</td>
<td>Each term</td>
<td>1 term</td>
<td>German</td>
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### Compulsory Elective Courses (Election: between 1 and 2 items)

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<th>Credits</th>
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<tbody>
<tr>
<td>T-WIWI-102697</td>
<td>Business Process Modelling</td>
<td>4,5 CR</td>
<td>Oberweis</td>
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<tr>
<td>T-WIWI-109799</td>
<td>Process Mining</td>
<td>4,5 CR</td>
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### Supplementary Courses (Election: between 0 and 1 items)

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<th>Course Name</th>
<th>Credits</th>
<th>Responsible</th>
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<tbody>
<tr>
<td>T-WIWI-110711</td>
<td>Supplement Applied Informatics</td>
<td>4,5 CR</td>
<td>Professorenschaft des Instituts AIFB</td>
</tr>
<tr>
<td>T-WIWI-104679</td>
<td>Foundations of Mobile Business</td>
<td>4,5 CR</td>
<td>Oberweis</td>
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<tr>
<td>T-WIWI-110541</td>
<td>Advanced Lab Informatics (Bachelor)</td>
<td>4,5 CR</td>
<td>Professorenschaft des Instituts AIFB</td>
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<tr>
<td>T-WIWI-112915</td>
<td>Advanced Lab Realization of Innovative Services (Bachelor)</td>
<td>4,5 CR</td>
<td>Oberweis</td>
</tr>
</tbody>
</table>

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

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

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

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

Additionally, fundamentals of software quality management are considered in this module. Maturity models like CMMI or SPICE for evaluation and improvement of a software development process are introduced.
### 5.12 Module: Commercial Law [M-INFO-101191]

<table>
<thead>
<tr>
<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
<th>Duration</th>
<th>Language</th>
<th>Level</th>
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<td>Each term</td>
<td>3 terms</td>
<td>German</td>
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**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** Law (mandatory)

<table>
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</table>
Module: Computer Architecture [M-INFO-100818]

- **Responsible:** Prof. Dr. Wolfgang Karl
- **Organisation:** KIT Department of Informatics
- **Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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### Mandatory

| T-INFO-101355 | Computer Architecture | 6 CR | Karl |

Information Systems B.Sc.
Module Handbook as of 27/02/2024

**Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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<td>Computer Graphics</td>
<td>6 CR</td>
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<td>T-INFO-104313</td>
<td>Computer Graphics Pass</td>
<td>0 CR</td>
<td>Dachsbacher</td>
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5.15 Module: Computer Organization [M-INFO-103179]

**Responsible:** Prof. Dr. Wolfgang Karl

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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<tr>
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<td>6</td>
<td>Karl</td>
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5.16 Module: Constitutional and Administrative Law [M-INFO-105247]

**Responsible:** N.N.

**Organisation:** KIT Department of Informatics

**Part of:** Law (mandatory)

<table>
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**Workload**

See German version.
Module: Curves in CAD [M-INFO-101248]

**Responsible:** Prof. Dr. Hartmut Prautzsch  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

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<td>Curves in CAD</td>
<td>5 CR</td>
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</table>

**Competence Goal**

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

**Content**

Bézier and B-spline-Technics, polarforms, algorithms of de Casteljau, de Boor and Boehm, Oslo-Algorithm, Stärk’s C^k construction, subdivision, change of representations, intersection algorithms, interpolation with splines, and a bit on tensorproduct surfaces (= curves controlled by curves).
5.18 Module: Database Systems [M-INFO-104921]

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

<table>
<thead>
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<th>Language</th>
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<tr>
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</table>
5.19 Module: Digital Circuits Design [M-INFO-102978]

**Responsible:** Prof. Dr.-Ing. Uwe Hanebeck

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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### 5.20 Module: Digital Games [M-INFO-106291]

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**Responsible:** Prof. Dr. Kathrin Gerling  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

*Mandatory*

<table>
<thead>
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<td>T-INFO-112751</td>
<td>Digital Games Pass</td>
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5.21 Module: eBusiness and Service Management [M-WIWI-101434]

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

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Compulsory Elective Courses (Elective: 9 credits)

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<td>T-WIWI-113160</td>
<td>Digital Democracy</td>
<td>4,5 CR</td>
<td>Fegert</td>
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<tr>
<td>T-WIWI-111307</td>
<td>Digital Services: Foundations</td>
<td>4,5 CR</td>
<td>Satzger, Vössing</td>
</tr>
<tr>
<td>T-WIWI-110797</td>
<td>eFinance: Information Systems for Securities Trading</td>
<td>4,5 CR</td>
<td>Weinhardt</td>
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<tr>
<td>T-WIWI-109816</td>
<td>Foundations of Interactive Systems</td>
<td>4,5 CR</td>
<td>Mädeche</td>
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<tr>
<td>T-WIWI-107506</td>
<td>Platform Economy</td>
<td>4,5 CR</td>
<td>Weinhardt</td>
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<tr>
<td>T-WIWI-109940</td>
<td>Special Topics in Information Systems</td>
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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.

Prerequisites
None

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

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

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

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

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

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

Annotation
All practical Seminars offered at the IM can be chosen for Special Topics in Information Systems. Please update yourself on www.iism.kit.edu/im/lehre
Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.
5.22 Module: Economic Policy I [M-WIWI-101668]

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

<table>
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<td>Basic Principles of Economic Policy</td>
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**Compulsory Elective Courses (Election: 1 Item)**

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<tr>
<td>T-WIWI-109121</td>
<td>Macroeconomic Theory</td>
<td>4,5</td>
<td>Brumm</td>
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<tr>
<td>T-WIWI-102739</td>
<td>Public Revenues</td>
<td>4,5</td>
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<tr>
<td>T-WIWI-102908</td>
<td>Personnel Policies and Labor Market Institutions</td>
<td>4,5</td>
<td>Nieken</td>
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<tr>
<td>T-WIWI-100005</td>
<td>Competition in Networks</td>
<td>4,5</td>
<td>Mitusch</td>
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</table>

**Competence Certificate**

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

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

**Prerequisites**

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

**Competence Goal**

Students shall be given the ability to

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

**Content**

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

**Workload**

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

**Recommendation**

Basic knowledge of micro- and macroeconomics is strongly recommended, as taught in the courses Economics I [2610012], and Economics II [2600014].
### 5.23 Module: Economic Theory [M-WIWI-101501]

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

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#### Compulsory Elective Courses (Election: 9 credits)

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<td>T-WIWI-102609</td>
<td>Advanced Topics in Economic Theory</td>
<td>Mtusch</td>
<td>T-WIWI-102876</td>
<td>Szech</td>
<td>T-WIWI-102892</td>
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<td>T-WIWI-102876</td>
<td>Auction &amp; Mechanism Design</td>
<td>Szech</td>
<td>T-WIWI-102850</td>
<td>Puppe, Reiß</td>
<td>T-WIWI-102844</td>
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<td>T-WIWI-102850</td>
<td>Introduction to Game Theory</td>
<td>T-WIWI-109121</td>
<td>Macroeconomic Theory</td>
<td>Brumm</td>
<td>T-WIWI-102610</td>
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<td>T-WIWI-102892</td>
<td>Economics and Behavior</td>
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<td>Industrial Organization</td>
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#### Competence Certificate

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

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

#### Prerequisites

None

#### Competence Goal

**Students**

- master concepts that are central to (micro-)economic theory and are familiar with their real-world applications,
- will be able to interpret and critically assess microeconomic models,
- attain in-depth knowledge of the theory of strategic decision making and of general equilibrium models,
- can apply methods from welfare economics to analyze issues like distributional fairness and equality of opportunity.

#### Content

The module covers central concepts in microeconomic theory as well as their applications. This includes an in-depth introduction to the modelling language and the equilibrium concepts (Nash equilibrium, sub-game-perfect Nash equilibrium, etc.) of non-cooperative game theory ("Introduction to Game Theory") as well as its applications to problems of imperfect competition and industrial organization ("Industrieökonomie") and the design of auctions and (incentive-)mechanisms ("Auction & Mechanism Design").

A further focus of the module is on the development of a micro-founded general equilibrium model in order to examine key macroeconomic issues such as public debt and labor market as well as monetary policies ("Macroeconomic Theory"). Students may also delve deeper into the basics of behavioral economics and experimental design ("Economics & Behavior") as well as into questions of equality of opportunity and the fairness and efficiency of economic allocations ("Wohlfahrtstheorie").

#### Annotation

Please note that the course T-WIWI-102609 "Advanced Topics in Economic Theory" is currently not available.

#### Workload

The total workload for this module is approximately 270 hours (9 credit points). The distribution is done according to the credit points of the courses of the module. The workload for courses with 4.5 credit points is approx. 135 hours. The total number of hours per course is calculated from the time required for attending lectures and exercises, as well as examination times and the time required for an average student to achieve the learning objectives of the module.

#### Recommendation

None
5.24 Module: Economics [M-WIWI-101431]

**Responsible:** Prof. Dr. Clemens Puppe

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

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

<table>
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**Competence Certificate**

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

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

**Prerequisites**

None

**Competence Goal**

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

In particular, the student should learn

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

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

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

**Content**

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

**Annotation**

When personal resources are available students’ tutorials will be established.

**Workload**

See German version.
5.25 Module: eFinance [M-WIWI-101402]

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

<table>
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<td>eFinance: Information Systems for Securities Trading</td>
<td>4.5 CR</td>
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**Supplementary Courses (Election: at least 4.5 credits)**

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<td>T-WIWI-112694</td>
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<td>International Finance</td>
<td>3 CR</td>
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**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

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

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

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

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

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

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

**Workload**
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.
Module: Energy Economics [M-WIWI-101464]

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

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

Mandatory
T-WIWI-102746 Introduction to Energy Economics 5.5 CR Fichtner

Supplementary Courses (Election: 3.5 credits)
T-WIWI-102607 Energy Policy 3.5 CR Wietschel
T-WIWI-100806 Renewable Energy-Resources, Technologies and Economics 3.5 CR Jochem

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

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

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

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

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

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

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

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

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

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

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

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Business Administration)

<table>
<thead>
<tr>
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<td>Each summer term</td>
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<td>German</td>
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Mandatory

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>T-WIWI-102605</td>
<td>Financial Management</td>
<td>4,5 CR Ruckes</td>
</tr>
<tr>
<td>T-WIWI-102604</td>
<td>Investments</td>
<td>4,5 CR Uhrig-Homburg</td>
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</tbody>
</table>

Competence Certificate

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

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

Prerequisites

None

Competence Goal

The student

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

Content

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

Workload

The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.
Module: Financial Economics [M-WIWI-103120]

**Responsible:** Prof. Dr. Maxim Ulrich

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

**Part of:** Economics and Management (Business Administration)

<table>
<thead>
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<th>Credits</th>
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**Compulsory Elective Courses (Election: 9 credits)**

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<th>Credits</th>
<th>Grade</th>
<th>Instructor</th>
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<tr>
<td>T-WIWI-102878</td>
<td>Computational Risk and Asset Management</td>
<td>4,5 CR</td>
<td>Ulrich</td>
<td></td>
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<tr>
<td>T-WIWI-106194</td>
<td>Macro-Finance</td>
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**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

**Prerequisites**
None.

**Competence Goal**
Students apply statistical methods to estimate expected returns, risk and risk densities of different investment instruments. They will know how to apply maximum likelihood and expectation maximization algorithms to estimate linear and non-linear asset pricing models from the fixed-income, equity or option pricing literature. Besides a conceptual understanding, students will implement the estimation algorithms using modern software and learn about current innovations in the macro-finance literature, aiming to price bonds, equity and option markets with explicitly accounting for fundamental economic and monetary policy related risks under no-arbitrage.

**Content**
See respective lecture

**Annotation**
See respective lecture

**Workload**
The total workload for this module is approximately 270 hours. For further information, see respective lecture.
<table>
<thead>
<tr>
<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
<th>Duration</th>
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**Mandatory**

| T-INFO-101336 | Formal Systems | 6 CR | Beckert |

**Responsible:** Prof. Dr. Bernhard Beckert

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)
Module: Foundations of Marketing [M-WIWI-101424]

Responsibility: Prof. Dr. Martin Klarmann

Organization: KIT Department of Economics and Management

Part of: Economics and Management (Business Administration)

<table>
<thead>
<tr>
<th>Credits</th>
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<th>Duration</th>
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<tr>
<td>T-WIWI-102805</td>
<td>Managing the Marketing Mix</td>
<td>4,5 CR</td>
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Supplementary Courses (Election: at least 4,5 credits)

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<tr>
<td>T-WIWI-111367</td>
<td>B2B Sales Management</td>
<td>4,5 CR</td>
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<td>Klarmann</td>
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<tr>
<td>T-WIWI-112156</td>
<td>Brand Management</td>
<td>4,5 CR</td>
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<td>Kupfer</td>
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<tr>
<td>T-WIWI-106569</td>
<td>Consumer Behavior</td>
<td>4,5 CR</td>
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</table>

Competence Certificate

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

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

Prerequisites

The course Marketing Mix is compulsory and must be examined.

Competence Goal

The aim of this module is to prepare students for a job in marketing or sales. Especially in technically oriented companies, employees who have a certain technical background as industrial engineers or business informatics specialists are often fit for this purpose.

Students

- are familiar with the most important concepts, procedures and theories of the four instruments of the marketing mix (product management, price management, communication management and sales management)
- have the knowledge to make decisions regarding current and future products (product innovations, e.g. by using conjoint analysis)
- know how customers perceive brands and how this perception can be influenced by the company
- understand how customers react to prices (e.g. using price-sales functions)
- can determine prices on the basis of conceptual and quantitative considerations
- know the basics of price differentiation
- are familiar with various communication instruments (e.g. TV advertising) and can design them accurately
- make communication decisions systematically (e.g. by means of media planning)
- can segment the market and position the product
- know how to assess the importance and satisfaction of customers.

Additionally when taking the course "B2B Sales Management":

- can shape the relationship with customers and sales partners and know the basics of sales organization as well as essential sales channel decisions
- know about specifics of marketing in B2B
- are able to identify different B2B business types and their peculiarities in marketing and sales
- are able to prioritize customers and calculate B2B customer lifetime value
- are able to determine value-based prices and prepare and conduct B2B sales presentations.

Additionally when taking the course "Consumer Behavior":

- know about the influences of social factors, neuronal processes and cognitive resources on consumer behavior
- know about the influences of evolutionary factors, emotions, individual differences and motivation on consumer behavior.
Content
The core course of the module is "Marketing Mix". This course is compulsory and must be examined. "Marketing Mix" contains instruments and methods that enable you to goal-oriented decisions in the operative marketing management (product management, pricing, promotion and sales management). In the "B2B Sales Management" course, we impart knowledge about marketing and sales in environments in which companies themselves distribute and market (often technically highly complex) products to other companies ("business-to-business"). In the "Consumer Behavior" course, we provide an understanding of situational, biological, cognitive, and evolutionary factors that influence consumer behavior. This understanding is provided from an interdisciplinary perspective, incorporating relevant theories and empirical research findings from psychology, cognitive science, biology, and economics.

Annotation
The courses "Services Marketing and B2B Marketing" and "International Marketing" were offered for the last time in the winter semester 2020/21 and will be replaced by the course "B2B Sales Management" from the winter semester 2021/22 on. The course "Marketing Mix" will continue to be offered as normal in the summer semester 2021 and will also be retained in the long term. For further information please contact the Marketing & Sales Research Group (marketing.iism.kit.edu).

Workload
Total effort for 9 credit points: approx. 270 hours.
The exact distribution is done according to the credit points of the courses of the module.
5.31 Module: Fundamentals of Digital Service Systems [M-WIWI-102752]

**Responsible:** Prof. Dr. Gerhard Satzger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Economics and Management (Business Administration)

<table>
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<tr>
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<th>Level</th>
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<td>2 terms</td>
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**Compulsory Elective Courses (Election: 9 credits)**

<table>
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<th>Course Title</th>
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<th>Grading</th>
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<tbody>
<tr>
<td>T-WIWI-111307</td>
<td>Digital Services: Foundations</td>
<td>4.5 CR</td>
<td>Satzger, Vössing</td>
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<tr>
<td>T-WIWI-109816</td>
<td>Foundations of Interactive Systems</td>
<td>4.5 CR</td>
<td>Mädche</td>
</tr>
<tr>
<td>T-WIWI-110888</td>
<td>Practical Seminar: Digital Services</td>
<td>4.5 CR</td>
<td>Satzger, Weinhardt</td>
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</table>

**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.

**Prerequisites**

None

**Competence Goal**

Students

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

**Content**

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

**Annotation**

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

**Workload**

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

**Recommendation**

None
5.32 Module: Geometric Basics for Geometry Processing [M-INFO-100756]

**Responsible:** Prof. Dr. Hartmut Prautzsch

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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</thead>
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<td>T-INFO-101293</td>
<td>Geometric Basics for Geometry Processing</td>
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</table>

Prautzsch
### Module: Geometric Optimization [M-INFO-100730]

**Responsible:** Prof. Dr. Hartmut Prautzsch  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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<th>Grading scale</th>
<th>Recurrence</th>
<th>Duration</th>
<th>Language</th>
<th>Level</th>
<th>Version</th>
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**Mandatory**

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<th>Geometric Optimization</th>
<th>3 CR</th>
<th>Hartmut Prautzsch</th>
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</thead>
</table>
5.34 Module: HR Management & Digital Workplace [M-WIWI-105928]

**Responsible:** Prof. Dr. Alexander Mädche
Prof. Dr. Petra Nieken

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

**Part of:** Economics and Management (Business Administration)

<table>
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<th>Credits</th>
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<th>Duration</th>
<th>Language</th>
<th>Level</th>
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<td>Each term</td>
<td>2 terms</td>
<td>German/English</td>
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</table>

**Elective Offer (Election:)**

<table>
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<th>Course Code</th>
<th>Course Title</th>
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<th>Instructor</th>
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<tbody>
<tr>
<td>T-WIWI-102909</td>
<td>Human Resource Management</td>
<td>4,5</td>
<td>Nieken</td>
</tr>
<tr>
<td>T-WIWI-111858</td>
<td>Topics in Human Resource Management</td>
<td>3</td>
<td>Nieken</td>
</tr>
<tr>
<td>T-WIWI-109816</td>
<td>Foundations of Interactive Systems</td>
<td>4,5</td>
<td>Mädche</td>
</tr>
<tr>
<td>T-WIWI-111914</td>
<td>Practical Seminar: Interactive Systems</td>
<td>4,5</td>
<td>Mädche</td>
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</table>

**Competence Certificate**
The assessment is carried out as partial exams of the courses in this module. The assessment procedures are described for each course in the module separately.

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

**Prerequisites**
Please refer to the course descriptions for potential restrictions regarding an individual course.

**Competence Goal**
The student

- understands and analyses challenges and objectives within organizations
- applies economic models and empirical methods to analyze and solve challenges with a focus on the future of work
- understands the impact of digitalization and new information and communication technology on the work life and HR decisions
- knows how to apply scientific research methods and understands the underlying problems

**Content**
The module „HR Management & Digital Workplace“ offers an interdisciplinary approach and brings together knowledge about Human Resource Management, Leadership and Digitalization. The module specifically focuses on topics related to the future of work in organizations. The topics range from interactive systems at the digital workplace and human-centered design, to recruiting, training and development, as well as (digital) leadership. All courses in the module foster active participation and allow students to learn state-of-the-art concepts and methods and apply them to real-world challenges.

**Annotation**
Please refer to the course descriptions for potential restrictions regarding an individual course.

**Workload**
Total workload for 9 credits: approx. 270 hours.
## 5.35 Module: Human Computer Interaction [M-INFO-100729]

<table>
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<th>Credits</th>
<th>Grading scale</th>
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<tbody>
<tr>
<td>T-INFO-101266</td>
<td>Human-Machine-Interaction</td>
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<td>Each summer term</td>
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<td>T-INFO-106257</td>
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**Responsible:** Prof. Dr.-Ing. Michael Beigl  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)
5.36 Module: Human Resources and Organizations [M-WIWI-101513]

**Responsible:** Prof. Dr. Petra Nieken

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

**Part of:** Economics and Management (Business Administration)

<table>
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<th>Credits</th>
<th>Grading scale</th>
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<th>Language</th>
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**Elective Offer (Election: )**

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<th>Instructor</th>
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<tr>
<td>T-WIWI-102909</td>
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<td>Nieken</td>
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<tr>
<td>T-WIWI-102908</td>
<td>Personnel Policies and Labor Market Institutions</td>
<td>4.5 CR</td>
<td>Nieken</td>
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<tr>
<td>T-WIWI-111858</td>
<td>Topics in Human Resource Management</td>
<td>3 CR</td>
<td>Nieken</td>
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<tr>
<td>T-WIWI-102630</td>
<td>Managing Organizations</td>
<td>3.5 CR</td>
<td>Lindstädt</td>
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</tr>
<tr>
<td>T-WIWI-102871</td>
<td>Problem Solving, Communication and Leadership</td>
<td>2 CR</td>
<td>Lindstädt</td>
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</table>

**Competence Certificate**
The assessment is carried out as partial written exams or alternative exam assessment of the single courses of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

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

**Prerequisites**
The course T-WIWI-111858 Topics in Human Resource Management may not be taken together with the course T-WIWI-102871 Problem Solving, Communication, and Leadership.

**Competence Goal**
The student

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

**Content**
Students acquire basic knowledge in the field of human resources, personnel economics and organization economics. Strategic as well as operative aspects of human resource management practices are analyzed and current research results discussed. Students gain knowledge about methods and instruments from the field of human resources and are able to apply those. The module addresses the opportunities and threats of digitalization in the workplace as well as the use of AI in HRM. In addition, questions of optimal organizational design or personnel politics are considered. The focus lies on the strategic analysis of decisions and the use of microeconomic or behavioral approaches. Empirical results of field or lab studies are discussed critically.

**Workload**
Total workload for 9 credits: approx. 270 hours.

**Recommendation**
Completion of module Business Administration is recommended.
Basic knowledge of microeconomics, game theory and statistics is recommended.
## 5.37 Module: Industrial Production I [M-WIWI-101437]

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

<table>
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<tr>
<th>Credits</th>
<th>Grading scale</th>
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<th>Duration</th>
<th>Language</th>
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<tbody>
<tr>
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<td>Grade to a tenth</td>
<td>Each term</td>
<td>2 terms</td>
<td>German/English</td>
<td>3</td>
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</table>

### Mandatory

- **T-WIWI-102606 Fundamentals of Production Management**  
  Credit: 5.5 CR  
  Schultmann

### Supplementary Courses (Elective: 3.5 credits)

- **T-WIWI-102870 Logistics and Supply Chain Management**  
  Credit: 3.5 CR  
  Schultmann

- **T-WIWI-102820 Production Economics and Sustainability**  
  Credit: 3.5 CR  
  Schultmann, Volk

### Competence Certificate

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

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

### Prerequisites

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

### Competence Goal

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

### Content

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

### Workload

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

The total effort for each course consists of attending lectures and tutorials, examination times and the time an average student needs to prepare himself in order to pass the exam with an average grade.
5.38 Module: Informatics Seminar [M-INFO-106327]

**Responsible:** Professorenschaft des Instituts AIFB

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

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

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**Seminar Informatics (Election: 1 item)**

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<td>T-WIWI-112836</td>
<td>Seminar in Informatics (Bachelor)</td>
<td>3 CR</td>
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</table>
### 5.39 Module: Information Security [M-INFO-106015]

**Responsible:** Prof. Dr. Jörn Müller-Quade  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

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5 MODULES

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

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**Responsible:** Prof. Dr. Melanie Volkamer

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

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

### Mandatory

<table>
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<td>T-WIWI-110342</td>
<td>Applied Informatics – Information Security</td>
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### Compulsory Elective Courses (Election: 1 Item)

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<tr>
<td>T-WIWI-108439</td>
<td>Advanced Lab Security, Usability and Society</td>
<td>4,5</td>
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<td>T-WIWI-109786</td>
<td>Advanced Lab Security</td>
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**Compentence Certificate**

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

**Prerequisites**

None

**Compentence Goal**

The student

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

**Content**

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

**Annotation**

This new module can be chosen from summer term 2018.

**Workload**

The total workload for this module is approximately 270 hours.
5.41 Module: Information Systems & Digital Business [M-WIWI-105981]

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

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

**Part of:** Economics and Management (Business Administration)

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**Compulsory Elective Courses (Election: at least 1 item)**

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<td>T-WIWI-111307</td>
<td>Digital Services: Foundations</td>
<td>4.5 CR</td>
<td>Satzger, Vössing</td>
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<td>T-WIWI-110797</td>
<td>eFinance: Information Systems for Securities Trading</td>
<td>4.5 CR</td>
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<td>T-WIWI-109816</td>
<td>Foundations of Interactive Systems</td>
<td>4.5 CR</td>
<td>Mädche</td>
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<td>T-WIWI-107506</td>
<td>Platform Economy</td>
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**Complementary Offer (Election: at most 1 item)**

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<tr>
<td>T-WIWI-110888</td>
<td>Practical Seminar: Digital Services</td>
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<td>T-WIWI-112154</td>
<td>Practical Seminar: Platform Economy</td>
<td>4.5 CR</td>
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**Competence Certificate**

The module examination takes place in the form of partial examinations via courses of the module amounting to a total of at least 9 LP.

The overall score of the module is formed from the credit-weighted scores of the partial examinations and truncated after the first decimal place.

**Competence Goal**

Students

- understand the basic concepts of interactive systems as well as the economic foundations and key components of platforms
- explore the theoretical grounding of interactive systems leveraging theories from reference disciplines such as psychology
- understand business models, network effects of digital platforms and get to know different market forms and market mechanisms
- gain experience in group work as well as in the analysis of case studies and the professional presentation of research results
Content
The “Information Systems & Digital Business” modules of the research groups of Prof. Dr. Alexander Mädche (Information Systems & Service Design), Prof. Dr. Gerhard Satzger (Digital Service Innovation) and Prof. Dr. Christof Weinhardt (Information & Market Engineering), offer a comprehensive overview on important topics of digitalization – blending aspects of digital interaction, digital services and the platform economy. Courses in this module cover the aspects of interaction between humans and information systems as well as the economic foundations of platform businesses:

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

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

**Consumer Behavior:**
Consumer decisions are ubiquitous in daily life and they can have long-ranging and important consequences for individual (financial) well-being and health but also for societies and the planet as a whole. To help people to make better choices it is important to understand the factors that influence their behavior. Towards this goal, we will explore how consumer behavior is shaped by social influences, situational and cognitive constraints, as well as by emotions, motivations, evolutionary forces, neuronal processes, and individual differences. 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 lecture will be held in English.

**Annotation**
The module can no longer be taken as of winter semester 2022/2023.

**Workload**
Total effort for 9 credit points: approx. 270 hours. The distribution is based on the credit points of the courses of the module (120-135h for courses with 4.5 credit points). The total number of hours per course results from the effort required to attend lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.
5.42 Module: Information Systems I [M-WIWI-104820]

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

Organisation: KIT Department of Economics and Management

Part of: Information Systems

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Mandatory

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

Competence Certificate

The module examination takes place in the form of a written examination of 60 minutes according to § 4 Abs. 2 via the course "Business Information Systems 1". A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Competence Goal

The student

- understands information systems and infrastructures as a dynamic interaction of technical and non-technical elements in the generation and use of information,
- knows application areas of information systems and infrastructures in business and society,
- understands digital transformation as a socio-technical design process of (business) processes (internal digitisation) and products/services (external digitisation) in information systems and infrastructures,
- knows different types of information systems and infrastructures in business and society,
- knows the potential benefits of a targeted supply of information in business and society through the appropriate use of information systems and infrastructures,
- develops an understanding of the importance of interdisciplinary, systemic thinking and learns to work with students in a team

General qualifications:

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

Content

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

Workload

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

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

### Competence Goal

Students

- know important integrated information systems and understand how they are being used in organisations.
- understand central concepts of IT management.
- learn the foundations of market engineering and understand how digital platforms contribute to the solution of allocation problems and how their success can be measured.
- know the foundations of digital value creation (information economy), and basic concepts for the evaluation and analysis of data.

### Content

In the lecture Information Systems II of the module four central issues of Information Systems, respectively their relevance in companies and society, are deepened. This includes the management of IT systems in organizations (IT Management), the use of IT for corporate management (Integrated Information Systems), the use of digital platforms and markets to coordinate economic problems such as the allocation and exchange of goods and services (Platform Economics), and the value and use of data (i.a. big data, open data, etc.) (Information Economics).

### Workload

Total effort for 4 credit points: approx. 120 hours.
- Presence time: 40 hours
- Preparation / follow-up: 40 hours
- Exam and exam preparation: 40 hours
5.44 Module: Intellectual Property and Data Protection [M-INFO-101253]

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**Mandatory**

| T-INFO-109840 | Intellectual Property and Data Protection | 6 CR | N.N. |

**Content**

Building onto what the students have learned in law during the first two years of Bachelor studies, the module Law in the third Bachelor years has the purpose of both deepening and specialising the legal studies in areas of practical importance for information economics and management...
### Module: Introduction in Computer Networks [M-INFO-103455]

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

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### 5.46 Module: Introduction to Artificial Intelligence [M-INFO-106014]

**Responsible:** TT-Prof. Dr. Pascal Friederich  
Prof. Dr. Gerhard Neumann

**Organisation:** KIT Department of Informatics

Part of: Informatics (Compulsory Elective Modules in Informatics)

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

**Responsible:** N.N.

**Organisation:** KIT Department of Informatics

**Part of:** Law (mandatory)

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**Mandatory**

| T-INFO-103339 | Civil Law for Beginners | 5 CR | Matz |
5.48 Module: Introduction to Data and Information Management [M-INFO-105589]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

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<td>German/English</td>
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Introduction to Data and Information Management (Election: at least 1 item as well as at least 5 credits)

- T-INFO-101317 Deployment of Database Systems
  - 5 CR
  - Böhm
- T-INFO-111400 Database as a Service
  - 5 CR
  - Böhm

Introduction to Data and Information Management (Election: at most 2 items as well as at most 4 credits)

- T-INFO-103552 Lab: Working with Database Systems
  - 4 CR
  - Böhm
- T-INFO-101977 Selling IT-Solutions Professionally
  - 1.5 CR
  - Böhm
- T-INFO-101975 Consulting in Practice
  - 1.5 CR
  - Böhm
- T-INFO-101976 Project Management in Practice
  - 1.5 CR
  - Böhm

Prerequisites
None

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

Content
This module aims at exposing students to modern information and database systems. Beyond fundamental theory and concepts, this module covers the deployment of such technology.
5.49 Module: Introduction to Operations Research [M-WIWI-101418]

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

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

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

<table>
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**Mandatory**

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

**Competence Certificate**

The assessment of the module is carried out by a written examination (120 minutes). In each term (usually in March and August), one examination is held for both courses.

**Prerequisites**

None

**Competence Goal**

The student

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

**Content**

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

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

**Module grade calculation**

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

**Workload**

The total workload for this module is approx. 270 hours (attendance time: 85 hours, other time for preparation and follow-up as well as exam preparation: 185 hours, 9 credit points). The total number of hours per course results from the time spent attending 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.
5.50 Module: Introduction to Statistics [M-WIWI-101432]

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

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

- **Part of:** Mathematics

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<td>T-WIWI-102738</td>
<td>Statistics II</td>
<td>5 CR</td>
<td>Grothe, Schienle</td>
<td></td>
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</tbody>
</table>

**Competence Certificate**

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

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

**Prerequisites**

Keine

**Competence Goal**

See German version.

**Content**

The module contains the fundamental methods and scopes of Statistics.

A. Descriptive Statistics: univariate and bivariate analysis

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

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

**Module grade calculation**

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

**Workload**

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

**Recommendation**

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

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

The lecture will be accompanied by an exercise, a tutorial and a computer internship, which are recommended.
## 5.51 Module: Lab Protocol Engineering [M-INFO-101247]

**Responsible:** Prof. Dr. Martina Zitterbart  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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<th>Duration</th>
<th>Language</th>
<th>Level</th>
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<td>Each winter term</td>
<td>1 term</td>
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**Mandatory**

<p>| T-INFO-102066 | Lab Protocol Engineering | 4 CR | Zitterbart |</p>
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### Mandatory

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<tr>
<th>T-INFO-103552</th>
<th>Lab: Working with Database Systems</th>
<th>4 CR</th>
<th>Böhm</th>
</tr>
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</table>
5.3 Module: Lego Mindstorms - Practical Course [M-INFO-102557]

**Responsible:** Prof. Dr.-Ing. Tamim Asfour

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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</table>

**Mandatory**

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

**Competence Certificate**

See partial achievements (Teilleistung)

**Prerequisites**

See partial achievements (Teilleistung)

**Competence Goal**

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

**Content**

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

**Workload**

118h

**Recommendation**

Basic knowledge in Python is necessary for successful completion of this course.
5.54 Module: Machine Learning and Data Science [M-WIWI-105482]

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

<table>
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</table>

**Mandatory**
T-WIWI-111028 Introduction to Machine Learning 4.5 CR Geyer-Schulz, Nazemi
T-WIWI-111029 Introduction to Neural Networks and Genetic Algorithms 4.5 CR Geyer-Schulz

**Competence Certificate**
The module examination is carried out in the form of partial examinations of the selected courses of the module, with which in total the minimum requirement of credit points is fulfilled. The kind of examination is described in detail for each course of this module.

**Prerequisites**
None

**Competence Goal**
The student
- knows the main families of machine learning methods, their basic principles, assumptions and restrictions.
- can use these methods to solve data analysis problems, to support decision making or for process automation in companies and use the solutions interpreted and evaluated accordingly.
- can compare and evaluate the performance of solutions.

**Content**
The module mainly focuses on methods from statistical learning (linear and logistic learning, regression, tree methods, SVMs, and shrinkage estimators) and from the field of neural and genetic procedures were presented. Furthermore, data transformations and representations (e.g. dimension reduction, clustering, imputation in case of missing data) and visualization techniques and appropriate inference, diagnosis and validation techniques are presented.

**Workload**
Total effort for 9 credit points: approx. 270 hours. The allocation is based on the credit points of the courses of the module.
### 5.55 Module: MARS-Based Internship [M/INFO-101245]

**Responsible:** Prof. Dr. Hartmut Prautzsch  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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<td>4 CR</td>
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</table>

**Workload**

120 h
**5.56 Module: Mathematics I [M-MATH-104914]**

**Responsible:** Prof. Dr. Andreas Rieder  
Prof. Dr. Christian Wieners

**Organisation:** KIT Department of Mathematics  
Part of: Mathematics

**Credits:** 8  
**Grading scale:** Grade to a tenth  
**Recurrence:** Each winter term  
**Duration:** 1 term  
**Language:** German  
**Level:** 1  
**Version:** 2

**Mandatory**

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<th>Authors</th>
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<td>T-MATH-109942</td>
<td>Mathematics I for Information Systems - Exam</td>
<td>7 CR</td>
<td>Rieder, Weiß, Wieners</td>
<td></td>
</tr>
<tr>
<td>T-MATH-109943</td>
<td>Mathematics I for Information Systems - Exercise</td>
<td>1 CR</td>
<td>Rieder, Weiß, Wieners</td>
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</tbody>
</table>

**Competence Certificate**

The assessment in this module consists of:

1. A non-graded certificate of exercise following §4(3) of the examination regulation from the exercises to mathematics I (1 credit) and
2. A written examination of 90 minutes on the lecture mathematics I following §4(2), 1 of the examination regulations (7 credits).

**Prerequisites**

None

**Competence Goal**

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

The students learn:

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

The provides the foundations for:

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

**Content**

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

**Module grade calculation**

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

**Annotation**

None.

**Workload**

See German version.


**5.57 Module: Mathematics II [M-MATH-104915]**

**Responsible:** Prof. Dr. Andreas Rieder  
Prof. Dr. Christian Wieners

**Organisation:** KIT Department of Mathematics

**Part of:** Mathematics

<table>
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<th>Duration</th>
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<td>Each summer term</td>
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<th>Grade</th>
<th>Recurrence</th>
<th>Language</th>
<th>Level</th>
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<tbody>
<tr>
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<td>7 CR</td>
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<tr>
<td>T-MATH-109945</td>
<td>Mathematics II for Information Systems - Exercise</td>
<td>1 CR</td>
<td>Rieder, Weiß, Wieners</td>
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</table>

**Competence Certificate**

The assessment in this module consists of:

1. a nongraded certificate of exercise following §4(3) of the examination regulation from the exercises to mathematics II (1 credit) and
2. a written examination of 90 minutes on the lecture mathematics II following §4(2), 1 of the examination regulations (7 credits).

**Prerequisites**

None

**Competence Goal**

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

The students learn:

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

The provides the foundations for:

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

**Content**

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

**Module grade calculation**

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

**Workload**

See German version.
5.58 Module: Mechano-Informatics and Robotics [M-INFO-100757]

**Responsible:** Prof. Dr.-Ing. Tamim Asfour

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
<tr>
<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
<th>Duration</th>
<th>Language</th>
<th>Level</th>
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<td>4</td>
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<td>Each winter term</td>
<td>1 term</td>
<td>German/English</td>
<td>3</td>
<td>1</td>
</tr>
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</table>

**Mandatory**

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

**Competence Certificate**

See partial achievements (Teilleistung)

**Prerequisites**

See partial achievements (Teilleistung)

**Competence Goal**

Students understand the basics of the synergistic integration of methods from mechatronics, computer science and artificial intelligence using the example of humanoid robotics. They are acquainted with the basic concepts and methods of machine learning, the description of robot movements and actions as well as artificial neural networks and their application in robotics.

In particular, they are able to apply basic methods to problems and know relevant tools. Using research-oriented examples from humanoid robotics, students have learned – in an interactive way – to think analytically and to proceed in a structured and goal-oriented way when analyzing, formalizing and solving tasks.

**Content**

The lecture addresses topics at the interface between robotics and artificial intelligence, which are illustrated and explained based on examples from current research in the area of humanoid robotics. The lecture introduces fundamental algorithms in robotics and machine learning as well as methods for describing dynamical systems and representing robot motions and actions. This includes an introduction to artificial neural networks, the description of dynamical systems in state space as well as the learning of movement primitives. The topics and content are illustrated by practical examples from humanoid robotics.

**Workload**

Lecture with 2 SWS, 4 CP.

4 LP corresponds to approx. 120 hours, of which
approx. 40 hours of lecture attendance,
approx. 30 hours of follow-up work on the lecture
approx. 50 hours exam preparation

**Recommendation**

Attendance at the Basispraktikums Mobile Roboter is recommended.
## Module: Methodical Foundations of OR [M-WIWI-101936]

### Responsible
Prof. Dr. Oliver Stein

### Organisation
KIT Department of Economics and Management

### Part of
Economics and Management (Operations Research)

### Credits
9

### Grading scale
Grade to a tenth

### Recurrence
Each term

### Duration
1 term

### Language
German

### Level
3

### Version
8

### Compulsory Elective Courses (Election: at least 1 item as well as between 4,5 and 9 credits)

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<td>4,5 CR</td>
<td>Stein</td>
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<tr>
<td>T-WIWI-103638</td>
<td>Global Optimization I and II</td>
<td>9 CR</td>
<td>Stein</td>
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<td>T-WIWI-102724</td>
<td>Nonlinear Optimization I</td>
<td>4,5 CR</td>
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<td>T-WIWI-103637</td>
<td>Nonlinear Optimization I and II</td>
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### Supplementary Courses (Election: at most 1 item)

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<tr>
<td>T-WIWI-102727</td>
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<td>T-WIWI-102725</td>
<td>Nonlinear Optimization II</td>
<td>4,5 CR</td>
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<tr>
<td>T-WIWI-102704</td>
<td>Facility Location and Strategic Supply Chain Management</td>
<td>4,5 CR</td>
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### Competence Certificate
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module seperately.

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

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

### Competence Goal
The student

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

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

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

### Workload
The total workload for this module is approximately 270 hours. For further information see German version.
## 5.60 Module: Microprocessors I [M-INFO-101183]

**Responsible:** Prof. Dr. Wolfgang Karl  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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### Mandatory

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<tr>
<td>T-INFO-101972</td>
<td>Microprocessors I</td>
<td>3 CR</td>
<td>Karl</td>
</tr>
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</table>
### Module: Mobile Computing and Internet of Things [M-INFO-101249]

- **Credits**: 5
- **Grading scale**: Grade to a tenth
- **Recurrence**: Each winter term
- **Duration**: 1 term
- **Language**: German
- **Level**: 3
- **Version**: 2

#### Mandatory

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<td>T-INFO-113119</td>
<td>Mobile Computing and Internet of Things - Exercise</td>
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<td>CR</td>
<td>Beigl</td>
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#### Prerequisites

None
### 5.62 Module: Mobile Robots – Practical Course [M-INFO-101184]

**Responsible:** Prof. Dr.-Ing. Tamim Asfour  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
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<th>Duration</th>
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</table>

**Competence Certificate**  
see partial achievements (Teilleistung)

**Prerequisites**  
see partial achievements (Teilleistung)

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

**Content**  
In this practical course, students assemble an ARMURO robot in groups of two. Each student will be provided with their own robot, which they have to put into operation. While using the robots, a new set of problems will be solved each week. The students will need to prepare for each week given the provided material. Sets of problems be solved using the C language and focus on controlling the robot’s sensors and actuators as well as on the generation of reflex-based behavior. The course ends with a race, where the robots have to tackle an obstacle course.
5.63 Module: Module Bachelor's Thesis [M-INFO-104875]

Organisation: KIT Department of Informatics
Part of: Bachelor's Thesis

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</table>

Mandatory

| T-INFO-109907 | Bachelor's Thesis | 15 CR |

Competence Goal
The student can independently work on a relevant topic in accordance with scientific criteria within the specified time frame. He/she is in a position to research, analyze the information, abstract and identify basic principles and regulations from less structured information. He/she reviews the task ahead, can select scientific methods and techniques and apply them to solve a problem or identify further potential. This is basically also done under consideration of social and/or ethical aspects. He/she can interpret, evaluate and if required, graphically present the obtained results. He/she is in a position to clearly structure a research paper and communicate in writing using the technical terminology.

Content
The Bachelor thesis is a written report which shows that the student can autonomously investigate a scientific problem in Information Engineering and Management. The work load for the Bachelor thesis should be 360h. The recommended project time is 4 months, the maximal project time is 5 months. The Bachelor thesis may also be written in English.
Module: Optimization under Uncertainty [M-WIWI-103278]

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

<table>
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<td>Each term</td>
<td>1 term</td>
<td>German</td>
<td>3</td>
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Compulsory Elective Courses (Election: between 1 and 2 items)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Lecturer</th>
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<tbody>
<tr>
<td>T-WIWI-106546</td>
<td>Introduction to Stochastic Optimization</td>
<td>4,5 CR</td>
<td>Rebennack</td>
</tr>
<tr>
<td>T-WIWI-106545</td>
<td>Optimization under Uncertainty</td>
<td>4,5 CR</td>
<td>Rebennack</td>
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</table>

Supplementary Courses (Election: at most 1 item)

<table>
<thead>
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<th>Lecturer</th>
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<tbody>
<tr>
<td>T-WIWI-102724</td>
<td>Nonlinear Optimization I</td>
<td>4,5 CR</td>
<td>Stein</td>
</tr>
<tr>
<td>T-WIWI-102714</td>
<td>Tactical and Operational Supply Chain Management</td>
<td>4,5 CR</td>
<td>Nickel</td>
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</table>

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

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

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

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

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

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

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

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

Recommendation
Knowledge from the lectures "Introduction to Operations Research I" and "Introduction to Operations Research II" are helpful.
### 5.65 Module: Orientation Exam [M-WIWI-104843]

**Responsible:** Studiendekan der KIT-Fakultät für Informatik  
Studiendekan des KIT-Studienganges

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

**Part of:** Orientation Exam

<table>
<thead>
<tr>
<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
<th>Duration</th>
<th>Language</th>
<th>Level</th>
<th>Version</th>
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<tr>
<td>T-INFO-101531</td>
<td>Programming</td>
<td>5 CR</td>
<td>Koziolek, Reussner</td>
</tr>
<tr>
<td>T-INFO-101967</td>
<td>Programming Pass</td>
<td>0 CR</td>
<td>Koziolek, Reussner</td>
</tr>
<tr>
<td>T-MATH-109943</td>
<td>Mathematics I for Information Systems - Exercise</td>
<td>1 CR</td>
<td>Rieder, Weiß, Wieners</td>
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<tr>
<td>T-MATH-109942</td>
<td>Mathematics I for Information Systems - Exam</td>
<td>7 CR</td>
<td>Rieder, Weiß, Wieners</td>
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<tr>
<td>T-WIWI-109817</td>
<td>Information Systems 1</td>
<td>4 CR</td>
<td>Mädche</td>
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</table>

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

**Prerequisites**
None
5.66 Module: Practical Course Computer Engineering: Hardware Design [M-INFO-101219]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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<th>Grade</th>
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<td>T-INFO-102011</td>
<td>Practical Course Computer Engineering: Hardware Design</td>
<td>4 CR</td>
<td>Karl</td>
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<td>T-INFO-105983</td>
<td>Practical Course Computer Engineering: Hardware Design Pass</td>
<td>0 CR</td>
<td>Karl</td>
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</tbody>
</table>

Workload

60 h
## 5.67 Module: Practical Course Web Applications and Service-Oriented Architectures (I) [M-INFO-101633]

**Responsible:** Prof. Dr. Sebastian Abeck  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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### Mandatory

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<tr>
<td>T-INFO-103119</td>
<td>Practical Course Web Applications and Service-Oriented Architectures (I)</td>
<td>5 CR</td>
<td>Abeck</td>
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</table>
### 5.68 Module: Practical Course: Managing Scientific Data [M-INFO-106311]

**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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<th>Credits</th>
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**Mandatory**

| T-INFO-112809 | Practical Course: Managing Scientific Data | 4 CR | Böhm |

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Module Handbook as of 27/02/2024
5.69 Module: Programming [M-INFO-101174]

**Responsible:** Prof. Dr.-Ing. Anne Koziolkek
Prof. Dr. Ralf Reussner

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (mandatory)

<table>
<thead>
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<th>Language</th>
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<tr>
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<td>Programming Pass</td>
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<td>Koziolkek, Reussner</td>
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<tr>
<td>T-INFO-101531</td>
<td>Programming</td>
<td>5 CR</td>
<td>Koziolkek, Reussner</td>
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</table>

**Competence Goal**

Students should learn:

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

**Content**

- objects and classes
- types, values and variables
- methods
- control structures
- recursion
- references, lists
- inheritance
- input and output
- exceptions
- programming methodology
- implementation of basic algorithms in Java (such as sorting algorithms)
5.70 Module: Public Finance [M-WIWI-101403]

**Responsible:** Prof. Dr. Berthold Wigger

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

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

<table>
<thead>
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<th>Credits</th>
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<th>Duration</th>
<th>Language</th>
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**Compulsory Elective Courses (Election: 9 credits)**

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<th>Recurrence</th>
<th>Duration</th>
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<th>Level</th>
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<tbody>
<tr>
<td>T-WIWI-102877</td>
<td>Introduction to Public Finance</td>
<td>4,5 CR</td>
<td>Wigger</td>
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<tr>
<td>T-WIWI-108711</td>
<td>Basics of German Company Tax Law and Tax Planning</td>
<td>4,5 CR</td>
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<tr>
<td>T-WIWI-102739</td>
<td>Public Revenues</td>
<td>4,5 CR</td>
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<td>T-WIWI-112721</td>
<td>Public Economics</td>
<td>4,5 CR</td>
<td>Wigger</td>
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**Competence Certificate**

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

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

**Competence Goal**

See German version.

**Content**

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

**Annotation**

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

**Workload**

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

**Recommendation**

It is recommended to attend the course 2560129 after having completed the course 2560120.
### Module: Real-Time Systems [M-INFO-100803]

**Responsible:** Prof. Dr.-Ing. Thomas Längle  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
<tr>
<th>Credits</th>
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<th>Recurrence</th>
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<th>Language</th>
<th>Level</th>
<th>Version</th>
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<tbody>
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<td>Each summer term</td>
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<th>Each summer term</th>
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<tbody>
<tr>
<td>T-INFO-101340</td>
<td>Real-Time Systems</td>
<td>6 CR</td>
<td>Längle</td>
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</table>
Module: Robotics I - Introduction to Robotics [M-INFO-100893]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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<th>Credits</th>
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<th>Language</th>
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<tbody>
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<td>6</td>
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Mandatory

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

Competence Certificate
See partial achievements (Teilleistung)

Prerequisites
See partial achievements (Teilleistung)

Competence Goal
The student is able to apply the presented concepts to simple and realistic tasks from robotics. This includes mastering and deriving the mathematical concepts relevant for robot modeling. Furthermore, the student masters the kinematic and dynamic modeling of robot systems, as well as the modeling and design of simple controllers. The student knows the algorithmic basics of motion and grasp planning and can apply these algorithms to problems in robotics. He/she knows algorithms from the field of image processing and is able to apply them to problems in robotics. He/she is able to model and solve tasks as a symbolic planning problem. The student has knowledge about intuitive programming procedures for robots and knows procedures for programming and learning by demonstration.

Content
The lecture provides an overview of the fundamentals of robotics using the examples of industrial robots, service robots and autonomous humanoid robots. An insight into all relevant topics is given. This includes methods and algorithms for robot modeling, control and motion planning, image processing and robot programming. First, mathematical basics and methods for kinematic and dynamic robot modeling, trajectory planning and control as well as algorithms for collision-free motion planning and grasp planning are covered. Subsequently, basics of image processing, intuitive robot programming especially by human demonstration and symbolic planning are presented.

In the exercise, the theoretical contents of the lecture are further illustrated with examples. Students deepen their knowledge of the methods and algorithms by independently working on problems and discussing them in the exercise. In particular, students can gain practical programming experience with tools and software libraries commonly used in robotics.

Workload
Lecture with 3 SWS + 1 SWS Tutorial, 6 LP
6 LP corresponds to 180 hours, including
15 * 3 = 45 hours attendance time (lecture)
15 * 1 = 15 hours attendance time (tutorial)
15 * 6 = 90 hours self-study and exercise sheets
30 hours preparation for the exam

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

**Responsible:** Dr.-Ing. Michael Färber

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

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

<table>
<thead>
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<tr>
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<td>Semantic Web Technologies</td>
<td>4,5 CR</td>
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**Supplementary Courses (Election: at least 1 item)**

<table>
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<tr>
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<td>Applied Informatics – Applications of Artificial Intelligence</td>
<td>4,5 CR</td>
<td>Färber</td>
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<tr>
<td>T-WIWI-102697</td>
<td>Business Process Modelling</td>
<td>4,5 CR</td>
<td>Oberweis</td>
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<tr>
<td>T-WIWI-110541</td>
<td>Advanced Lab Informatics (Bachelor)</td>
<td>4,5 CR</td>
<td>Professorenschaft des Instituts AIFB</td>
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</table>

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

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

**Competence Goal**
Students

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

**Content**
In modern companies the availability and usability of knowledge is an essential factor of success for central managerial tasks and duties such as the improvement of business processes, product innovation and the amelioration of customer satisfaction. This module illustrates the typical problems of knowledge management in organizations and presents IT methods to approach these questions. The relevant groups of knowledge management systems are analyzed and expanded in the subject areas knowledge representation/semantic modeling and document management/groupware systems.

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

**Workload**
The workload is app. 270 hours.
5.74 Module: Seminar Module Economic Sciences [M-WIWI-101826]

**Responsible:** Studiendekan des KIT-Studienganges  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Seminars

<table>
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**Compulsory Elective Courses (Election: 1 item)**

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<tr>
<td>T-WIWI-103486</td>
<td>Seminar in Business Administration (Bachelor)</td>
<td>3 CR Professorenschaft des Fachbereichs Betriebswirtschaftslehre</td>
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<tr>
<td>T-WIWI-103488</td>
<td>Seminar in Operations Research (Bachelor)</td>
<td>3 CR Nickel, Rebennack, Stein</td>
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<tr>
<td>T-WIWI-103489</td>
<td>Seminar in Statistics (Bachelor)</td>
<td>3 CR Grothe, Schienle</td>
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<tr>
<td>T-WIWI-103487</td>
<td>Seminar in Economics (Bachelor)</td>
<td>3 CR Professorenschaft des Fachbereichs Volkswirtschaftslehre</td>
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**Competence Certificate**
The assessment is done by a seminar with at least 3 CP. The assessment of the seminar (following §4(2), 3 ER) is described at the course description.

**Prerequisites**
None.

**Competence Goal**
- Students are able to independently deal with a defined problem in a specialized field based on scientific criteria.
- They are able to research, analyze the information, abstract and derive basic principles and regularities from unstructured information.
- They can solve the problems in a structured manner using their interdisciplinary know-how.
- They know how to validate the obtained results.
- Finally, they are able to logically and systematically present the results both orally and in written form in accordance with scientific guidelines (structuring, technical terminology, referencing). They can argue and defend the results professionally in the discussion.
- Students are familiar with the DFG’s Code of Conduct “Guidelines for Safeguarding Good Research Practice” and base their scientific work on it.

**Content**
The module consists of a seminar thematically related to economics. A list of approved courses will be announced on the Internet. The teaching of the DFG Code “Guidelines for Safeguarding Good Research Practice” takes place within the online course “Good Scientific Practice” of the KIT Library, which can be completed in self-study.

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

**Workload**
The total workload for this module is approximately 90 hours.
### 5.75 Module: Seminar Module Informatics [M-INFO-102058]

**Responsible:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Informatics  
KIT Department of Economics and Management  

**Part of:** Seminars

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#### Seminar Informatics (Election: 1 item)

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<tr>
<td>T-WIWI-103485</td>
<td>Seminar in Informatics (Bachelor)</td>
<td>3</td>
<td>CR</td>
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### 5.76 Module: Seminar Module Law [M-INFO-101218]

**Responsible:** N.N.

**Organisation:** KIT Department of Informatics

**Part of:** Seminars

<table>
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**Mandatory**

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<td>Seminar: Legal Studies I</td>
<td>3 CR</td>
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</table>
5.77 Module: Software Engineering I [M-INFO-101175]

**Responsible:** Prof. Dr.-Ing. Ina Schaefer

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (mandatory)

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

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

**Workload**
approx. 180 h
## 5.78 Module: Software Engineering II [M-INFO-100833]

<table>
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<th>Language</th>
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<tbody>
<tr>
<td>T-INFO-101370</td>
<td>Software Engineering II</td>
<td>6 CR</td>
<td>Koziolek, Reussner</td>
</tr>
</tbody>
</table>

### Content

Requirements engineering, software development processes, software quality, software architectures, MDD, Enterprise Software Patterns software maintainability, software security, dependability, embedded software, middleware, domain-driven design
5.79 Module: Statistics and Econometrics [M-WIWI-101599]

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

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

**Part of:**  
- Economics and Management (Statistics)  
- Economics and Management (Economics)

<table>
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<tr>
<th>Credits</th>
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<td>T-WIWI-102736</td>
<td>Economics III: Introduction in Econometrics</td>
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**Supplementary Courses (Elect: between 1 and 2 items)**

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<th>Course Title</th>
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<tr>
<td>T-WIWI-103063</td>
<td>Analysis of Multivariate Data</td>
<td>4.5 CR</td>
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<tr>
<td>T-WIWI-103064</td>
<td>Financial Econometrics</td>
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<td>Financial Econometrics II</td>
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<td>T-WIWI-112153</td>
<td>Microeconometrics</td>
<td>4.5 CR</td>
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<tr>
<td>T-WIWI-103065</td>
<td>Statistical Modeling of Generalized Regression Models</td>
<td>4.5 CR</td>
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</table>

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

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

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

**Competence Goal**
The student

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

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

**Workload**
The total workload for this module is approximately 270 hours.
Module: Statistics and Econometrics II [M-WIWI-105414]

**Responsible:** Prof. Dr. Melanie Schienle

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

**Part of:** Economics and Management (Business Administration)

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<th>Credits</th>
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**Compulsory Elective Courses (Election: )**

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<tr>
<td>T-WIWI-103063</td>
<td>Analysis of Multivariate Data</td>
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<td>T-WIWI-103064</td>
<td>Financial Econometrics</td>
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<td>T-WIWI-110939</td>
<td>Financial Econometrics II</td>
<td>4.5 CR</td>
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<tr>
<td>T-WIWI-112153</td>
<td>Microeconometrics</td>
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<tr>
<td>T-WIWI-103065</td>
<td>Statistical Modeling of Generalized Regression Models</td>
<td>4.5 CR</td>
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**Compentence Certificate**

The assessment is carried out as partial exams of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

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

**Prerequisites**

The following module must have been started: Statistics and Econometrics [M-WIWI-101599].

**Competence Goal**

The student

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

**Content**

The courses provide foundations of advanced Econometric and statistical techniques for regression, time series and multivariate analysis.

**Workload**

The total workload for this module is approximately 270 hours.
5.81 Module: Strategy and Organization [M-WIWI-101425]

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

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Strategy and Organization (Election: at least 9 credits)

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<td>Managing Organizations</td>
<td>3.5</td>
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<tr>
<td>T-WIWI-102871</td>
<td>Problem Solving, Communication and Leadership</td>
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<tr>
<td>T-WIWI-113090</td>
<td>Strategic Management</td>
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</table>

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

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

Competence Goal
- The student can prepare strategic decisions along the ideal-typical strategy process and classify them strategically.
- He/she evaluates the strengths and weaknesses of existing organizational structures and regulations using systematic criteria and can review the management of organizational change.
- The student can effectively carry out decision-making by structuring problems and communicating solutions, taking into account the situation and the personalities involved.
- Through intensive exposure to a variety of practice-relevant case studies, students learn to apply and discuss theoretical course content to real-life situations.

Content
The module has a practical and action-oriented structure. Students become familiar with central frameworks of strategic management along the ideal-typical strategy process. An overview of fundamental models will be given, and an action-oriented integration performance will be achieved through the transfer of theory to practical issues. In addition, students learn concepts for the design of organizational structures, regulation of organizational processes as well as control of organizational changes. This enables a well-founded assessment of existing organizational structures and regulations. Furthermore, participants are enabled to recognize, structure, analyze and effectively communicate problems. In addition, central leadership concepts are taught that address the influence of the situation, the leadership personality and the characteristics of those being led.

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.
5.82 Module: Supply Chain Management [M-WIWI-101421]

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

<table>
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<th>Grading Scale</th>
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<tr>
<td>T-WIWI-107506</td>
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Supplementary Courses (Election: 1 item)

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<td>T-WIWI-102704</td>
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<td>4,5 CR</td>
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<td>T-WIWI-102714</td>
<td>Tactical and Operational Supply Chain Management</td>
<td>4,5 CR</td>
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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.

Prerequisites
The course T-WIWI-107506 “Platform Economy” has to be taken.

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

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

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

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

Workload
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.
5.83 Module: Surfaces for Computer Aided Design [M-INFO-101254]

Responsibility: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

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<td>Surfaces for Computer aided Design</td>
<td>5 CR</td>
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</table>

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

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

Content
### 5.84 Module: Team Project Software Development [M-INFO-104809]

**Responsible:** Prof. Dr. Sebastian Abeck  
Prof. Dr. Ralf Reussner

**Organisation:** KIT Department of Informatics  
Part of: Information Systems

<table>
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<th>Credits</th>
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</table>
Module: Telematics [M-INFO-100801]

### Responsible
Prof. Dr. Martina Zitterbart

### Organisation
KIT Department of Informatics

### Part of
Informatics (Compulsory Elective Modules in Informatics)

<table>
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</table>

#### Mandatory

| T-INFO-101338 Telematics | 6 CR | Zitterbart |

#### Competence Certificate
See partial achievement.

#### Prerequisites
See partial achievement.

#### Competence Goal

**Students**

- master protocols, architectures, and methods and algorithms that are used on the Internet for routing and for establishing a reliable end-to-end connection, as well as various media allocation procedures in local networks.
- have an understanding of the systems and the problems that appear in a global, dynamic network as well as the mechanisms used to remedy them.
- are familiar with current developments such as SDN and data center networking.
- know methods to manage and administrate networks.

Students master the basic protocol mechanisms for establishing reliable end-to-end communication. Students have detailed knowledge of the mechanisms used in TCP for congestion and flow control and can discuss the issue of fairness with multiple parallel transport streams. Students can analytically determine the performance of transport protocols and know methods that fulfill special requirements of TCP, such as high data rates and short latencies. Students are familiar with current topics such as problems introduced by utilization of middle boxes in the Internet, the use of TCP in data centers and multipath TCP. Students can use transport protocols in practice.

Students know the functions of routers in the Internet and can reproduce and apply common routing algorithms. Students can reproduce the architecture of a router and know different approaches to buffer placement as well as their advantages and disadvantages.

Students understand the distinction of routing protocols into interior and exterior gateway protocols and have detailed knowledge of the functionality and properties of common protocols such as RIP, OSPF and BGP. The students are familiar with current topics such as SDN.

Students know the function of media allocation and can classify and analytically evaluate media allocation processes. Students have in-depth knowledge of Ethernet and are familiar with various Ethernet forms and their differences, especially current developments such as real-time Ethernet and data center Ethernet. Students can reproduce and apply the spanning tree protocol.

Students can reproduce the technical characteristics of DSL. Students are familiar with the concept of label switching and can compare existing approaches such as MPLS.

#### Content

- Introduction
- End-to-end data transport
- Routing protocols and architectures
- Media allocation
- Bridges
- Data transmission
- Further selected examples
- Network management

#### Workload
180 hrs.
5.86 Module: Theoretical Informatics [M-INFO-101189]

**Responsible:** Prof. Dr. Jörn Müller-Quade
                       Prof. Dr. Dorothea Wagner

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (mandatory)

<table>
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</table>

**Mandatory**

| T-INFO-103235 | Theoretical Foundations of Computer Science | 6 CR | Künemann, Ueckerdt |

**Competence Certificate**

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

**Competence Goal**

The student

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

**Content**

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

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

**Workload**

approx. 210 h
5.87 Module: Topics in Finance I [M-WIWI-101465]

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

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

**Part of:** Economics and Management (Business Administration)

<table>
<thead>
<tr>
<th>Credits</th>
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<td>Each term</td>
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**Compulsory Elective Courses (Election: 9 credits)**

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<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>T-WIWI-102643</td>
<td>Derivatives</td>
<td>4.5 CR</td>
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<tr>
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<tr>
<td>T-WIWI-102626</td>
<td>Business Strategies of Banks</td>
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<tr>
<td>T-WIWI-108711</td>
<td>Basics of German Company Tax Law and Tax Planning</td>
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<tr>
<td>T-WIWI-110511</td>
<td>Strategic Finance and Technology Change</td>
<td>1.5 CR</td>
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</table>

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

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

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

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

**Competence Goal**
The student

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

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

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

**Workload**
The total workload of the module is about 240 hours. The workload is proportional to the credit points of the individual courses.
Module: Topics in Finance II [M-WIWI-101423]

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

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

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Business Administration)

Election notes

This module will not count towards the degree until the module Essentials in Finance has also been successfully completed. The Essentials in Finance module may not be booked out as an additional examination.

Compulsory Elective Courses (Election: 9 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<td>9</td>
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<tr>
<td>T-WIWI-102626</td>
<td>Business Strategies of Banks</td>
<td>3 CR</td>
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<td>4(2)</td>
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<td>T-WIWI-108711</td>
<td>Basics of German Company Tax Law and Tax Planning</td>
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<td>T-WIWI-110511</td>
<td>Strategic Finance and Technology Change</td>
<td>1.5 CR</td>
<td>Each term</td>
<td>4(2)</td>
<td>German/English</td>
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<td>9</td>
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</table>

Compensation Certificate

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

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

Prerequisites

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

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

Competence Goal

The student

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

Content

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

Annotation

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

Workload

The total workload for this module is approximately 270 hours.
<table>
<thead>
<tr>
<th>Credits</th>
<th>Grading scale</th>
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**Mandatory**

| T-INFO-103122 | Web Applications and Service-Oriented Architectures (I) | 4 CR | Abeck |
## 6 Courses

### 6.1 Course: Advanced Lab Informatics (Bachelor) [T-WIWI-110541]

**Responsible:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Economics and Management  
**Part of:**  
- M-WIWI-101438 - Semantic Knowledge Management  
- M-WIWI-101476 - Business Processes and Information Systems

<table>
<thead>
<tr>
<th>Type</th>
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**Events**

<table>
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<tr>
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<th>Description</th>
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<th>Grading</th>
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<tbody>
<tr>
<td>WT 23/24</td>
<td>2512204</td>
<td>Lab Realisation of innovative services (Bachelor)</td>
<td>3</td>
<td>Practical course / Online</td>
<td>Oberweis, Toussaint, Schieber, Schüler</td>
<td></td>
<td></td>
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<tr>
<td>WT 23/24</td>
<td>2512400</td>
<td>Practical Course Sociotechnical Information Systems Development (Bachelor)</td>
<td>3</td>
<td>Practical course / Online</td>
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</tr>
<tr>
<td>WT 23/24</td>
<td>2512402</td>
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<td></td>
<td>Practical course / Online</td>
<td>Sunyaev, Kannengießer, Sturm, Beyene</td>
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<tr>
<td>WT 23/24</td>
<td>2512554</td>
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<td>Practical course / Online</td>
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<td>ST 2024</td>
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<td>Practical course / Cancelled</td>
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**Exams**

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<td>Volkamer</td>
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</tbody>
</table>

**Legend:**  
- Online  
- Blended (On-Site/Online)  
- On-Site  
- Cancelled

**Competence Certificate**  
The alternative exam assessment consists of:  
- a practical work  
- a presentation  
- 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:

Lab Realisation of innovative services (Bachelor)
2512204, WS 23/24, 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.

Advanced Lab Blockchain Hackathon (Bachelor)
2512402, WS 23/24, SWS, Language: German/English, Open in study portal
Practical course (P)
Online
Content
Practical Course (Informatik): Blockchain Hackathon

Bachelor/Master
The practical course "Blockchain Hackathon" aims to teach students the basics of developing socio-technical information systems in the context of blockchain or distributed ledger technology (DLT) in a practical way. For this purpose, students will be introduced to DLT and the development of DLT applications in a kick-off event. Subsequently, students should implement a software artifact (e.g., desktop application, mobile app, or web application) in group work that solves a given problem. Further focuses of the practice course are quality assurance (e.g., by implementing tests) and documentation of the implemented software artifacts.

Educational objectives

- Understanding of the basics of DLT and DLT application development
- Independent and self-organized realization of a software development project
- Use of current development methods
- Selection and evaluation of development tools and methods
- Planning and execution of design, implementation and quality assurance of software artifacts
- Preparation of documentation for a software project
- Preparing and presenting project results in an understandable and structured way

Registration for
Practical Course ("Praktikum")

Registration period
Mo. 10/09/2023 00:00 – Fr. 11/17/2023 23:59

Registration procedure
Manual allocation
The lecturer manually issues acceptances and rejections and assigns topics if necessary.

Restrictions
There are no restrictions on registration.

Topics
Topic assignment will take place after the launch event.

Program
Format: Practical Course

Important: The practical course takes place during the semester break. Please keep the following provisional dates free if you want to participate in the internship

- We., 11/22/2023
  - 09:00 – 10:30: Lecture: The Ethereum Blockchain
  - 10:30 – 11:00: Break
  - 11:00 – 12:30: Lecture: Smart Contract Development
  - 12:30 – 13:00: Break
  - 13:00 – 14:30: Lecture: Presentation of the Topics
  - 14:30 – 15:00: Break
  - 15:00 – 17:00: Lecture: Frontend Integration
- Th., 11/23/2023
  - 09:00 – 09:30: Assignment of the topics
  - 09:30 – 11:00: Set-Up example Docker project
  - 11:00 – 11:30: Q&A
  - From 11:30: Independent treatment of the topics in groups
- Fr., 11/24/2023 until Mo., 02/12/2024
  - Independent work on the topics in groups
- Mo., 01/15/2024
  - 13:30 – 14:30: Interim presentation of developed DLT applications (duration depends on the number of groups)
  - From 14:30: Final discussion and conclusion
- Mo., 02/05/2024
  - 10:00 – 11:00: Final presentation of the developed software artifacts (duration depends on the number of groups)
- Submission of the documentation of the software artifact: Probably on 02/28/2024 (the final date will be announced at the event).

These appointments may still be postponed. Further information on the procedure will be announced on the first appointment. Depending on the number of participants, the individual sessions may have a shorter duration.

Control of Success
The control of success takes place in the form of an examination of a different kind. The following aspects are included in the evaluation:

- The software artifact in terms of functionality, and code quality. Meaningful tests must have been developed to show the functionality.
- A presentation to introduce the software artifact
- The written documentation

The lecturer determines the points scheme for the evaluation. It will be announced at the beginning of the course. The problem to be solved can be worked on together in a group of a maximum of four students. The individual partial performances must be marked.

The documentation (and the presentation) can be done in English or German.

This practical course will be credited as a "Praktikum Informatik".

Recommendations for the Preparation for the cii Blockchain Hackathon

To successfully participate in the cii Blockchain Hackathon, we recommend the following:

- You should have a basic understanding about programming and blockchain technology. You should use a computing device with more than 4 GB RAM and at least 3 GB free storage.
- You should have basic knowledge about React or ReactJS.
- You should be able to use Git and Node Package Manager (NPM).

To practice smart contract programming and prepare yourselves for the hackathon, we offer the following example projects:

- Smart Contract Patterns: https://github.com/KITcii/smart-contract-dev-support
- Example Project in Docker: https://git.scc.kit.edu/tf2000/drizzle-with-events

If you have any questions regarding these applications, please contact niclas.kannengiesser@kit.edu

Praktikum Security, Usability and Society (Bachelor)

2512554, WS 23/24, 3 SWS, Language: German/English, Open in study portal

Practical course (P)
Online
Content
The Praktikum 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 the WiWi portal and send an email with your chosen topic, plus a back-up one, to mattia.mossano@kit.edu. Topics are assigned first-come-first-served until all of them are filled. Topics in italics have already been assigned.

There are two rounds to apply:

Important dates:
- **Kick-off:** 05.10.2023, 09:00 AM CET in Big Blue Button - Link
- Report & code feedback deadline: 01.03.2024, 23:59 CET
- Feedback on Report & code: 08.03.2024, 23:59 CET
- Final report & code deadline: 15.03.2024, 23:59 CET
- Presentation draft deadline: 15.03.2024, 23:59 CET
- Feedback on presentation draft: 19.03.2024, 23:59 CET
- Final presentation deadline: 22.03.2024, 23:59 CET
- **Presentation day:** 29.03.2024, 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](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.
- **Title:** Notes 2.0
- **Number of students:** 1 Bachelor
- **Description:** Update und Vorbereitung zur Veröffentlichung der Notes 2.0-App.

**Designing Security User studies**
These topics are related to how to set up and conduct user studies of various types. Online studies, interviews and lab studies are possible. At the end of the semester, the students present a report / paper and a talk in which they present their methodologies and the results of small pre-studies.
- **Title:** Designing User Studies for Evaluating Biometric Authentication Systems
- **Number of students:** 1 Bachelor or Master level
- **Description:** The proposed topic focuses on designing and implementing a user study methodology to evaluate the usability and user perception of biometric authentication systems. Biometric authentication involves using unique physiological or behavioral characteristics, such as fingerprints, facial recognition, or voice patterns, to verify a user's identity. The goal of this research is to understand the factors that affect the effectiveness and acceptance of biometric authentication and provide insights for designing user-friendly and secure biometric authentication systems.
- **Title:** How useful are security advice given by ChatGPT?
- **Number of students:** 1-2 Bachelor level
- **Description:** ChatGPT is nowadays used for multiple reasons. One of them is to obtain advice on security decision, asking the program how to be best defend oneself. However, what are these advice based on? And more importantly, is the quality of the advice in line with the best practices or are they misleading? The goal of this topic is to design an expert study where various advice given by ChatGPT on security topics (e.g., password policies, phishing, etc.) are compared against the advice of experts. The results then need to be analysed and classified to determine the quality of ChatGPT advice.

**Run Usable Security Studies and Results Analysis**
These topics are related to run and analyse the results of user-studies. Online studies, interviews and lab studies are all possible, depending on the topic. At the end of the semester, the students present a report / paper with the analyses conducted and a talk in which they present the results.
- **Title:** Phishing through homographic attacks in messengers and social networks
- **Number of students:** 1-2 Bachelor or Master level
- **Description:** The task will be to test three types of attacks in messengers and social networks that work in some email clients. First is the link mismatch attack, where the link text differs from the actual link target. Second is an attack in which the actual link target is disguised by URL encoding [https://en.wikipedia.org/wiki/URL_encoding](https://en.wikipedia.org/wiki/URL_encoding), and finally homographic attacks which uses Internationalized Domain Names [https://en.wikipedia.org/wiki/IDN_homograph_attack](https://en.wikipedia.org/wiki/IDN_homograph_attack), in which Latin characters are replaced by characters of a different alphabet in the domain name. The attacks are predefined, so no knowledge of phishing techniques is required.
Title: Usability Study of Mobile Authentication for Elderly Users with Rheumatoid Arthritis (English only)
Number of students: 1 Bachelor or Master level
Description: Authentication is an ever important topic, especially in the mobile context. However, it becomes even more relevant when considering accessibility to it. Nowadays, a common authentication method is using a PIN. Yet, given the low hand mobility of users affected by rheumatoid arthritis, sometimes using PINs can be difficult. In this topic, the student will conduct several sessions of an already designed lab study with various participants using arthritis simulation gloves to evaluate three PIN-pad interfaces aimed at making authentication more accessible. The study will also investigate the preferences of users regarding PIN-pad interfaces through drawings and proposals of changes. The student will then analyse the results through inferential statistics. Depending on the quality of the outcome, the results will then be published in a paper and the student will be added to the authors list.

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).
Content
The Praktikum 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 the WiWi portal and send an email with your chosen topic, plus a back-up one, to mattia.mossano@kit.edu . Topics are assigned first-come-first-served until all of them are filled. Topics in italics have already been assigned.

There are two deadlines:

Important dates:
Kick-off: 05.10.2023, 09:00 AM CET in Big Blue Button - Link
Report & code feedback deadline: 01.03.2024, 23:59 CET
Feedback on Report & code: 08.03.2024, 23:59 CET
Final report & code deadline: 15.03.2024, 23:59 CET
Presentation draft deadline: 15.03.2024, 23:59 CET
Feedback on presentation draft: 19.03.2024, 23:59 CET
Final presentation deadline: 22.03.2024, 23:59 CET
Presentation day: 29.03.2024, 09:00 CET

Topics:
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.
Title: Making e-mails more visible by embedding moving images
Number of students: 1 Master
Description: In case of a security incident, it is necessary to inform the affected persons about their vulnerabilities as soon as possible. Within the context of the INSPECTION project, we are currently informing website owners via e-mail about security related vulnerabilities on their websites. Although e-mails have been shown to be the most cost-efficient means to deliver such information, they have not lead to an appropriate remediation rate. While speaking to the affected website owners we learned that they would appreciate more information, although not being delivered as more text in the e-mail. Also, we learned that most e-mails were not read because they were considered spam. Thus, we need to find a way to make e-mail notifications more effective in raising peoples’ awareness. Videos have been proven effective to raise awareness in the context of IT security. The goal of the project will be, to explore ways to embed videos in an e-mail via HTML (either as gifs or as preview to a YouTube video). The challenge is to make this e-mail readable for different clients and webmail as well as getting it delivered through spam filters.

Designing Security User studies
These topics are related to how to set up and conduct user studies of various types. Online studies, interviews and lab studies are possible. At the end of the semester, the students present a report / paper and a talk in which they present their methodologies and the results of small pre-studies.
Title: Designing User Studies for Evaluating Biometric Authentication Systems
Number of students: 1 Bachelor or Master level
Description: The proposed topic focuses on designing and implementing a user study methodology to evaluate the usability and user perception of biometric authentication systems. Biometric authentication involves using unique physiological or behavioral characteristics, such as fingerprints, facial recognition, or voice patterns, to verify a user’s identity. The goal of this research is to understand the factors that affect the effectiveness and acceptance of biometric authentication and provide insights for designing user-friendly and secure biometric authentication systems.
Title: Can anxiety influence security advice?
Number of students: 1 Master level
Description: Nowadays ChatGPT is used for a multitude of reasons. One is to ask advice on security topics. However, previous research showed that oftentimes ChatGPT creates answers based on previous interactions with it. Therefore, is it possible that also security advice change according to the previous interaction? And if this is the case, can more anxious props lead to completely different results? The student will have to read the previous literature on ChatGPT, find expert advice on security topics and create an experiment to determine if anxiety influenced the advice given by ChatGPT.
Title: Investigating ChatGPT privacy tradeoffs and users perception of them (English only)
Number of students: 1 Master level
Description: As ChatGPT grows in popularity, it becomes increasingly vital to examine the privacy trade-offs associated with its usage. The user's willingness to accept these trade-offs is instrumental in understanding the wider implications of employing AI language models. This topic involves a two-part exploration into the privacy trade-offs of using ChatGPT. Initially, the student will analyse ChatGPT’s Terms and Conditions and conduct a short literature review to identify potential privacy trade-offs. The found trade-offs need to be categorised into a set of trade-offs that will be investigated. Subsequently, the student will design an online user study, incorporating various question types and a deception study, to gauge the willingness of ChatGPT users to accept these trade-offs. Finally, the student will test the designed online user study in the course of small pre-test.

Run Usable Security Studies and Results Analysis
These topics are related to run and analyse the results of user-studies. Online studies, interviews and lab studies are all possible, depending on the topic. At the end of the semester, the students present a report / paper with the analyses conducted and a talk in which they present the results.

Title: Phishing through homographic attacks in messengers and social networks
Number of students: 1-2 Bachelor or Master level
Description: The task will be to test three types of attacks in messengers and social networks that work in some email clients. First is the link mismatch attack, where the link text differs from the actual link target. Second is an attack in which the actual link target is disguised by URL encoding [https://en.wikipedia.org/wiki/URL_encoding], and finally homographic attacks which uses Internationalized Domain Names [https://en.wikipedia.org/wiki/IDN_homograph_attack], in which Latin characters are replaced by characters of a different alphabet in the domain name. The attacks are predefined, so no knowledge of phishing techniques is required.

Title: Usability Study of Mobile Authentication for Elderly Users with Rheumatoid Arthritis (English only)
Number of students: 1 Bachelor or Master level
Description: Authentication is an ever important topic, especially in the mobile context. However, it becomes even more relevant when considering accessibility to it. Nowadays, a common authentication method is using a PIN. Yet, given the low hand mobility of users affected by rheumatoid arthritis, sometimes using PINs can be difficult. In this topic, the student will conduct several sessions of an already designed lab study with various participants using arthritis simulation gloves to evaluate three PIN-pad interfaces aimed at making authentication more accessible. The study will also investigate the preferences of users regarding PIN-pad interfaces through drawings and proposals of changes. The student will then analyse the results through inferential statistics. Depending on the quality of the outcome, the results will then be published in a paper and the student will be added to the authors list.

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Lab Realisation of innovative services (Bachelor)
2512204, SS 2024, 3 SWS, Language: German, Open in study portal
Practical course (P) On-Site

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.

Advanced Lab Development of Sociotechnical Information Systems (Bachelor)
2512400, SS 2024, 3 SWS, Language: German/English, Open in study portal
Practical course (P) Blended (On-Site/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.

Practical lab Security, Usability and Society (Bachelor)
2512554, SS 2024, 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. To reserve a place, please, register on the WiWi portal and send an email with your chosen topic, plus a back-up one, to mattia.mossano@kit.edu before the kick-off. You can find a better description of the topics in ILIAS (link below). Topics are assigned first-come-first-served until all of them are filled. Topics in italics have been already assigned.

ILIAS link: https://ilias.studium.kit.edu/goto.php?target=crs_1792110&client_id=produktiv

Important dates:
Kick-off: 19.04.2022, 9:00-10:00 CET Uhr Microsoft Teams - - Link
Report + code submission: 09.09.2022, 23:59 CET
Presentation deadline: 25.09.2022, 23:59 CET
Presentation day: 28.09.2022, 16:00 CET

Topics:
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.

- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Improving the PassSec+ browser extension by investigating a security vulnerability in Mozilla Firefox Relay
- Development of a tool for the automated search for tweets on the topic of “phishing”
- Hacking TORPEDO
- Restructuring TORPEDO

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.
6 COURSES

6.2 Course: Advanced Lab Realization of Innovative Services (Bachelor) [T-WIWI-112915]

- **Responsible:** Prof. Dr. Andreas Oberweis
- **Organisation:** KIT Department of Economics and Management
- **Part of:** M-WIWI-101476 - Business Processes and Information Systems
- **Type:** Examination of another type
- **Credits:** 4,5
- **Grading scale:** Grade to a third
- **Recurrence:** Each term
- **Version:** 1

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<td>Practical course / 🧩 Oberweis, Toussaint, Schiefer, Schüler</td>
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**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.

**Annotation**
As part of the lab, the participants should work together in small groups to produce innovative services (mainly for students).
Further information can be found on the ILIAS page of the lab.

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

**Lab Realisation of innovative services (Bachelor)**
2512204, WS 23/24, 3 SWS, Language: German, [Open in study portal](#)

**Content**
As part of the lab, the participants should work together in small groups to produce 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.

**Lab Realisation of innovative services (Bachelor)**
2512204, SS 2024, 3 SWS, Language: German, [Open in study portal](#)

**Content**
As part of the lab, the participants should work together in small groups to produce 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.
6.3 Course: Advanced Lab Security [T-WIWI-109786]

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

<table>
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<td>Each winter term</td>
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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.
### 6.4 Course: Advanced Lab Security, Usability and Society [T-WIWI-108439]

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

<table>
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#### Events

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<td>Practical course / 🗣</td>
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#### Exams

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</table>

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 will not be offered in the summer semester 2023.

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

<table>
<thead>
<tr>
<th>Name</th>
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<th>Code</th>
<th>Language</th>
<th>Open in study portal</th>
</tr>
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<tbody>
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<td>Practical course (P)</td>
<td>2512554, WS 23/24, 3 SWS, Language: German/English</td>
<td>Online</td>
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Content
The Praktikum 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 the WiWi portal and send an email with your chosen topic, plus a backup one, to mattia.mossano@kit.edu. Topics are assigned first-come-first-served until all of them are filled. Topics in italics have already been assigned.

There are two rounds to apply:
Summer round closes on 16.07.2023. Assignment will be done by 17.07.2023 and confirmation must be received by 21.07.2023.
Autumn round opens 11.09.2023 and closes on 08.10.2023. Assignment will be done by 09.10.2023 and confirmation must be received by 13.10.2023.

Important dates:
Kick-off: 05.10.2023, 09:00 AM CET in Big Blue Button - Link
Report & code feedback deadline: 01.03.2024, 23:59 CET
Feedback on Report & code: 08.03.2024, 23:59 CET
Final report + code deadline: 15.03.2024, 23:59 CET
Presentation draft deadline: 15.03.2024, 23:59 CET
Feedback on presentation draft: 19.03.2024, 23:59 CET
Final presentation deadline: 22.03.2024, 23:59 CET
Presentation day: 29.03.2024, 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://seusco.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.
Title: Notes 2.0
Number of students: 1 Bachelor
Description: Update und Vorbereitung zur Veröffentlichung der Notes 2.0-App.

Designing Security User studies
These topics are related to how to set up and conduct user studies of various types. Online studies, interviews and lab studies are possible. At the end of the semester, the students present a report / paper and a talk in which they present their methodologies and the results of small pre-studies.
Title: Designing User Studies for Evaluating Biometric Authentication Systems
Number of students: 1 Bachelor or Master level
Description: The proposed topic focuses on designing and implementing a user study methodology to evaluate the usability and user perception of biometric authentication systems. Biometric authentication involves using unique physiological or behavioral characteristics, such as fingerprints, facial recognition, or voice patterns, to verify a user’s identity. The goal of this research is to understand the factors that affect the effectiveness and acceptance of biometric authentication and provide insights for designing user-friendly and secure biometric authentication systems.
Title: How useful are security advice given by ChatGPT?
Number of students: 1-2 Bachelor level
Description: ChatGPT is nowadays used for multiple reasons. One of them is to obtain advice on security decision, asking the program how to be best defend oneself. However, what are these advice based on? And more importantly, is the quality of the advice in line with the best practices or are they misleading? The goal of this topic is to design an expert study where various advice given by ChatGPT on security topics (e.g., password policies, phishing, etc.) are compared against the advice of experts. The results then need to be analysed and classified to determine the quality of ChatGPT advice.

Run Usable Security Studies and Results Analysis
These topics are related to run and analyse the results of user-studies. Online studies, interviews and lab studies are all possible, depending on the topic. At the end of the semester, the students present a report / paper with the analyses conducted and a talk in which they present the results.
Title: Phishing through homographic attacks in messengers and social networks
Number of students: 1-2 Bachelor or Master level
Description: The task will be to test three types of attacks in messengers and social networks that work in some email clients. First is the link mismatch attack, where the link text differs from the actual link target. Second is an attack in which the actual link target is disguised by URL encoding [https://en.wikipedia.org/wiki/URL_encoding], and finally homographic attacks which uses Internationalized Domain Names [https://en.wikipedia.org/wiki/IDN_homograph_attack], in which Latin characters are replaced by characters of a different alphabet in the domain name. The attacks are predefined, so no knowledge of phishing techniques is required.
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Number of students: 1 Bachelor or Master level
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Title: Making e-mails more visible by embedding moving images
Number of students: 1 Master
Description: In case of a security incident, it is necessary to inform the affected persons about their vulnerabilities as soon as possible. Within the context of the INSPECTION project, we are currently informing website owners via e-mail about security related vulnerabilities on their websites. Although e-mails have been shown to be the most cost-efficient means to deliver such information, they have not lead to an appropriate remediation rate. While speaking to the affected website owners, we learned that they would appreciate more information, although not being delivered as more text in the e-mail. Also, we learned that most e-mails were not read because they were considered spam. Thus, we need to find a way to make e-mail notifications more effective in raising people's awareness. Videos have been proven effective to raise awareness in the context of IT security. The goal of the project will be, to explore ways to embed videos in an e-mail via HTML (either as gifs or as preview to a YouTube video). The challenge is to make this e-mail readable for different clients and webmail as well as getting it delivered through spam filters.

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- Restructuring TORPEDO

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

**Responsible:** Prof. Dr. Kay Mitusch

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

**Part of:** M-WIWI-101501 - Economic Theory

<table>
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**Events**

| ST 2024 | 2520527 | Advanced Topics in Economic Theory | 2 SWS | Lecture / 🗣 | Mitusch, Brumm |
| ST 2024 | 2520528 | Übung zu Advanced Topics in Economic Theory | 1 SWS | Practice / 🗣 | Pegorari, Corbo |

**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:

**Advanced Topics in Economic Theory**
2520527, SS 2024, 2 SWS, Language: English, Open in study portal

**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.
6 Course: Algorithms for Planar Graphs [T-INFO-101986]

**Responsible:** Dr. rer. nat. Torsten Ueckerdt

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-101220 - Algorithms for Planar Graphs

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**Events**

| ST 2024 | 24614 | Algorithmen für planare Graphen (mit Übungen) | 3 SWS | Lecture / Practice ( / ) | Ueckerdt, Merker |

**Exams**

| WT 23/24 | 7500227 | Algorithms for Planar Graphs | Ueckerdt |
| WT 23/24 | 7500364 | Algorithms for Planar Graphs | Wagner |

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, 🐠 Cancelled
### 6.7 Course: Algorithms I [T-INFO-100001]

**Responsible:** TT-Prof. Dr. Thomas Bläsius  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-100030 - Algorithms I

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<td>24500</td>
<td>Algorithms I</td>
<td>4 SWS</td>
<td>Lecture / Practice (/) Bläsius, Wilhelm, Yi, von der Heydt</td>
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<td>Bläsius</td>
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<td>ST 2024</td>
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<td>Bläsius</td>
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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🔴 On-Site, ✗ Cancelled
6.8 Course: Algorithms II [T-INFO-102020]

**Responsible:** Prof. Dr. Peter Sanders  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101173 - Algorithms II

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### Events

**Fall 23/24**

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### Exams

**Fall 23/24**

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<td>Sanders</td>
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**Legend:** 🖥 Online, 🕊 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

### Competence Certificate

The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 120 minutes.

### Prerequisites

none.
6.9 Course: Analysis of Multivariate Data [T-WIWI-103063]

**Responsible:** Prof. Dr. Oliver Grothe  
**Organisation:** KIT Department of Economics and Management  
**Part of:**  
- M-WIWI-101599 - Statistics and Econometrics  
- M-WIWI-105414 - Statistics and Econometrics II

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<td>Practice / 🗣</td>
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**Exams**

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<td>7900033</td>
<td>Analysis of Multivariate Data</td>
<td>2 SWS</td>
<td>Grothe</td>
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**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

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

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

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

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**Literature**
Skrift zur Vorlesung
6 COURSES

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

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

**Responsible:** Dr.-Ing. Michael Färber

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

**Part of:** M-WIWI-101438 - Semantic Knowledge Management

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#### Events

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<td>Lecture / 🧩</td>
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#### Exams

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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

**Competence Certificate**

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

**Prerequisites**

None.

**Recommendation**

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

---

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

**Applied Informatics - Applications of Artificial Intelligence**

2511314, WS 23/24, 2 SWS, Language: German, Open in study portal

Lecture (V)  
Blended (On-Site/Online)
Content
The lecture provides insights into the fundamentals of artificial intelligence. Basic methods of artificial intelligence and their applications in industry are presented.

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

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

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

Learning objectives:
The students

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

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

Exercises to Applied Informatics - Applications of Artificial Intelligence
2511315, WS 23/24, 1 SWS, Language: German, Open in study portal

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

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

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

Learning objectives:
The students

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


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

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<tr>
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<td>2511551</td>
<td>Exercise Applied Informatics - Information Security</td>
<td>1 SWS</td>
<td>Practice / 🗣</td>
<td>Volkamer, Berens, Ballreich</td>
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Exams

| WT 23/24 | 79AlFB_IS_A2 | Applied Informatics – Information Security | Volkamer |

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation, for which admission must be obtained through successful participation in the exercise during the semester.

The exam takes place every semester and can be repeated at every regular examination date.

Annotation

Competence Goal

The student

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

Content

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

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

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

Learning objectives:
The student

- can explain the basics of information security
- knows suitable measures to achieve different protection goals
- can assess the quality of organisational protective measures, i.e. among other things knows what has to be taken into account when using the individual measures
- understands the differences between information security in the organisational and in the private context
- knows the areas of application of different standards and knows their weaknesses
- knows and can explain the problems of information security that which arise from human-machine interaction
- is able to deal with messages concerning found security problems in a critical way.

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php.

Literature


Exercise Applied Informatics - Information Security

2511551, SS 2024, 1 SWS, Open in study portal

Content

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php.
6.12 Course: Applied Informatics – Modelling [T-WIWI-110338]

**Responsible:** Prof. Dr. Andreas Oberweis

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

**Part of:** M-WIWI-101430 - Applied Informatics

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<td>Lecture / 🗣</td>
<td>Oberweis, Schiefer, Schüler</td>
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<td>WT 23/24</td>
<td>2511031</td>
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<td>1</td>
<td>Practice / 🗣</td>
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**Exams**

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<td>Applied Informatics – Modelling</td>
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_Ooberweis_

| Legend: 🖥 Online,🧩 Blended (On-Site/Online),🗣 On-Site,🗙 Cancelled |

**Competence Certificate**
The assessment consists of a written examination (60 min) in the first week after lecture period (according to Section 4 (2),1 of the examination regulation).

**Prerequisites**
None

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

**Applied Informatics - Modelling**
2511030, WS 23/24, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**
On-Site

**Content**
In the context of complex information systems, modelling is of central importance, e.g. – in the context of systems to be developed – for a better understanding of their functionality or in the context of existing systems for supporting maintenance and further development.

Modelling, in particular modelling of information systems, forms the core part of this lecture. The lecture is organized in two parts. The first part mainly covers the modelling of static aspects, the second part covers the modelling of dynamic aspects of information systems.

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

**Learning objectives:**
Students

- explain the strengths and weaknesses of various modeling approaches for Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- modelling given situations in propositional and predicate logic and can interpret them,
- analyze various properties in propositional and predicate logic,
- create and evaluate a relational database schema and express queries in relational algebra.

**Workload:**

- Total effort: 120-135 hours
- Presence time: 45 hours
- Self study: 75-90 hours
Content
In the context of complex information systems, modelling is of central importance, e.g. – in the context of systems to be developed – for a better understanding of their functionality or in the context of existing systems for supporting maintenance and further development.

Modelling, in particular modelling of information systems, forms the core part of this lecture. The lecture is organized in two parts. The first part mainly covers the modelling of static aspects, the second part covers the modelling of dynamic aspects of information systems.

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

Learning objectives:
Students
• explain the strengths and weaknesses of various modeling approaches for Information Systems and choose an appropriate method for a given problem,
• create UML models, ER models and Petri nets for given problems,
• modellling given situations in propositional and predicate logic and can interpret them,
• analyze various properties in propositional and predicate logic,
• create and evaluate a relational database schema and express queries in relational algebra.

Workload:
• Total effort: 120-135 hours
• Presence time: 45 hours
• Self study: 75-90 hours

Organizational issues
Bei Bedarf wird ein Tutorium online angeboten.

Literature

**Responsible:** Prof. Dr. Ali Sunyaev  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101430 - Applied Informatics

### Events

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<td>Sunyaev</td>
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<td>Übungen zu Angewandte Informatik - Internet Computing</td>
<td>Practice</td>
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### Exams

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<th>Type</th>
<th>Grade to a third</th>
<th>Recurrence</th>
<th>Version</th>
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#### 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.

Successful participation in the exercise by submitting correct solutions to 50% of the exercises can earn a grade bonus. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

#### Prerequisites
None

#### Recommendation

Knowledge of content of the modules Basic Notions of Computer Science and Algorithms I is expected.

#### Annotation

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

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

**V Applied Informatics - Internet Computing**

2511032, SS 2024, 2 SWS, Language: German, [Open in study portal](#)
Content
The lecture Applied Computer Science - Internet Computing 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.

Literature
Wird in der Vorlesung bekannt gegeben
6.14 Course: Auction & Mechanism Design [T-WIWI-102876]

**Responsible:** Prof. Dr. Nora Szech  
**Organisation:** KIT Department of Economics and Management  
**Part of:**  
- M-WIWI-101499 - Applied Microeconomics  
- M-WIWI-101501 - Economic Theory

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**Exams**

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**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.

A bonus can be earned through successful participation in the exercise. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

**Prerequisites**

None

**Recommendation**

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

**Annotation**

The lecture will be held in English.

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

**Digitale Märkte und Mechanismen**

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Lecture (V)  
On-Site
Content
Many businesses in the digital economy monetize through auctions. For example, every time you use Google, an auction is held in the background. This course develops the basic theory of auctions and mechanism design that is necessary for gaining a deeper understanding of many markets in the digital economy.

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

The students
- learn to analyze strategic behavior in auctions;
- learn to compare auction formats with regard to efficiency and revenue;
- are familiarized with the basic theory of (Bayesian) mechanism design;
- learn to master the revenue equivalence theorem for standard auctions;
- learn to apply mechanism design to one object auctions and bilateral trade.

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.

Through successful participation in the Exercise, students can earn a bonus. If the grade on the written exam is between 4,0 and 1,3 the bonus improves the grade by one step (0.3 or 0.4). Details will be announced during the lecture.

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

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

Literature
6.15 Course: B2B Sales Management [T-WIWI-111367]

**Responsible:** Prof. Dr. Martin Klarmann

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

**Part of:** M-WIWI-101424 - Foundations of Marketing

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**Exams**

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Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The assessment of success takes place through the preparation and presentation of a sales presentation based on a case study (max 30 points) and a written exam with additional aids in the sense of an open book exam (max. 60 points). In total, a maximum of 90 points can be achieved in the course. Further details will be announced during the lecture.

**Prerequisites**

None.

**Annotation**

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

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

**B2B Sales Management**

2572187, WS 23/24, 2 SWS, Language: German, Open in study portal

Lecture (V) On-Site
Content

The event is designed to teach you taking on marketing responsibility in a very special business environment. This involves companies that sell and market their (often technically highly complex) products themselves to other companies, which is referred to as "business-to-business" (B2B) marketing and sales. Since traditional communication instruments (e.g. advertising) often hardly work in this environment and many projects lead to a long-term cooperation between supplier and customer, (personal) sales play a special role in marketing. Therefore, this event introduces marketing in B2B markets on the one hand and deals with questions of sales and distribution on the other hand.

Topics with regard to B2B sales management are:

- Basic aspects of B2B sales and B2B purchasing
- Understanding of marketing challenges in specific B2B business types (commodities, systems, solutions)
- Value pricing and value-based selling
- Organizational buying behavior
- Basics of B2B customer relationship management (e.g. key account management, reference customer management)
- Sales process (lead generation, sales presentations, customer-oriented selling, closing)
- Sales automation

Learning objectives

Students

- Are familiar with marketing and sales peculiarities and challenges in B2B environments
- Are able to identify different B2B business types and their marketing characteristics
- Are familiar with central theories of organizational buying behavior
- Are familiar with central objectives of Customer Relationship Management in B2B environments and are able to implement them with appropriate tools
- Are able to prioritize customers and calculate B2B Customer Lifetime Value
- Know how B2B sales presentations work and have also gained practical experience in this area
- Are able to determine value-based prices

Workload

The total workload for this course is approximately 135.0 hours.
Attendance time: 35.0 hours
Self-study: 100.0 hours

Organization

A detailed schedule will be announced.

Literature

6.16 Course: Bachelor's Thesis [T-INFO-109907]

**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-104875 - Module Bachelor's Thesis

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**Final Thesis**
This course represents a final thesis. The following periods have been supplied:

- **Submission deadline**: 4 months
- **Maximum extension period**: 1 months
- **Correction period**: 6 weeks
### 6.17 Course: Basic Notions of Computer Science [T-INFO-101964]

**Responsible:** Dr. rer. nat. Mattias Ulbrich  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101170 - Basic Notions of Computer Science

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Legend: 🖥 Online, 🏠 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
## Course: Basic Notions of Computer Science Pass [T-INFO-101965]

**Responsible:** Dr. rer. nat. Mattias Ulbrich  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101170 - Basic Notions of Computer Science

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**Legend:** 🖥 Online, 🌈 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
6.19 Course: Basic Practical Course for the ICPC-Programming Contest [T-INFO-101991]

**Responsible:**
- TT-Prof. Dr. Thomas Bläsius
- Miriam Goetze
- Dr. rer. nat. Torsten Ueckerdt
- Michael Zündorf

**Organisation:**
KIT Department of Informatics

**Part of:**
M-INFO-101230 - Basic Practical Course for the ICPC-Programming Contest

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**Events**

| ST 2024 | 24872 | Basispraktikum zum ICPC Programmierwettbewerb | 6 SWS | Practical course / 🗣 | Zündorf, Ueckerdt, Goetze, Bläsius |

Legend: 🖥 Online, ☐ Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
6.20 Course: Basic Principles of Economic Policy [T-WIWI-103213]

**Responsible:** Prof. Dr. Ingrid Ott  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101668 - Economic Policy I

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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 [2610012], and Economics II [2600014].
Annotation
Please note that the lecture will not be held in summer semester 2021. The exam is offered.

Description:
Theory of general economic policy and discussion of current economic policy topics:
- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning objectives:
Students learn:
- To apply basic concepts of micro- and macroeconomic theories to economic policy issues.
- to develop arguments on how state intervention in the market can be legitimized from a welfare economic perspective
- to derive theory-based policy recommendations.

Learning content:
- Market interventions: microeconomic perspective
- Market interventions: macroeconomic perspective
- Institutional economic aspects
- Economic policy and welfare economics
- Economic policy makers: Political-economic aspects

Workload:
- Total effort at 4.5 LP: approx. 135 hours
- Presence time: approx. 30 hours
- Self-study: approx. 105 hours

Media:
See course announcement

References:
See course announcement

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

Exercises of Basic Principles of Economic Policy
2560281, SS 2024, 1 SWS, Language: German, Open in study portal

Organizational issues
Zugehörige Veranstaltung: [2560280] Einführung in die Wirtschaftspolitik

Literature
- Foliensatz zur Vorlesung
- Übungsaufgaben
6.21 Course: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]

**Responsible:** Dr. Gerd Gutekunst  
Prof. Dr. Berthold Wigger

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

**Part of:**  
M-WIWI-101403 - Public Finance  
M-WIWI-101423 - Topics in Finance II  
M-WIWI-101465 - Topics in Finance I

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**Exams**

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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:*

**Basics of German Company Tax Law and Tax Planning**

2560134, WS 23/24, 3 SWS, Language: German, Open in study portal

**Content**

**Workload:**

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

Course: Brand Management [T-WIWI-112156]

6.22 Course: Brand Management [T-WIWI-112156]

**Responsible:** Prof. Dr. Ann-Kristin Kupfer

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

**Part of:** M-WIWI-101424 - Foundations of Marketing

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### Exams

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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗾 On-Site, ✗ Canceled

### Competence Certificate

The assessment of success will be done by the preparation and presentation of a case study as well as a written exam. Further details will be announced during the lecture.

### Prerequisites

None

### Recommendation

Students are highly encouraged to actively participate in class.

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

#### Brand Management

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**Language:** English, [Open in study portal](#)

**Lecture (V) On-Site**

### Content

Students learn the theoretical foundations of brand management and its most important concepts. They learn both about the importance of brands for consumers as well as the importance of brands for firms. Special emphasis will be given to the development of brand strategies. Furthermore, students will learn how to evaluate and apply brand instruments. A tutorial offers the opportunity to apply the key learnings of the lecture using case studies.

The learning objectives are as follows:

- Getting to know the theoretical foundations of brand management
- Evaluating strategic branding options (e.g., relating to the development of the core of the brand and the brand architecture) and operative brand instruments (e.g., relating to the brand name and logo)
- Fostering critical and analytical thinking skills and the application of knowledge to marketing problems
- Improving English skills

### Total time required for 4.5 credit points: approx. 135 hours

- **Attendance time:** 30 hours
- **Self-study:** 105 hours

Information Systems B.Sc.
Module Handbook as of 27/02/2024

150
6.23 Course: Business Process Modelling [T-WIWI-102697]

**Responsible:** Prof. Dr. Andreas Oberweis

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

**Part of:**
- M-WIWI-101438 - Semantic Knowledge Management
- M-WIWI-101476 - Business Processes and Information Systems

<table>
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**Events**

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<th>Business Process Modelling</th>
<th>2 SWS</th>
<th>Lecture / O</th>
<th>Oberweis</th>
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<td>1 SWS</td>
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<td>Oberweis, Schüler</td>
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</table>

**Exams**

| WT 23/24  | 79AIFB_MvG_C2 | Business Process Modelling | Oberweis |

**Competence Certificate**

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**

None

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

**Business Process Modelling**

2511210, WS 23/24, 2 SWS, Language: German, Open in study portal

**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 apply 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 models 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


Weitere Literatur wird in der Vorlesung bekannt gegeben.
6.24 Course: Business Strategies of Banks [T-WIWI-102626]

**Responsible:** Prof. Dr. Wolfgang Müller

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

**Part of:**
- M-WIWI-101423 - Topics in Finance II
- M-WIWI-101465 - Topics in Finance I

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**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.
### 6.25 Course: Civil Law for Beginners [T-INFO-103339]

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<th>Dr. Yvonne Matz</th>
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#### Exams

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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled
6.26 Course: Competition in Networks [T-WIWI-100005]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101668 - Economic Policy I

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<td>Übung zu Wettbewerb in Netzen</td>
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<td>Mitusch</td>
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Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

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 23/24, 2 SWS, Language: German, Open in study portal
Lecture (V) Blended (On-Site/Online)

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.
6.27 Course: Computational Macroeconomics [T-WIWI-112723]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-106472 - Advanced Macroeconomics

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<td>2 SWS</td>
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<td>Übung zu Computational Macroeconomics</td>
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<td>Practice / 🗣️</td>
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Legend: 🖥 Online, ☞ Blended (On-Site/Online), 🗣️ On-Site, ✗ Cancelled

Competence Certificate
The assessment takes place in the form of a written 60 min. examination 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

Annotation
New lecture starting summer semester 2024.
6.28 Course: Computational Risk and Asset Management [T-WIWI-102878]

**Responsible:** Prof. Dr. Maxim Ulrich

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

**Part of:** M-WIWI-103120 - Financial Economics

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<td>Each winter term</td>
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**Competence Certificate**
The module examination takes the form of an alternative exam assessment. The alternative exam assessment consists of a Python-based "Takehome Exam". At the end of the third week of January, the student is given a "Takehome Exam" which he processes and sends back independently within 4 hours using Python. Precise instructions will be announced at the beginning of the course. The alternative exam assessment can be repeated a maximum of once. A timely repeat option takes place at the end of the third week in March of the same year. More detailed instructions will be given at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
Basic knowledge of capital market theory.
<table>
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<th>Course: Computer Architecture [T-INFO-101355]</th>
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<td>Computer Architecture</td>
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**Legend:** 🖥 Online, 🎤 Blended (On-Site/Online), 🗂 On-Site, ✗ Cancelled
6.30 Course: Computer Graphics [T-INFO-101393]

**Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-100856 - Computer Graphics

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| Events | | | |
|WT 23/24| 24081 | Computergrafik | 4 SWS | Lecture / Dachsbacher, Bretl |

| Exams | | | |
|WT 23/24| 7500430 | Computer Graphics | | Dachsbacher |

Legend: 🖥 Online, 🟢 Blended (On-Site/Online), �捍 On-Site, ☑ Cancelled

- **Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher
- **Organisation:** KIT Department of Informatics
- **Part of:** M-INFO-100856 - Computer Graphics

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**Events**

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<td>24083</td>
<td>Übungen zu Computergrafik</td>
<td>Lecture / Practice</td>
<td>Bretl, Dolp, Piochowiak</td>
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<td>Dachsbacher</td>
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<td>7500508</td>
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# 6.32 Course: Computer Organization [T-INFO-103531]

**Responsible:** Prof. Dr. Wolfgang Karl  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-103179 - Computer Organization

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| Events          |          |               |         |         |
|-----------------|----------|---------------|---------|
| WT 23/24        | 24502    | Computer Organization | 3 SWS | Lecture | Henkel, Lehmann |
| WT 23/24        | 24505    | Übungen zu Rechnerorganisation | 2 SWS | Practice | Lehmann |

| Exams           |          |               |         |         |
|-----------------|----------|---------------|---------|
| WT 23/24        | 7500228  | Computer Organization |         | Henkel  |
## 6.33 Course: Consulting in Practice [T-INFO-101975]

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6.34 Course: Consumer Behavior [T-WIWI-106569]

**Responsible:** Prof. Dr. Benjamin Scheibehenne

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

**Part of:** M-WIWI-101424 - Foundations of Marketing

M-WIWI-105981 - Information Systems & Digital Business

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**Exams**

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**Competence Certificate**

The assessment of success takes the form of a presentation (weighting 20%) as part of the exercise and a written examination (90 minutes, weighting 80%).

**Prerequisites**

None.

**Annotation**

For further information, please contact the research group Marketing and Sales (http://marketing.iism.kit.edu/).

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

**Consumer Behavior**

2572174, SS 2024, 3 SWS, Language: English, [Open in study portal](#)
Content

Important information

1. WIWI portal registration is required for the course. The registration will be open in March. Seats are limited to 30;

2. Übung associated with this course is MANDATORY: Students will be asked to do presentations in groups of 3 (introduce and discuss academic papers assigned by the lecturer). This will take place over one day (as a blocked event) during the semester (When and where will be decided at the beginning of the semester). This task will count towards 20% of the final grades of the “Consumer Behavior” class. There will be no weekly or biweekly Übung besides this event.

Goal

The goal of the class is to gain a better understanding of the situational, biological, cognitive, and evolutionary factors that drive consumer behavior. We will address these questions from an interdisciplinary perspective, including relevant theories and empirical research findings from Psychology, Marketing, Cognitive Science, Biology, and Economics.

Description

Consumer decisions are ubiquitous in daily life and they can have long-ranging and important consequences for individual (financial) well-being and health but also for societies and the planet as a whole. To help people making better choices it is important to understand the factors that influence their behavior. Towards this goal, we will explore how consumer behavior is shaped by social influences, situational and cognitive constraints, as well as by emotions, motivations, evolutionary forces, neuronal processes, and individual differences. 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 lecture will be held in English.

Grading

Grading is based on two parts. An oral presentation that takes place in the Übung will count towards 20% of the grade. A written exam at the last day of class will make the rest 80%. The exam will cover the content of the lecture and the literature listed in the required reading list that will be made available to enrolled students on the first day of class. The exam questions will be in English. You are allowed to bring a language dictionary into the exam but you are not allowed to bring notes.

Workload

The total workload for this course is approximately 135 hours.

Presence time: 30 hours

Preparation and wrap-up of the course: 45 hours

Exam and exam preparation: 60 hours

Comment

This lecture features a “double down” format: There will be two lecture sessions in a row during the first half of the semester. Thus, you will be finished with this class after 7 weeks.

Organizational issues

WIWI portal sign up required

Literature

Will be made available to enrolled students on the first day of class.
### 6.35 Course: Curves in CAD [T-INFO-102067]

**Responsible:** Prof. Dr. Hartmut Prautzsch  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101248 - Curves in CAD  

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**Exams**

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<td>7500272</td>
<td>Curves in CAD</td>
<td>Prautzsch</td>
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6.36 Course: Database as a Service [T-INFO-111400]

**Responsible:** Prof. Dr.-Ing. Klemens Böhm

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-105589 - Introduction to Data and Information Management

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**Exams**

| WT 23/24 | 7500309  | Database as a Service | Böhm |
| ST 2024  | 7500056  | Database as a Service | Böhm |

**Prerequisites**

none
### 6.37 Course: Database Systems [T-INFO-101497]

**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-104921 - Database Systems

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*Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣️ On-Site, ❌ Cancelled*
6.38 Course: Decision Theory [T-WIWI-102792]

**Responsible:** Prof. Dr. Karl-Martin Ehrhart

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

**Part of:** M-WIWI-101499 - Applied Microeconomics

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**Competence Certificate**

The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins. The exam is offered each semester.

**Prerequisites**

None

**Recommendation**

Knowledge in mathematics and statistics is required.

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

**Decision Theory**

2520365, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Literature**

- Ehrhart, K.-M. und S.K. Berninghaus (2012): Skript zur Vorlesung Entscheidungstheorie, KIT.
### 6.39 Course: Deployment of Database Systems [T-INFO-101317]

**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-105589 - Introduction to Data and Information Management

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*Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🔴 On-Site, ✗ Cancelled*
6.40 Course: Derivatives [T-WIWI-102643]

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**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination or as an open-book examination (alternative exam assessment).

A bonus can be earned by correctly solving at least 50% of the posed bonus exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

**Prerequisites**
None

**Recommendation**
None

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

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**Literature**


**Weiterführende Literatur:**

6.41 Course: Digital Circuits Design [T-INFO-103469]

**Responsible:** Prof. Dr.-Ing. Uwe Hanebeck

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-102978 - Digital Circuits Design

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**Exams**

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Legend: 🖥 Online, ⚫ Blended (On-Site/Online), 🗣️ On-Site, ✗ Cancelled
**Course: Digital Democracy [T-WIWI-113160]**

**Responsible:** Jonas Fegert  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101434 - eBusiness and Service Management

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Legend: Online, 🗣 Blended (On-Site/Online), 🗣 On-Site, X Cancelled

**Competence Certificate**
Alternative exam assessment. The examination consists of two parts (presentation and oral exam). Details on the design of the exam will be announced at the beginning of the course.

**Annotation**
Limited to 25 students. Application (cover letter) via the Wiwi-portal.

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

**Digital Democracy**  
00052, WS 23/24, 2 SWS, Language: English, Open in study portal  
Lecture (V)  
Blended (On-Site/Online)

**Content**
The "Digital Democracy" Lecture deals with opportunities and challenges of democracy and participation in a digitalized world. Social networks and other platforms have become a central place for human interaction.

These technologies open up many possibilities to connect people, promote societal discourse, and organize social movements. On the other hand, they are also used to undermine democracy by extremist forces.

One example is the spread of disinformation through social media, which can undermine trust in democratic institutions and exacerbate divisions in society. Big tech actors pursue their own economically driven interests, some of which run counter to societal ones.

So to what extent can Internet platforms help strengthen social discourse? And what measures can be taken to promote the quality and diversity of discourse in the digital world? What role do big tech players play in digital democracy and how can their interests be reconciled with democratic principles? These and many more questions will be explored in the lecture. The lecture introduces theoretical foundations and evidence-based research on digital democracy. It will address the following questions: What characterizes deliberative democracies, how do democracies change, and what can damage them? How does social polarization emerge and what drives it - offline and online. Accordingly, different platform types and phenomena of disinformation, such as clickbait, will be presented. The last part of the lecture series will deal with the search for approaches and alternatives to these problems.

**Organizational issues**
Beschränkung auf 25 Plätze mit Bewerbung per kurzem Motivations schreiben (ab Anfang/Mitte September über das Wiki-Portal)
6.43 Course: Digital Games [T-INFO-112750]

Responsible: Prof. Dr. Kathrin Gerling
Organisation: KIT Department of Informatics
Part of: M-INFO-106291 - Digital Games

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Exams

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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
# 6.44 Course: Digital Games Pass [T-INFO-112751]

**Responsible:** Prof. Dr. Kathrin Gerling  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-106291 - Digital Games

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|--------|---|---|
| ST 2024 | 7500295 | Digital Games | Gerling |

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🔴 On-Site, ✗ Cancelled
### Course: Digital Markets and Market Design [T-WIWI-112228]

**Responsible:** Prof. Dr. Adrian Hillenbrand  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101499 - Applied Microeconomics

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

**Prerequisites**
None

**Annotation**
The lecture will be held in English.

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

#### Lecture (V)

**Digital Markets and Market Design**  
2500035, WS 23/24, 2 SWS, Language: English, [Open in study portal](#)  
Lecture (V)  
On-Site

**Content**
Online Markets determine our everyday lives. At the same time rapid technological advancements quickly change the landscape of online markets posing challenges for market design and consumer protection. In this course we apply theoretical economic models in the area of digital markets in order to make sense of current developments. Topics include consumer search, algorithmic pricing, recommender systems and steering, price discrimination and matching markets. We also discuss the potential effects of current policies like the Digital Markets Act and Digital Services Act on market outcomes.

#### Practice (Ü)

**Digital Markets and Market Design**  
2500036, WS 23/24, 1 SWS, Language: English, [Open in study portal](#)  
Practice (Ü)  
On-Site

**Content**
Exercise Session for the course "Digital Markets and Market Design"

**Organizational issues**
Jede zweite Woche eine Übung
Below you will find excerpts from events related to this course:

Digital Services: Foundations  
2595466, SS 2024, 2 SWS, Language: English, Open in study portal  

Content
The world has been moving towards “service-led” economies: In many developed countries, services already account for more than 70% of the gross domestic product. In order to design, engineer, and manage services, traditional “goods-oriented” business models are often inappropriate. At the same time, the rapid development of information and communication technology (ICT) pushes “servitization” and the economic importance of digital services and, therefore, drives competition: Increased interaction and individualization options open up new dimensions of “value co-creation” between providers and customers; dynamic and scalable service value networks replace static value chains; services can instantly be delivered anywhere across the globe.

Building on a systematic categorization of different types of services and on the general notion of “value co-creation”, we cover concepts and foundations for engineering and managing ICT-based digital services, allowing for further specialization in other KSRI/IIISM courses at the Master level. Topics in this course include an introduction to services and human-centered design, as well as an introduction to AI-based services, smart services & IoT, and quantum services. Additionally, essential concepts for the design of AI-based services are covered, such as transparency, fairness, and human-AI complementarity in services. Finally, the lecture provides an outlook on digital services in the context of sustainability. Besides those contents, the lecture entails case studies, hands-on exercises, and guest lectures that will illustrate the relevance of digital services in today’s world.
Literature

### Course: Economics and Behavior [T-WIWI-102892]

**Responsible:** Prof. Dr. Nora Szech  
**Organisation:** KIT Department of Economics and Management  
**Part of:**  
- M-WIWI-101499 - Applied Microeconomics  
- M-WIWI-101501 - Economic Theory  

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**Legend:** 📚 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

#### Competence Certificate

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

#### Prerequisites

None

#### Recommendation

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

#### Annotation

The lecture will be held in English.

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

### Economics and Behavior

**2560137, WS 23/24, 2 SWS, Language: English, Open in study portal**

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

#### Content

The course covers topics from behavioral economics with regard to contents and methods. In addition, the students gain insight into the design of economic experiments. Furthermore, the students will become acquainted with reading and critically evaluating current research papers in the field of behavioral economics.

The students

- gain insight into fundamental topics in behavioral economics;
- get to know different research methods in the field of behavioral economics;
- learn to critically evaluate experimental designs;
- get introduced to current research papers in behavioral economics;
- become acquainted with the technical terminology in English.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. The grade will be determined in a final written exam. Students can earn a bonus to the final grade by successfully participating in the exercises.

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

The lecture will be held in English.

**Recommendations:**

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.
Literature
6.48 Course: Economics I: Microeconomics [T-WIWI-102708]

Responsible: Prof. Dr. Clemens Puppe  
Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101431 - Economics

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Exams

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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation.

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

Prerequisites

None

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

V Economics I: Microeconomics
2610012, WS 23/24, 3 SWS, Language: German, Open in study portal

Lecture (V)
On-Site
The students learn the basic concepts in Microeconomics and some basics in game theory. The student will understand the working of markets in modern economies and the role of decision making. Furthermore, she should be able to understand simple game theoretic argumentation in different fields of Economics.

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

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

In particular, the student should learn:

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

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

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

The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation. The main exam takes place subsequent to the lecture.

The re-examination is offered at the same examination period. Usually, only repeating candidates are entitled for taking place the re-examination. For a detailed description on the exam regulations see the information of the respective chair.

The total workload for this course is approximately 150 hours.

**Literature**

- H. Varian, Grundzüge der Mikroökonomik, 5. Auflage (2001), Oldenburg Verlag
- Pindyck, Robert S./Rubinfeld, Daniel L., Mikroökonomie, 6. Aufl., Pearson. München, 2005
Course: Economics III: Introduction in Econometrics [T-WIWI-102736]

**Responsible:** Prof. Dr. Melanie Schienle

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

**Part of:**
- M-WIWI-101499 - Applied Microeconomics
- M-WIWI-101599 - Statistics and Econometrics

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**Competence Certificate**

Depending on further pandemic developments, the examination will be offered either as a 90-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

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

**Economics III: Introduction to Econometrics**

- **2520016, SS 2024, 2 SWS, Language: German**, Open in study portal
  - Lecture (V)
  - On-Site

**Content**

Learning objectives:

- Familiarity with the basic concepts and methods of econometrics
- Preparation of simple econometric surveys

Content:

- Simple and multiple linear regression (estimating parameters, confidence interval, testing, prognosis, testing assumptions)
- Model assessment

Requirements:

Knowledge of the lectures Statistics I + II is required.

**Workload:**

- Total workload for 5 CP: approx. 150 hours
- Attendance: 30 hours
- Preparation and follow-up: 120 hours

**Literature**

6.50 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-101402 - eFinance  
- M-WIWI-101423 - Topics in Finance II  
- M-WIWI-101434 - eBusiness and Service Management  
- M-WIWI-101465 - Topics in Finance I  
- M-WIWI-105981 - Information Systems & Digital Business

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**Exams**

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**Type**

- Written examination
- Lecture / 🗣
- Practice / 🗣

**Literature**


**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.

**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:**

**eFinance: Information Systems for Securities Trading**  
2540454, WS 23/24, 2 SWS, Language: English, [Open in study portal](#)  
**Lecture (V)**  
On-Site  

**Weiterführende Literatur:**

6.51 Course: Energy Policy [T-WIWI-102607]

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**Type**
- Written examination

**Credits**
- 3.5

**Grading scale**
- Grade to a third

**Recurrence**
- Each summer term

**Version**
- 3

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**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:

**Content**
The availability of cheap, environmentally friendly and secure energy is crucial for human welfare. However, the increasing scarcity of resources and increasing environmental pressures, with a particular focus on climate change, threaten human welfare through economic action. Energy contributes significantly to environmental pollution. The energy industry is characterised by high regulation and a significant influence of political decisions.

At the beginning of the lecture different perspectives on energy policy will be presented and the analysis of political decision-making processes will be discussed. Then the current energy policy challenges in the area of environmental pollution, regulation and the role of energy for households and industry will be discussed. Then the actors of energy policy and energy responsibilities in Europe will be discussed. The economic approaches from traditional environmental economics and sustainability as a new policy approach will then be discussed. Finally, energy policy instruments such as the promotion of renewable energies or energy efficiency are discussed in detail and how they can be evaluated.

The lecture emphasizes the relationship between theory and practice and presents some case studies.

**Literature**
Wird in der Vorlesung bekannt gegeben.
### 6.52 Course: Exercises in Civil Law [T-INFO-102013]

**Responsible:** Dr. Yvonne Matz  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101191 - Commercial Law

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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
### 6.53 Course: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

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

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

**Part of:**
- M-WIWI-101413 - Applications of Operations Research
- M-WIWI-101421 - Supply Chain Management
- M-WIWI-101936 - Methodical Foundations of OR

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#### 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 successful completion of the online assessments.

### Prerequisites

Prerequisite for admission to examination is the successful completion of the online assessments.

### Recommendation

None

### Annotation

The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

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

### Organizational issues

Für die Klausurzulassung müssen 4 von 5 Online-Tests bestanden sein.

Die Zulassung ist ein Jahr gültig, außer es handelt sich um einen Zweitversuch. In diesem Falle müssen die Online-Tests nicht erneut absolviert werden.

### Literature

**Weiterführende Literatur:**

- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
6 COURSES

Course: Financial Accounting for Global Firms [T-WIWI-107505]

6.54 Course: Financial Accounting for Global Firms [T-WIWI-107505]

**Responsible:** Dr. Torsten Luedecke

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

**Part of:**
- M-WIWI-101423 - Topics in Finance II
- M-WIWI-101465 - Topics in Finance I

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**Competence Certificate**

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

**Prerequisites**

None

**Recommendation**

Basic knowledge in corporate finance and accounting.

**Annotation**

New lecture in the winter term 2017/18.

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

**Financial Accounting for Global Firms**

2530242, WS 23/24, 2 SWS, Language: English, [Open in study portal](#)

**Literature**


6.55 Course: Financial Econometrics [T-WIWI-103064]

**Responsible:** Prof. Dr. Melanie Schienle

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

**Part of:**
- M-WIWI-101599 - Statistics and Econometrics
- M-WIWI-105414 - Statistics and Econometrics II

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**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 next lecture will take place in the winter semester 2022/23.

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

**Financial Econometrics I**
2520022, WS 23/24, 2 SWS, Language: English, [Open in study portal]

**Content**

**Learning objectives:**
The student

- shows a broad knowledge of financial econometric estimation and testing techniques
- is able to apply his/her technical knowledge using software in order to critically assess empirical problems

**Content:**
ARMA, ARIMA, ARFIMA, (non)stationarity, causality, cointegration, ARCH/GARCH, stochastic volatility models, computer based exercises

**Requirements:**
It is recommended to attend the course Economics III: Introduction to Econometrics [2520016] prior to this course.

**Workload:**
Total workload for 4.5 CP: approx. 135 hours
Attendance: 30 hours
Preparation and follow-up: 65 hours
Exam preparation: 40 hours
Literature
Additional literature will be discussed in the lecture.
6.56 Course: Financial Econometrics II [T-WIWI-110939]

**Responsible:** Prof. Dr. Melanie Schienle

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

**Part of:**
- M-WIWI-101599 - Statistics and Econometrics
- M-WIWI-105414 - Statistics and Econometrics II

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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled

**Competence Certificate**
Written examination (90 minutes). If the number of participants is low, an oral examination will be held instead.

**Prerequisites**
None

**Recommendation**
Knowledge of the contents covered by the course "Financial Econometrics"

**Annotation**
Course language is English
The next lecture will take place in the summer semester of 2023.
6.57 Course: Financial Intermediation [T-WIWI-102623]

| Responsible: | Prof. Dr. Martin Ruckes |
| Organisation: | KIT Department of Economics and Management |
| Part of: | M-WIWI-101423 - Topics in Finance II  
M-WIWI-101465 - Topics in Finance I |

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Event Details:

**Events**

- **WT 23/24 2530232**
  - Financial Intermediation
  - 2 SWS
  - Lecture / 📚
  - Ruckes

- **WT 23/24 2530233**
  - Übung zu Finanzintermediation
  - 1 SWS
  - Practice
  - Ruckes, Benz

**Exams**

- **WT 23/24 7900063**
  - Financial Intermediation
  - Ruckes

Competence Certificate

The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins. The exam is offered each semester.

Prerequisites

None

Recommendation

None

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

**Financial Intermediation**

- **2530232, WS 23/24, 2 SWS, Language: German**
  - Open in study portal

Organizational Issues

Terminankündigungen des Instituts beachten

Literature

Weiterführende Literatur:

**Course: Financial Management [T-WIWI-102605]**

**Responsible:** Prof. Dr. Martin Ruckes  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101435 - Essentials of Finance

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**Legend:** 🖥 Online, ☑ Blended (On-Site/Online), 🗑 On-Site, ✗ Canceled

**Competence Certificate**  
The assessment consists of a written exam (60 min.) according to Section 4 (2), 1 of the examination regulation. The exam takes place at every semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**  
None

**Recommendation**  
Knowledge of the content of the course Business Administration: Finance and Accounting [25026/25027] is recommended.

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

**Financial Management**

2530216, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Literature**

*Weiterführende Literatur:*

### 6.59 Course: FinTech [T-WIWI-112694]

**Responsible:** TT-Prof. Dr. Julian Thimme  
**Organisation:** KIT Department of Economics and Management  
**Part of:**  
- M-WIWI-101402 - eFinance  
- M-WIWI-101423 - Topics in Finance II  
- M-WIWI-101465 - Topics in Finance I  

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**Competence Certificate**  
Written examination (90 minutes) during the lecture-free period of the semester (according to §4(2), 1 SPO).  
The examination is offered every semester and can be repeated at any regular examination date.

**Prerequisites**  
None

**Recommendation**  
Knowledge of the course Business Administration: Finance and Accounting [25026/25027] is very helpful.
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6.61 Course: Foundations of Interactive Systems [T-WIWI-109816]

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

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

**Part of:**
- M-WIWI-101434 - eBusiness and Service Management
- M-WIWI-102752 - Fundamentals of Digital Service Systems
- M-WIWI-105928 - HR Management & Digital Workplace
- M-WIWI-105981 - Information Systems & Digital Business

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**Competence Certificate**

Alternative exam assessment. The assessment is carried out in the form of a one-hour written examination and by carrying out a Capstone project.

Details on the assessment will be announced during the lecture.

**Prerequisites**

None

**Recommendation**

None

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

**Foundations of Interactive Systems**

2540560, SS 2024, 3 SWS, Language: English, [Open in study portal](#)
Content
Lecture Description

Computers have evolved from batch processors to highly interactive systems. This offers new possibilities besides challenges for designing a successful interaction between humans and computers. Interactive systems are socio-technical systems in which users perform tasks by interacting with technology in a specific context to achieve specified goals and outcomes.

This lecture introduces key concepts and principles of interactive systems from a human and computer perspective. From a human perspective, we discuss selected individual characteristics, cognitive processes, the interplay between cognition and activity, as well as mental models. From a computer perspective, we introduce established interaction technologies as well as contemporary multimodal technologies (e.g., augmented/mixed reality, eye-based interaction, etc.). We also introduce established principles and guidelines for designing user interfaces. Furthermore, we describe the human-centered design process for interactive systems and supporting techniques & tools (e.g., personas, prototyping, user testing).

With this lecture, students acquire foundational knowledge to successfully design the interaction between humans and computers in business and private life. The course is complemented with a Design Capstone Project, where students in a team apply design methods & techniques to create an interactive prototype.

Learning Objectives
The students

- have a basic understanding of key conceptual and theoretical foundations of interactive systems from a human and computer perspective
- are aware of important design principles for the design of important classes of interactive systems
- know design processes and techniques for developing interactive systems
- know how to apply the knowledge and skills gathered in the lecture for a real-world problem (as part of design capstone project)

Prerequisites: No specific prerequisites are required for the lecture

Language of instruction: English

Bibliography


Further literature will be made available in the lecture. In case of questions feel free to approach Moritz Langner (moritz.langner@kit.edu)

Die Erfolgskontrolle erfolgt in Form einer Prüfungsleistung anderer Art (Form) nach § 4 Abs. 2 Nr. 3 SPO. Die Leistungskontrolle erfolgt in Form einer einstündigen Klausur und der Durchführung eines Capstone Projektes. Details zur Ausgestaltung der Erfolgskontrolle werden im Rahmen der Vorlesung bekannt gegeben.
6.62 Course: Foundations of Mobile Business [T-WIWI-104679]

Responsibility: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101476 - Business Processes and Information Systems

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Competence Certificate

The assessment of this course is a written (60 min.) or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites

None

Annotation

Lecture and exercises are integrated.

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

Content

The lecture covers the basics of mobile business with a focus on (information) technical basics. These are interlinked with the economic background in Germany.

Contents are:

1. organizational matters
2. introduction & definitions
3. mobile devices
4. mobile radio technologies
5. mobile communications market
6. mobile applications
7. digital radio technologies
8. location & context

Note: The teaching units listed above each have a different scope.

Learning objectives:

If you are confronted with a question in your job which affects "Mobile Business", you should be able to provide answers quickly and competently:

Market structures
technique
Possibilities for applications
lawsuits
issues

Workload:

The total workload for this course unit is approx. 135 hours (4.5 credit points).
Organizational issues
Vorlesung und Übung werden integriert angeboten.

Literature

  http://www.mi.fu-berlin.de/inf/groups/ag-tech/teaching/resources/Mobile_Communications/course_Material/index.html

- Martin Sauter: Grundkurs Mobile Kommunikationssysteme (6. Aufl. 2015)


Einige relevante Informationen im Web

- Bundesnetzagentur http://www.bundesnetzagentur.de
  u.a. Jahresbericht und Marktbeobachtung

- VATM-Marktstudien
  http://www.vatm.de/vatm-marktstudien.html

- Verbände, bspw. BITKOM (bitkom.org), eco e.V. (eco.de)

- Presse, bspw. Teltarif, Heise, Golem, ...

- Statistiken (Statista Lizenz des KIT)
6.63 Course: Fundamentals of Production Management [T-WIWI-102606]

**Responsible:** Prof. Dr. Frank Schultmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101437 - Industrial Production I

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**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

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

**Fundamentals of Production Management**

2581950, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**Content**

This lecture focuses on strategic production management with respect to various economic aspects. Interdisciplinary approaches of systems theory will be used to describe the challenges of industrial production. This course will emphasize the importance of R&D as the central step in strategic corporate planning to ensure future long-term success. In the field of site selection and planning for firms and factories, attention will be drawn upon individual aspects of existing and greenfield sites as well as existing distribution and supply centres. Students will obtain knowledge in solving internal and external transport and storage problems.

**Organizational issues**

Blockveranstaltung, siehe Institutsaushang

**Literature**

Wird in der Veranstaltung bekannt gegeben.
6.64 Course: Geometric Basics for Geometry Processing [T-INFO-101293]

**Responsible:** Prof. Dr. Hartmut Prautzsch  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-100756 - Geometric Basics for Geometry Processing

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**Responsible:** Prof. Dr. Hartmut Prautzsch

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-100730 - Geometric Optimization
Course: Global Optimization I [T-WIWI-102726]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101413 - Applications of Operations Research
M-WIWI-101936 - Methodical Foundations of OR

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<th>2 SWS</th>
<th>Lecture / 🗣</th>
<th>Stein</th>
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Exams

<table>
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<th>7900004_WS2324_NK</th>
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<th>Stein</th>
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<tr>
<td>ST 2024</td>
<td>7900205_SS2024_HK</td>
<td>Global Optimization I</td>
<td>Stein</td>
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</table>

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Canceled

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:

Global Optimization I
2550134, SS 2024, 2 SWS, Language: German, Open in study portal
Lecture (V)
On-Site
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

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
6.67 Course: Global Optimization I and II [T-WIWI-103638]

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101936 - Methodical Foundations of OR

<table>
<thead>
<tr>
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<td>Each summer term</td>
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**Events**

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<th>Event Description</th>
<th>SWS</th>
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<tbody>
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<td>ST 2024</td>
<td>2550134</td>
<td>Global Optimization I</td>
<td>2</td>
<td>Lecture / 🗣️</td>
<td>Stein</td>
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<tr>
<td>ST 2024</td>
<td>2550135</td>
<td>Exercise to Global Optimization I and II</td>
<td>2</td>
<td>Practice / 🗣️</td>
<td>Stein, Beck</td>
</tr>
<tr>
<td>ST 2024</td>
<td>2550136</td>
<td>Global Optimization II</td>
<td>2</td>
<td>Lecture / 🗣️</td>
<td>Stein</td>
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**Exams**

<table>
<thead>
<tr>
<th>Semester</th>
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<th>Exam Description</th>
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<tbody>
<tr>
<td>WT 23/24</td>
<td>7900006_WS2324_NK</td>
<td>Global Optimization I and II</td>
<td>Stein</td>
</tr>
<tr>
<td>ST 2024</td>
<td>7900207_SS2024_HK</td>
<td>Global Optimization I and II</td>
<td>Stein</td>
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</tbody>
</table>

**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:**

**Global Optimization I**

2550134, SS 2024, 2 SWS, Language: German, [Open in study portal](#)
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

Weiterführende Literatur:
- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000

Global Optimization II
2550136, SS 2024, 2 SWS, Language: German, Open in study portal

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.
Literatur

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
6 COURSES

6.68 Course: Global Optimization II [T-WIWI-102727]

**Responsible:** Prof. Dr. Oliver Stein

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

**Part of:** M-WIWI-101936 - Methodical Foundations of OR

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<thead>
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<th>Version</th>
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<td>Each summer term</td>
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**Events**

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<th>Type</th>
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<td>ST 2024</td>
<td>2550136</td>
<td>Global Optimization II</td>
<td>2</td>
<td>Lecture</td>
<td>Stein</td>
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</table>

**Exams**

<table>
<thead>
<tr>
<th>Event</th>
<th>Code</th>
<th>Title</th>
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<td>7900005_WS2324_NK</td>
<td>Global Optimization II</td>
<td>2</td>
<td>Lecture</td>
<td>Stein</td>
</tr>
<tr>
<td>ST 2024</td>
<td>7900206_SS2024_HK</td>
<td>Global Optimization II</td>
<td>2</td>
<td>Lecture</td>
<td>Stein</td>
</tr>
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</table>

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:*

<table>
<thead>
<tr>
<th>Event</th>
<th>Code</th>
<th>Title</th>
<th>SWS</th>
<th>Type</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>Global Optimization II</td>
<td>2550136, SS 2024, 2 SWS, Language: German, Open in study portal</td>
<td>2</td>
<td>Lecture</td>
<td>On-Site</td>
</tr>
</tbody>
</table>
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

Weiterführende Literatur:

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
Course: Human Resource Management [T-WIWI-102909]

**Responsible:** Prof. Dr. Petra Nieken

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

**Part of:**
- M-WIWI-101513 - Human Resources and Organizations
- M-WIWI-105928 - HR Management & Digital Workplace

<table>
<thead>
<tr>
<th>Type</th>
<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
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<td>Grade to a third</td>
<td>Each winter term</td>
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**Events**

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<th>WT 23/24</th>
<th>2573005</th>
<th>Human Resource Management</th>
<th>2 SWS</th>
<th>Lecture / 🗣</th>
<th>Nieken</th>
</tr>
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<tbody>
<tr>
<td>WT 23/24</td>
<td>2573006</td>
<td>Übung zu Human Resource Management</td>
<td>1 SWS</td>
<td>Practice / 🗣</td>
<td>Nieken, Mitarbeiter, Walther</td>
</tr>
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</table>

**Exams**

<table>
<thead>
<tr>
<th>ST 2024</th>
<th>7900134</th>
<th>Human Resource Management</th>
<th>Nieken</th>
</tr>
</thead>
</table>

**Competence Certificate**

The assessment of this course is a written examination of 1 hour. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. In case of a small number of registrations, we might offer an oral exam instead of a written exam.

**Prerequisites**
None

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

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

**Human Resource Management**
2573005, WS 23/24, 2 SWS, Language: German, **Open in study portal**
Content
The students acquire basic knowledge in the fields of human resource planning, selection and talent management. Different processes and instruments and their link to corporate strategy are evaluated based on microeconomic and behavioral approaches. The results are tested and discussed based on empirical data.

Aim
The student
- understands the processes and instruments of human resource management.
- analyzes different methods of human resource planning and selection and evaluates their usefulness.
- analyzes different processes of talent management and evaluates the strengths and weaknesses.
- understands the challenges of human resource management and its link to corporate strategy.

Workload
The total workload for this course is approximately 135 hours.
Lecture: 32 hours
Preparation of lecture: 52 hours
Exam preparation: 51 hours

Literature
- Personnel Economics in Practice, Lazear & Gibbs, John Wiley & Sons, 2014
- Strategic Human Resources. Frameworks for General Managers, Baron & Kreps, John Wiley & Sons, 1999
## 6.70 Course: Human-Machine-Interaction [T-INFO-101266]

**Responsible:** Prof. Dr.-Ing. Michael Beigl  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INF0-100729 - Human Computer Interaction

<table>
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### Events

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<th>24659</th>
<th>Human-Computer-Interaction</th>
<th>2 SWS</th>
<th>Lecture / Online</th>
<th>Beigl, Lee</th>
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### Exams

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<th>Beigl</th>
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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🔴 On-Site, ✗ Cancelled

**Responsible:** Prof. Dr.-Ing. Michael Beigl

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-100729 - Human Computer Interaction

<table>
<thead>
<tr>
<th>Type</th>
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**Events**

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<th>Code</th>
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<th>Credits</th>
<th>Type</th>
<th>Lecture</th>
<th>Tutor</th>
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<tr>
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<td>Human-Computer-Interaction</td>
<td>1 SWS</td>
<td>Practice</td>
<td>Beigl, Lee</td>
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<td>ST 2024</td>
<td>24659</td>
<td>Human-Computer-Interaction</td>
<td>2 SWS</td>
<td>Lecture</td>
<td>Beigl, Lee</td>
<td></td>
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</table>

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, 🗑 Cancelled
6 COURSES

Course: Industrial Organization [T-WIWI-102844]

Responsibility: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101499 - Applied Microeconomics
M-WIWI-101501 - Economic Theory

Type: Written examination
Credits: 4.5
Grading scale: Grade to a third
Recurrence: Irregular
Version: 1

Events

| ST 2024  | 2560238 | Industrial Organization | 2 SWS | Lecture / 🗣 | Reiß |
| ST 2024  | 2560239 | Übung zu Industrieökonomie | 1 SWS | Practice / 🗣 | Reiß, Potarca |

Exams

| WT 23/24 | 7910003 | Industrial Organization | | | Reiß |

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
Completion of the module Economics [WW1VWL] is assumed.

Annotation
This course is not given in summer 2017.

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

Industrial Organization
2560238, SS 2024, 2 SWS, Language: German, Open in study portal

Literature
Verpflichtende Literatur:

Ergänzende Literatur:
Course: Information Security [T-INFO-112195]

**Responsible:** Prof. Dr. Jörn Müller-Quade

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-106015 - Information Security

<table>
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<th>Type</th>
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<td>Grade to a third</td>
<td>Each summer term</td>
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**Events**

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<tr>
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<th>Code</th>
<th>Lecture</th>
<th>Practice</th>
<th>Professors</th>
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<td>2400199</td>
<td>Informationssicherheit</td>
<td>3 SWS</td>
<td>Lecture / Practice (Müller-Quade, Strufe, Wressnegger, Schadt)</td>
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**Exams**

<table>
<thead>
<tr>
<th>Event</th>
<th>Code</th>
<th>Lecture</th>
<th>Practice</th>
<th>Professors</th>
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</thead>
<tbody>
<tr>
<td>WT 23/24</td>
<td>7500003</td>
<td>Information Security</td>
<td></td>
<td>Wressnegger, Müller-Quade, Strufe</td>
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</table>
6 COURSES

Course: Information Systems 1 [T-WIWI-109817]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-104820 - Information Systems I
M-WIWI-104843 - Orientation Exam

<table>
<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
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<td>Each winter term</td>
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Events

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<tr>
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<th>Tutorial ( / 📲)</th>
<th>Mädche, Abeck</th>
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<tr>
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<td>Information Systems I</td>
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Exams

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<th>WT 23/24</th>
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<tbody>
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<td>7900279</td>
<td>Information Systems 1</td>
<td>Mädche</td>
</tr>
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</table>

Legend: 🖥 Online, 📲 Blended (On-Site/Online), 🗣 On-Site, ✗ Canceled

Competence Certificate
The assessment is monitored in the form of a written test (60 minutes) at the end of the lecture period. By successful processing the exercises a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites
None

Recommendation
None

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

Information Systems I
2540425, WS 23/24, 2 SWS, Language: German, Open in study portal

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

Content
In the lecture Information Systems I of the module central basics of information systems are introduced as a scientific discipline. For this purpose, the objects of knowledge, basic terms, scientific character and goals as well as methods in science and practice of information systems are introduced. Concepts, methods and theories as well as systems and their technical design are discussed along the analysis units individual, group, organization and market. The lecture focuses on the analysis units individual and group.

Learning objectives:
The students
- can describe the subject area of the discipline information systems in science and practice
- know the central terms as well as goals, core tasks and objects of knowledge of information systems
- understand the interplay of subject area, method and theory in information systems
- can define the central analysis units individual, group, organization and market and obtain a basic understanding of the targeted use of information systems and infrastructures
- develop an understanding of the importance of interdisciplinary, systemic thinking and develop in a team a solution to a real social problem

Workload:
Total effort for 4 credit points: approx. 120 hours. Presence time: 40 hours Preparation/postprocessing: 40 hours Examination and exam preparation: 40 hours
6.75 Course: Information Systems 2 [T-WIWI-109818]

Responsibility:
- Prof. Dr. Alexander Mädche
- Prof. Dr. Christof Weinhardt

Organization:
- KIT Department of Economics and Management

Part of:
- M-WIWI-104821 - Information Systems II

<table>
<thead>
<tr>
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<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
<th>Version</th>
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<tbody>
<tr>
<td>Written examination</td>
<td>4</td>
<td>Grade to a third</td>
<td>Each summer term</td>
<td>1</td>
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</table>

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None

Recommendation
None

Annotation
New course starting summer term 2020.

Events

<table>
<thead>
<tr>
<th>Events</th>
<th>Type</th>
<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
<th>Version</th>
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<tbody>
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Exams

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Legend: 🖥 Online, 📘 Blended (On-Site/Online), 🗣 On-Site, ❌ Canceled
### Course: Intellectual Property and Data Protection [T-INFO-109840]

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101253 - Intellectual Property and Data Protection

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*Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled*
6.77 Course: International Finance [T-WIWI-102646]

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

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

**Part of:**
- M-WIWI-101402 - eFinance
- M-WIWI-101423 - Topics in Finance II
- M-WIWI-101465 - Topics in Finance I

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**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:_

**Organizational issues**

Kickoff am Mittwoch, 24.04.24, 15:45 - 19:00 Uhr im Raum 320 im Geb. 09.21 (Blücherstr. 17). Die Veranstaltung wird samstags als Blockveranstaltung angeboten, nach dem Kickoff nach Absprache.

**Literature**

Weiterführende Literatur:
### 6.78 Course: Introduction in Computer Networks [T-INFO-102015]

**Responsible:** Prof. Dr. Martina Zitterbart  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-103455 - Introduction in Computer Networks

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#### Exams

| WT 23/24 | 7500201 | Introduction to Computer Networking | Zitterbart |

Legend: 🖥 Online, 🚪 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
6.79 Course: Introduction to Artificial Intelligence [T-INFO-112194]

- **Responsible:** TT-Prof. Dr. Pascal Friederich
  Prof. Dr. Gerhard Neumann
- **Organisation:** KIT Department of Informatics
- **Part of:** M-INFO-106014 - Introduction to Artificial Intelligence

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**Exams**

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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
6.80 Course: Introduction to Energy Economics [T-WIWI-102746]

- **Responsible:** Prof. Dr. Wolf Fichtner
- **Organisation:** KIT Department of Economics and Management
- **Part of:** M-WIWI-101464 - Energy Economics

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**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.

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

---

**Content**

1. Introduction: terms, units, conversions
2. The energy carrier gas (reserves, resources, technologies)
3. The energy carrier oil (reserves, resources, technologies)
4. The energy carrier hard coal (reserves, resources, technologies)
5. The energy carrier lignite (reserves, resources, technologies)
6. The energy carrier uranium (reserves, resources, technologies)
7. The final carrier source electricity
8. The final carrier source heat
9. Other final energy carriers (cooling energy, hydrogen, compressed air)

The student is able to
- characterize and judge the different energy carriers and their peculiarities,
- understand contexts related to energy economics.

**Literature**

Weiterführende Literatur:
- Feess, Eberhard. Umweltökonomie und Umweltpolitik. ISBN 3-8006-2187-8

---
6.81 Course: Introduction to Finance and Accounting [T-WIWI-112820]

**Responsible:**
- Dr. Torsten Luedecke
- Prof. Dr. Martin Ruckes
- Dr. Jan-Oliver Strych
- Prof. Dr. Marliese Uhrig-Homburg
- Prof. Dr. Marcus Wouters

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

**Part of:**
M-WIWI-105267 - Business Administration

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**Exams**

- **WT 23/24**
  - 7900005 Financing and Accounting
  - Ruckes, Wouters, Luedecke

- **ST 2024**
  - 7900043 Financing and Accounting
  - Ruckes, Wouters, Luedecke

**Competence Certificate**

Written Exam. The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.
6 COURSES

Course: Introduction to Game Theory [T-WIWI-102850]

6.82 Course: Introduction to Game Theory [T-WIWI-102850]

**Responsible:** Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

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

**Part of:**
- M-WIWI-101499 - Applied Microeconomics
- M-WIWI-101501 - Economic Theory

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**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 exam takes place in the recess period and can be repeated at every ordinary examination date.

**Recommendation**
Knowledge from the lecture "Economics I: Microeconomics" is recommended. Furthermore, basic knowledge of mathematics and statistics is assumed.

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

**V Introduction to Game Theory**
2520525, SS 2024, 2 SWS, Language: German, [Open in study portal]

**Content**
The course focuses on non-cooperative game theory. It discusses models, solution concepts, and applications for simultaneous games as well as sequential games. Various solution concepts, e.g., Nash equilibrium and subgame-perfect equilibrium, are introduced along with more advanced concepts.
The assessment consists of a written exam (60 minutes) according to Section 4(2),1 of the examination regulation.
The exam takes place in the recess period and can be resited at every ordinary examination date.
Recommendation: You should have passed the module [M-WIWI-101398] Introduction to Economics.

**Recommendations:**
Basic knowledge of mathematics and statistics is assumed.
This course offers an introduction to the theoretical analysis of strategic interaction situations. At the end of the course, students shall be able to analyze situations of strategic interaction systematically and to use game theory to predict outcomes and give advice in applied economics settings.

**Compulsory textbook:**

**Additional Literature:**
Literature

**Verpflichtende Literatur:**

**Ergänzende Literatur:**
6.83 Course: Introduction to Machine Learning [T-WIWI-111028]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
Dr. Abdolreza Nazemi

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

**Part of:** M-WIWI-105482 - Machine Learning and Data Science

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**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-point-steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.

A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

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

**Introduction to Machine Learning**

2540539, WS 23/24, 2 SWS, Language: English, Open in study portal

**Content**

- Introduction
- Data Cleaning
- Data Visualization
- Linear Regression
- Logistic Regression
- Tree-based Algorithms
- Support Vector Machine
- Shrinkage Models
- Dimensionality Reduction
- Clustering

**Literature**

- James, G., Witten, D., Hastie, T., and R. Tibshirani (2013). *An Introduction to Statistical Learning: with Applications in R*. Springer.
6.84 Course: Introduction to Neural Networks and Genetic Algorithms [T-WIWI-111029]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-105482 - Machine Learning and Data Science

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**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-point-steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.  
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

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

**Content**  
The course consists of a short introduction and two parts:

1. In the introduction, the biological mechanisms of neural and genetic methods are presented. Furthermore, a common framework for the learning performance evaluation of these methods in applications is introduced.  
2. In the field of genetic methods, simple genetic algorithms and their variants are introduced, analyzed, and applied.  
3. In the area of neural methods, the basic algorithms are presented (e.g., backpropagation) as well as their applications in data science.

**Learning Objectives:**  
The student knows the essential algorithms, learning procedures, and methods for neural networks and genetic algorithms. They can apply these methods (e.g. in R) and evaluate their quality.

**Literature**

6.85 Course: Introduction to Operations Research I and II [T-WIWI-102758]

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

**Organisation:**
KIT Department of Economics and Management  
**Part of:** M-WIWI-101418 - Introduction to Operations Research

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<td>2 SWS</td>
<td>Nickel</td>
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<td>Tutorial (🗣)</td>
<td>2 SWS</td>
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**Exams**

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<tr>
<td>7900209</td>
<td>Introduction to Operations Research I and II</td>
<td></td>
<td>Rebennack</td>
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**Competence Certificate**
The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.  
In each term (usually in March and August), one examination is held for both courses.  
The overall grade of the module is the grade of the written examination.

**Prerequisites**
None

**Recommendation**
Knowledge of Mathematics I and II is recommended, as well as programming knowledge for the software laboratory. It is strongly recommended to attend the course Introduction to Operations Research I [2550040] before attending the course Introduction to Operations Research II [2530043].

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

**Introduction to Operations Research II**

2530043, WS 23/24, 2 SWS, Open in study portal

Lecture (V)  
Blended (On-Site/Online)
Content
Integer and combinatorial optimization: basic concepts, cutting plane methods, branch-and-bound methods, branch-and-cut methods, heuristic methods.
Nonlinear optimization: basic concepts, optimality conditions, solution methods for convex and nonconvex optimization problems.
Dynamic and stochastic models and methods: Dynamic optimization, Bellman methods, lot-sizing models and dynamic and stochastic models of inventory, queues.

Learning Objectives:
The student
- knows and describes the basic concepts of integer and combinatorial optimization, nonlinear optimization and dynamic optimization,
- knows the methods and models indispensable for a quantitative analysis,
- models and classifies optimization problems and selects appropriate solution procedures to solve simple optimization problems independently,
- validates, illustrates and interprets obtained solutions.

Literature

Introduction to Operations Research I
2550040, SS 2024, 2 SWS, Language: German, Open in study portal

Content
Examples for typical OR problems.
Linear Programming: Basic notions, simplex method, duality, special versions of the simplex method (dual simplex method, three phase method), sensitivity analysis, parametric optimization, game theory.
Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal and minimal cost flows in networks.

Learning objectives:
The student
- names and describes basic notions of linear programming as well as graphs and networks,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve optimization problems independently,
- validates, illustrates and interprets the obtained solutions.

Literature
### Course: Introduction to Public Finance [T-WIWI-102877]

**Responsible:** Prof. Dr. Berthold Wigger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101403 - Public Finance

<table>
<thead>
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<th>Recurrence</th>
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<td>Introduction to Public Finance</td>
<td>Lecture</td>
<td>3 SWS</td>
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<td>Wigger</td>
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<td>790fiwi</td>
<td>Introduction to Public Finance</td>
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**Exams**

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<th>Responsible</th>
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<tr>
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<td>Introduction to Public Finance</td>
<td>Lecture</td>
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<tr>
<td>ST 2024</td>
<td>790fiwi</td>
<td>Introduction to Public Finance</td>
<td>Lecture</td>
<td>Wigger</td>
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</table>

**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

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

### Introduction to Public Finance

**Course Details:** 2560131, WS 23/24, 3 SWS, Language: German, Open in study portal

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

### Content

The course *Introduction to Public Finance* provides an overview of the fundamental issues in public economics. The first part of the course deals with normative theories about the economic role of the state in a market economy. Welfare economics theory is offered as a base model, with which alternative normative theories are compared and contrasted. Within this theoretical framework, arguments concerning efficiency and equity are developed as justification for varying degrees of economic intervention by the state. The second part of the course deals with the positivist theory of public economics. Processes of public decision making are examined and the conditions that lead to market failures resulting from collective action problems are discussed. The third part of the course examines a variety of public spending programs, including social security systems, the public education system, and programs aimed at reducing poverty. The fifth part of the course addresses the key theoretical and political issues associated with fiscal federalism.

### Learning goals:

Students are able to:

- critically assess the economic role of the state in a market economy
- explain and discuss key concepts in public finance, including: public goods; economic externalities; and market failure
- explain and critically discuss competing theoretical approaches to public finance, including welfare economics and public choice theory
- explain the theory of bureaucracy according to Weber and critically assess its strengths and weaknesses
- evaluate the incentives inherent in the bureaucratic model, as well as the more recent introduction of market-oriented incentives associated with public-sector reform

### Workload:

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

### Organizational issues

Die Vorlesung wird im WS 23/24 in Hybrid-Modus angeboten: in der ersten Vorlesungswoche sowie im zweiwöchigen Rhythmus danach findet sie in Präsenz im entsprechend angegebenen Vorlesungsraum statt; in der zweiten Vorlesungswoche sowie alle zwei Wochen danach findet sie online über im ILIAS-Kurs angegebenen Zoom-Vorlesungsraum statt.
Literature

6.87 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

**Responsible:** Prof. Dr. Steffen Rebennack  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-103278 - Optimization under Uncertainty

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**Exams**

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**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 semester.

**Prerequisites**
None.
6.88 Course: Investments [T-WIWI-102604]

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101435 - Essentials of Finance

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**Exams**

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<td>Practice / 🗣️</td>
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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 or as an open-book examination (alternative exam assessment).

A bonus can be earned by correctly solving at least 50% of the posed bonus exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

**Prerequisites**

None

**Recommendation**

Knowledge of Business Administration: Finance and Accounting [2610026] is recommended.

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

**Investments**

2530575, SS 2024, 2 SWS, Language: German. [Open in study portal]

**Literature**

**Weiterführende Literatur:**

## 6.89 Course: Lab Protocol Engineering [T-INFO-102066]

**Responsible:** Prof. Dr. Martina Zitterbart  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101247 - Lab Protocol Engineering

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### Events

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### Exams

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6.90 Course: Lab: Working with Database Systems [T-INFO-103552]

**Responsible:** Prof. Dr.-Ing. Klemens Böhm

**Organisation:** KIT Department of Informatics

**Part of:**
- M-INFO-101865 - Lab: Working with Database Systems
- M-INFO-105589 - Introduction to Data and Information Management

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<td>WT 23/24</td>
<td>24317</td>
<td>Arbeiten mit Datenbanksystemen</td>
<td>2 SWS</td>
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**Exams**

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<td>7500146</td>
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Legend: 🖥 Online, 📦 Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled
6.91 Course: Logistics and Supply Chain Management [T-WIWI-102870]

**Responsible:** Prof. Dr. Frank Schultmann

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

**Part of:** M-WIWI-101437 - Industrial Production I

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<td>2 SWS</td>
<td>Lecture / 🗣</td>
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<td>Grade to a third</td>
<td>Each summer term</td>
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<td>On-Site</td>
<td>Schultmann, Rosenberg</td>
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**Exams**

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<th>Credits</th>
<th>Grading scale</th>
<th>Recurrence</th>
<th>Version</th>
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<tbody>
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<td>7981996</td>
<td>Logistics and Supply Chain Management</td>
<td>2 SWS</td>
<td>Lecture / 🗣</td>
<td>Schultmann, Rosenberg</td>
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**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).

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

**Logistics and Supply Chain Management**

<table>
<thead>
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<th>Code</th>
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<td>2581996</td>
<td>2 SWS</td>
<td>English</td>
<td>Lecture (V)</td>
<td>On-Site</td>
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</tr>
</tbody>
</table>

**Content**

Students are introduced to the methods and tools of logistics and supply chain management. They learn the key terms and components of supply chains together with key economic trade-offs. In detail, students gain knowledge of decisions in supply chain management, such as facility location, supply chain planning, inventory management, pricing and supply chain cooperation. In this manner, students will gain knowledge in analyzing, designing and steering of decisions in the domain of logistics and supply chain management.

- Introduction: Basic terms and concepts
- Facility location and network optimization
- Supply chain planning I: flexibility
- Supply chain planning II: forecasting
- Inventory management & pricing
- Supply chain coordination I: the Bullwhip-effect
- Supply chain coordination II: double marginalization
- Supply chain risk management

**Literature**

Wird in der Veranstaltung bekannt gegeben.
6.92 Course: Macroeconomic Theory [T-WIWI-109121]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101501 - Economic Theory
          M-WIWI-101668 - Economic Policy I
          M-WIWI-106472 - Advanced Macroeconomics

<table>
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<tbody>
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<td>4.5</td>
<td>Grade to a third</td>
<td>Each winter term</td>
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Events

WT 23/24 2560404 Macroeconomic Theory 2 SWS Lecture / On-Site Brumm, Krause
WT 23/24 2560405 Übung zu Macroeconomic Theory 1 SWS Practice / On-Site Pegorari

Exams

WT 23/24 7900264 Macroeconomic Theory 1 SWS Brumm

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ☠ Cancelled

Competence Certificate
The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites
None.

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

Macroeconomic Theory
2560404, WS 23/24, 2 SWS, Language: English, Open in study portal

Content
This course introduces a modern approach to macroeconomics by building on microeconomic principles. To be able to rigorously address key macroeconomic questions a general framework based on intertemporal decision making is introduced. Starting by the principles of consumer and firm behavior, this framework is successively expanded by introducing market imperfections, monetary factors as well as international trade. With this framework at hand students are able to analyze labor market policies, government deficits, monetary policy, trade policy, and other important macroeconomic problems. Throughout the course, we not only point out the power of theory but also its limitations.

Literature
Literatur und Skripte werden in der Veranstaltung angegeben.
6.93 Course: Macro-Finance [T-WWI-106194]

Responsible: Prof. Dr. Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: M-WWI-103120 - Financial Economics

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<tbody>
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<td>Each winter term</td>
<td>2</td>
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</table>

Competence Certificate
The grade is based on an exam. The exam covers all the material that is taught in the current semester. The exam takes place in the last week of the lecture-free period. Students who fail the exam are allowed to retake it in the following semester (last week of the respective lecture-free period).

Prerequisites
None.

Recommendation
None.
### 6.94 Course: Management and Marketing [T-WIWI-111594]

**Responsible:** Prof. Dr. Martin Klarmann  
Prof. Dr. Hagen Lindstädt  
Prof. Dr. Petra Nieken  
Prof. Dr. Orestis Terzidis

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

**Part of:** M-WIWI-105267 - Business Administration

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#### Events

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<th>Recurrence</th>
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<td>Lecture / 🗣️</td>
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<td>WT 23/24</td>
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#### Exams

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<tbody>
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<td>Management and Marketing</td>
<td>2 SWS</td>
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<td>Nieken, Terzidis, Klarmann</td>
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<td>ST 2024</td>
<td>Management and Marketing</td>
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<td>Nieken, Terzidis, Klarmann</td>
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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣️ On-Site, ❌ Cancelled

**Competence Certificate**

Written exam on the two courses "Management" and "Marketing". The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

**Prerequisites**

None

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

#### Marketing

<table>
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**Literature**

Ausführliche Literaturhinweise werden in den Materialien zur Vorlesung gegeben.
### 6.95 Course: Managing Organizations [T-WIWI-102630]

**Responsible:** Prof. Dr. Hagen Lindstädt  
**Organisation:** KIT Department of Economics and Management  
**Part of:**  
- M-WIWI-101425 - Strategy and Organization  
- M-WIWI-101513 - Human Resources and Organizations

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<th>Recurrence</th>
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**Exams**

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<th>Recurrence</th>
<th>Version</th>
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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled

**Competence Certificate**

The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**

None

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

<table>
<thead>
<tr>
<th>Lecture (V)</th>
</tr>
</thead>
</table>
| Managing Organizations  
2577902, WS 23/24, 2 SWS, Language: German, Open in study portal

Lecture (V)  
On-Site
Content
This course enables participants to make a sound assessment of existing organizational structures and regulations. Students learn concepts and models for designing organizational structures, regulating organizational processes, and managing organizational change.

Through intensive exposure to real-world case studies, students are encouraged to learn and apply strategic actions in real-world business settings. The course features an action-oriented approach and provides students with a realistic understanding of the possibilities and limitations of rational design approaches.

Content in Keywords:
- Fundamentals of organizational management: fundamental concepts and theoretical background knowledge
- Management of organizational structures and processes: Corporate headquarters, departmental organization, instruction structure and incentive systems
- Ideal organizational structures: organic vs. mechanistic, Mintzberg’s types, relationship to strategy and 7S model
- Management of organizational change (change management): Change processes within an organization, management of revolutionary change

Structure:
Lectures in the course are available to students online as recordings, while class dates are reserved for active discussion of real-world case studies.

Learning Objectives:
Upon completion of the course, students will be able to,
- critically evaluate existing organizational structures and regulations
- compare alternative structural options in a practical setting and evaluate and interpret their effectiveness and efficiency
- analyze and evaluate change processes in organizational management
- apply theoretical knowledge in practical situations

Recommendations:
None.

Workload:
- Total workload for 3.5 credit points: approx. 105 hours
- Attendance time: 30 hours
- Self-study: 75 hours

Verification:
The assessment of success takes place in the form of a written examination (60min.) (according to §4(2), 1 SPO) at the beginning of the lecture-free period of the semester. The examination is offered every semester and can be repeated at any regular examination date.
A bonus can be earned through successful participation in the exercise. If the grade on the written exam is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the lecture.

Literature

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.
Course: Managing the Marketing Mix [T-WIWI-102805]

**6.96 Course: Managing the Marketing Mix [T-WIWI-102805]**

- **Responsible:** Prof. Dr. Martin Klarmann
- **Organisation:** KIT Department of Economics and Management
- **Part of:** M-WIWI-101424 - Foundations of Marketing

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<td>Managing the Marketing Mix</td>
<td>2 SWS</td>
<td>Lecture / K</td>
<td>Each summer term</td>
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<td>ST 2024</td>
<td>2571153</td>
<td>Übung zu Marketing Mix (Bachelor)</td>
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<td>Practice / K</td>
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**Exams**

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Legend: 🛥 Online, ☑ Blended (On-Site/Online), ⚔ On-Site, ✗ Canceled

**Competence Certificate**
The assessment of success takes place through the preparation and presentation of a case study (max. 30 points) as well as a written exam with additional aids in the sense of an open book exam (max. 60 points). In total, a maximum of 90 points can be achieved in the course. Further details will be announced during the lecture.

**Prerequisites**
None

**Annotation**
The course is compulsory in the module “Foundations of Marketing”. For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

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

- Managing the Marketing Mix
  - Code: 2571152, SS 2024, 2 SWS, Language: German, [Open in study portal]
  - Type: Lecture (V)
  - Location: On-Site

**Content**
The content of this course concentrates on the elements of the marketing mix. Therefore the main chapters are brand management, pricing, promotion and sales management.
For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

**Learning objectives:**

- student
  - know the meaning of the branding, the brand positioning and the possibilities of the brand value calculation
  - understand the price behavior of customers and can apply this knowledge to the practice
    - know different methods for price determination (conjoint analysis, cost-plus determination, target costing, customer surveys, bidding procedures) and price differentiation
  - are able to name and explain the relevant communication theories
  - can identify crisis situations and formulate appropriate response strategies
  - can name and judge different possibilities of the Intermediaplanung
  - know various design elements of advertising communication
  - understand the measurement of advertising impact and can apply it
  - know the basics of sales organization
  - are able to evaluate basic sales channel decisions

**Workload:**
The total workload for this course is approximately 135.0 hours.
Literature
### 6.97 Course: MARS Basis Lab [T-INFO-102053]

- **Responsible:** Prof. Dr. Hartmut Prautzsch
- **Organisation:** KIT Department of Informatics
- **Part of:** M-INFO-101245 - MARS-Based Internship

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#### Exams

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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled
### 6.98 Course: Mathematics I for Information Systems - Exam [T-MATH-109942]

**Responsible:** Prof. Dr. Andreas Rieder  
Dr. Daniel Weiss  
Prof. Dr. Christian Wieners  

**Organisation:** KIT Department of Mathematics  

**Part of:**  
- M-MATH-104914 - Mathematics I  
- M-WIWI-104843 - Orientation Exam

<table>
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<td>Each term</td>
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**Events**

| WT 23/24   | 0136000 | Mathematik 1 für die Fachrichtung Wirtschaftsinformatik | 4 SWS | Lecture / 🗣 | Weiss |

**Exams**

| WT 23/24   | 7700054 | Mathematics I for Information Systems - Exam | Weiss |

**Legend:**  
- 🖥 Online  
- 🌐 Blended (On-Site/Online)  
- 🗣 On-Site  
- ✗ Cancelled

**Annotation**

This exam is part of the orientation exam.
6.99 Course: Mathematics I for Information Systems - Exercise [T-MATH-109943]

**Responsible:**
Prof. Dr. Andreas Rieder
Dr. Daniel Weiß
Prof. Dr. Christian Wieners

**Organisation:**
KIT Department of Mathematics

**Part of:**
- M-MATH-104914 - Mathematics I
- M-WIWI-104843 - Orientation Exam

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**Exams**

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**Legend:**
- Online
- Blended (On-Site/Online)
- On-Site
- Cancelled

**Annotation**
This exam is part of the orientation exam.
## 6.100 Course: Mathematics II for Information Systems - Exam [T-MATH-109944]

**Responsible:** Prof. Dr. Andreas Rieder  
Dr. Daniel Weiß  
Prof. Dr. Christian Wieners

**Organisation:** KIT Department of Mathematics

**Part of:** M-MATH-104915 - Mathematics II

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<td>7700044</td>
<td>Mathematics II for Information Systems - Exam</td>
<td>Weiß</td>
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6.101 Course: Mathematics II for Information Systems - Exercise [T-MATH-109945]

**Responsible:** Prof. Dr. Andreas Rieder  
Dr. Daniel Weiß  
Prof. Dr. Christian Wieners

**Organisation:** KIT Department of Mathematics

**Part of:** M-MATH-104915 - Mathematics II

<table>
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### 6.102 Course: Mechano-Informatics and Robotics [T-INFO-101294]

#### Responsible:
Prof. Dr.-Ing. Tamim Asfour

#### Organisation:
KIT Department of Informatics

#### Part of:
M-INFO-100757 - Mechano-Informatics and Robotics

<table>
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#### Events

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**Legend:** Online, Blended (On-Site/Online), On-Site, Cancelled

#### Competence Certificate
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

#### Prerequisites
None.

#### Recommendation
Basispraktikum Mobile Roboter

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

#### V Mechanano-Informatics and Robotics
2400077, WS 23/24, 2 SWS, Language: German/English, [Open in study portal]

**Lecture (V)**

**On-Site**

#### Content

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

Subsequently, models and methods are introduced with which dynamical systems can be formalized and which can be used to encode and represent robot actions. To do so, we will discuss linear time-invariant systems in state.

**Learning Objectives:**

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

#### Organizational issues

Zugehörige Veranstaltungen: Empfehlung - Basispraktikum Mobile Roboter

Die Erfolgskontrolle erfolgt in Form einer schriftlichen Prüfung in englischer Sprache im Umfang von i.d.R. 60 Minuten nach § 4 Abs. 2 Nr. 1 SPO.

**Arbeitsaufwand:**

2h Präsenz
+ 2*2h = 4h Vor/Nachbereitung
+ 30h Prüfungsvorbereitung
120h
6 COURSES

Course: Microeconometrics [T-WIWI-112153]

6.103 Course: Microeconometrics [T-WIWI-112153]

Responsible: Prof. Dr. Fabian Krüger
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

<table>
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Events

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<td>Tutorial in Microeconometrics</td>
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<td>Practice</td>
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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

Competence Certificate

The assessment consists of a written examination (60 minutes). A bonus can be acquired by successful completion of an assignment (written report + short in-class presentation) during the semester. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4).

Prerequisites

None

Recommendation

Students are expected to have a good working knowledge of the linear regression model (e.g. by having attended the course ‘Volkswirtschaftslehre III: Einführung in die Ökonometrie’, or attending it in the same semester as ‘Microeconometrics’).

Annotation

The course will be offered in the summer semester 2024.

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

Microeconometrics

2500032, SS 2024, 2 SWS, Language: English, Open in study portal

Content

Microeconometrics is concerned with modeling data from an individual (‘micro’) unit like a person, household or firm. The response variables of interest are often discrete. For example, a person’s type of employment may be coded as a binary variable (e.g. working in IT sector versus not working in IT sector), and a person’s choice of transportation mode can be cast as a multinomial variable (e.g. bike, train, car, or other). These examples differ from the basic econometric setting of a continuous response variable, and require nonlinear regression modeling.

The course first introduces maximum likelihood estimation which is particularly useful in microeconometrics. We then discuss econometric models for various types of response variables (binary, ordered, multinomial, censored), as well as methods for estimation and model evaluation. Throughout the course, implementation via R software plays an important role.

Prerequisites: Course participants are expected to have a good working knowledge of the linear regression model (e.g. by having attended the course ‘Volkswirtschaftslehre III: Einführung in die Ökonometrie’, or attending it in the same semester as ‘Microeconometrics’).

Literature

### 6.104 Course: Microprocessors I [T-INFO-101972]

**Responsible:** Prof. Dr. Wolfgang Karl  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101183 - Microprocessors I

<table>
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#### Exams

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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
### Course: Mobile Computing and Internet of Things [T-INFO-102061]

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<tbody>
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### 6.106 Course: Mobile Computing and Internet of Things - Exercise [T-INFO-113119]

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6.107 Course: Mobile Robots – Practical Course [T-INFO-101992]

**Responsible:** Prof. Dr.-Ing. Tamim Asfour  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101184 - Mobile Robots – Practical Course

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**Exams**

- **ST 2024**
  - Code: 7500264
  - Name: Mobile Robots – Practical Course
  - Examiner: Asfour

**Legend:** 🖥 Online, ☑ Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

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

**Mobile Robots - Practical Course**

24624, SS 2024, 4 SWS, Language: German, Open in study portal

**Content**

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

**Learning Objectives:**

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

**Organizational issues**

Die Erfolgskontrolle erfolgt nach § 4 Abs. 2 Nr. 3 SPO als Erfolgskontrolle anderer Art und besteht aus mehreren Teilaufgaben. Die Bewertung erfolgt mit den Noten “bestanden” / “nicht bestanden”.

Voraussetzungen: Kenntnisse in der Programmiersprache C und in der Technischen Informatik werden vorausgesetzt.

Arbeitsaufwand: 120 h

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

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

**Part of:** M-WIWI-101413 - Applications of Operations Research

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**Exams**

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Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The assessment is a written examination. The examination is held in every semester. The prerequisite can only be obtained in semesters in which the course exercises are offered.

**Prerequisites**

Prerequisite for admission to the exam is the successful participation in the exercises. This includes the processing and presentation of exercises.

**Recommendation**


**Annotation**

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is offered in every term. The planned lectures and courses for the next three years are announced online.

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

**Modellieren und OR-Software: Einführung**

2550490, SS 2024, 3 SWS, Language: German, [Open in study portal]

**Content**

After an introduction to general concepts of modelling tools (implementation, data handling, result interpretation,...), the software IBM ILOG CPLEX Optimization Studio and the corresponding modelling language OPL will be discussed which can be used to solve OR problems on a computer-aided basis. Subsequently, a broad range of exercises will be discussed. The main goals of the exercises from literature and practical applications are to learn the process of modeling optimization problems as linear or mixed-integer programs, to efficiently utilize the presented tools for solving these optimization problems and to implement heuristic solution procedures for mixed-integer programs.

**Organizational issues**

Die Teilnehmerzahl für diese Veranstaltung ist begrenzt.

Die Bewerbung erfolgt über das Wiwi-Portal.

Der Bewerbszeitraum ist vom 01.03.24 bis zum 18.03.24.
6.109 Course: Nonlinear Optimization I [T-WIWI-102724]

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:**  
- M-WIWI-101936 - Methodical Foundations of OR  
- M-WIWI-103278 - Optimization under Uncertainty

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**Exams**

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**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:**

**Nonlinear Optimization I**  
2550111, WS 23/24, 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 conditions
- 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

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
6.110 Course: Nonlinear Optimization I and II [T-WIWI-103637]

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101936 - Methodical Foundations of OR

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| WT 23/24 2550111 | Nonlinear Optimization I | 2 SWS | Lecture / 🗣 | Stein  
| WT 23/24 2550112 | Exercises Nonlinear Optimization I + II | 2 SWS | Practice / 🗣 | Stein, Schwarze  
| WT 23/24 2550113 | Nonlinear Optimization II | 2 SWS | Lecture / 🗣 | Stein

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| ST 2024 7900204_SS2024_NK | Nonlinear Optimization I and II | Stein

**Competence Certificate**  
The assessment consists 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:

**Nonlinear Optimization I**  
2550111, WS 23/24, 2 SWS, Language: German, [Open in study portal]

**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 conditions
- 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.
Course: Nonlinear Optimization I and II 

**Literature**

**Weiterführende Literatur:**
- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993

### Nonlinear Optimization II

**Course Code:** 2550113, WS 23/24, 2 SWS, Language: German, [Open in study portal](#)

**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**

**Weiterführende Literatur:**
- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
# 6.111 Course: Nonlinear Optimization II [T-WIWI-102725]

**Responsible:** Prof. Dr. Oliver Stein  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101936 - Methodical Foundations of OR

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## Events

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<td>2 SWS</td>
<td>Lecture / 🗣️</td>
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## 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 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:**

## 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

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
6.112 Course: Optimization under Uncertainty [T-WIWI-106545]

**Responsible:** Prof. Dr. Steffen Rebennack

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

**Part of:**
- M-WIWI-101413 - Applications of Operations Research
- M-WIWI-103278 - Optimization under Uncertainty

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**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.

**Responsible:** Prof. Dr. Petra Nieken

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

**Part of:**
- M-WIWI-101513 - Human Resources and Organizations
- M-WIWI-101668 - Economic Policy I

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<td>Übungen zu Personalpolitik und Arbeitsmarktinstitutionen</td>
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<td>Practice /🗣</td>
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**Exams**

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**Legend:** 🖥 Online, ⏺ Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

**Competence Certificate**
The assessment of this course is a written examination of 1 hour. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
In case of a small number of registrations, we might offer an oral exam instead of a written exam.

**Prerequisites**
None

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

*Below you will find excerpts from events related to this course:*
Content
The students acquire knowledge about the process and the strategic aspects of collective bargaining about wages. They analyze selected aspects of corporate governance and co-determination in Germany. The lecture also addresses questions of personnel politics and labor market discrimination. Microeconomic and behavioral approaches as well as empirical data is used and evaluated critically.

Aim
The student
- understands the process and role of agents in collective wage bargaining.
- analyzes strategic decisions in the context of corporate governance.
- understands the concept of co-determination in Germany.
- challenges statements that evaluate certain personnel politics.

Workload
The total workload for this course is approximately 135 hours.
Lecture 32 hours
Preparation of lecture 52 hours
Exam preparation 51 hours

Literature
6 COURSES

Course: Platform Economy [T-WIWI-107506]

| Responsible: | Prof. Dr. Christof Weinhardt |
| Organisation: | KIT Department of Economics and Management |
| Part of: | M-WIWI-101421 - Supply Chain Management |
| | M-WIWI-101434 - eBusiness and Service Management |
| | M-WIWI-105981 - Information Systems & Digital Business |

**Course Overview**

**Type**: Examination of another type

**Credits**: 4.5

**Grading scale**: Grade to a third

**Recurrence**: Each winter term

**Version**: 3

**Events**

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**Competence Certificate**

Alternative exam assessment. The assessment is carried out in the form of a one-hour written examination and by carrying out a case study. Details on the assessment will be announced during the lecture.

**Prerequisites**

see below

**Recommendation**

None

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

**Platform Economy**

2540468, WS 23/24, 2 SWS, Language: German, Open in study portal

**Literature**

6.115 Course: Practical Course Computer Engineering: Hardware Design [T-INFO-102011]

**Responsible:** Prof. Dr. Wolfgang Karl

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-101219 - Practical Course Computer Engineering: Hardware Design

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

---

**Basispraktikum TI: Hardware-related System Design**

2424309, WS 23/24, 4 SWS, Language: English, [Open in study portal]

Practical course (P)

---

**Content**

**Overview:** This lab aims at providing the students with the practical concepts of designing digital hardware systems.

- It provides an overview of the design process, starting from very simple circuits to the design of processors with prototyping on FPGAs and using HDL languages.
- It covers the main design and implementation issues for digital devices and their applications. These issues challenge the students to make design decisions to optimize the designed hardware under constrained resources.
- The students gain in-depth practical experiences in digital system design with a focus on hardware development and implementing custom peripheral, e.g., display interface and input buttons, for processors.
- Students experience the process of High-Level Synthesis where software descriptions (for instance in C) are (semi-)automatically transformed to hardware.

**Lab's Goals:**

- Introducing the students to hardware design
- Familiarizing the students with the challenges faced in hardware design, e.g., glitches, timing violations, etc.
- The students shall be able to implement and design custom useful and interesting hardware and they shall be able to develop/use debug interfaces to check for errors.

**Target Audience:**

- This lab is suitable for electrical engineering and informatics students and those who have an interest in digital systems design and digital techniques.

**Prerequisites:**

- The ability to develop simple software programs in C is recommended.
- Basic knowledge about other programming languages can be helpful (e.g., Java or Python).
- No previous knowledge of FPGA or HDL programming needed!
- Attending the TI lecture, to understand.

**Details:**

- The lab manuals and exercises are conducted only in English.
- The lab is split into weekly sessions throughout the semester. Each session is approximately 3-4 hours per week. At the end of the semester, there will be a final project.
- State-of-the-art FPGA-based MPSoCs and FPGA design software are used in the lab, i.e., the Blackboard FPGA development board and the Vivado 2022.2 software.
### 6.116 Course: Practical Course Computer Engineering: Hardware Design Pass [T/INFO-105983]

**Responsible:** Prof. Dr. Wolfgang Karl  
**Organisation:** KIT Department of Informatics  
**Part of:** M/INFO-101219 - Practical Course Computer Engineering: Hardware Design

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### 6.117 Course: Practical Course Web Applications and Service-Oriented Architectures (I) [T-INFO-103119]

**Responsible:** Prof. Dr. Sebastian Abeck  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101633 - Practical Course Web Applications and Service-Oriented Architectures (I)

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| Events |  
|--------|---|---|---|---|
| WT 23/24 | 24312 | Basispraktikum Microservice2Go (I) | 2 SWS | Practical course / 🗣 | Abeck, Schneider, Sänger |

| Exams |  
|--------|---|---|---|
| WT 23/24 | 7500029 | Practical Course Web Applications and Service-oriented Architectures (I) | | Abeck |

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled
6.118 Course: Practical Course: Lego Mindstorms [T-INFO-107502]

**Responsible:** Prof. Dr.-Ing. Tamim Asfour  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-102557 - Lego Mindstorms - Practical Course

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**Prerequisites**  
None.

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

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

**Lego Mindstorms - Laboratory**  
24306, WS 23/24, 3 SWS, Language: German, [Open in study portal]

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

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

**Organizational issues**  
Das Praktikum findet wöchentlich statt.  
Nachweis: Die Erfolgskontrolle wird in der Modulbeschreibung erläutert.  
Ansprechpartner: Cornelius Klas  
E-Mail: cornelius.klas@kit.edu

**Empfehlung:**  
Grundlegende Kenntnisse in Python sind hilfreich, aber nicht zwingend erforderlich. / Basic knowledge in Python is helpful but not required.

**Arbeitsaufwand:** 120 h

**Beschreibung:**  
Die Aufgabenstellungen des Praktikums reichen von Aufbau und Programmierung der Lego EV3-Bausteine mit der Programmiersprache Python bis hin zur Lösung spezieller Aufgaben, die im Rahmen eines abschließenden Wettrennens zu lösen sind (Linien folgen, Hindernissen ausweichen, Bahnplanung).

**Literature**  
Wird in der Veranstaltung bekannt gegeben.
### 6.119 Course: Practical Course: Managing Scientific Data [T-INFO-112809]

**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-106311 - Practical Course: Managing Scientific Data

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**Exams**

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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣️ On-Site, ✗ Cancelled
Course: Practical Seminar: Digital Services [T-WIWI-110888]

**6.120 Course: Practical Seminar: Digital Services [T-WIWI-110888]**

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

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

**Part of:** M-WIWI-102752 - Fundamentals of Digital Service Systems  
M-WIWI-105981 - Information Systems & Digital Business

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**Competence Certificate**

The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion. In the seminar, a maximum score of 60 points can be achieved, consisting of:

- maximum 25 points for the documentation (written examination)
- maximum 25 points for the practical assessment
- maximum 10 points for the participation during the discussion sessions

The practical seminar is passed when at least a score of 30 points is achieved.

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The current range of seminar topics is announced on the following Website:  
www.dsi.iism.kit.edu
6 COURSES

Course: Practical Seminar: Interactive Systems [T-WIWI-111914]

**6.121 Course: Practical Seminar: Interactive Systems [T-WIWI-111914]**

- **Responsible:** Prof. Dr. Alexander Mädche
- **Organisation:** KIT Department of Economics and Management
- **Part of:**
  - M-WIWI-105928 - HR Management & Digital Workplace
  - M-WIWI-105981 - Information Systems & Digital Business

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**Events**

| ST 2024 | 2540555 | Practical Seminar: Interactive Systems | 3 SWS | Lecture / 🧩 | Mädche |

**Exams**

| ST 2024 | 7900113 | Practical Seminar: Interactive Systems | Mädche |

**Competence Certificate**

Alternative exam assessment.

The assessment of this course consists of the implementation of a practical component, the preparation of a written documentation, and active participation in the discussions.

A total of 60 points can be achieved, of which:

- maximum 25 points for the written documentation
- maximum 25 points for the practical component
- maximum 10 points for active participation in the discussions

A minimum of 30 points must be achieved to pass this course.

Please note that a practical component, such as conducting a survey or implementing an application, is also part of the course. Please refer to the institute website issd.iism.kit.edu for the current offer of practical seminar theses.

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

**Practical Seminar: Interactive Systems**

2540555, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

**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.

Please find the current open offerings on our website: [https://h-lab.iism.kit.edu/thesis.php](https://h-lab.iism.kit.edu/thesis.php)
Course: Practical Seminar: Platform Economy [T-WIWI-112154]

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

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

**Part of:** M-WIWI-105981 - Information Systems & Digital Business

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### Competence Certificate

The assessment of this course is 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).

### Prerequisites

None.
6.123 Course: Problem Solving, Communication and Leadership [T-WIWI-102871]

**Responsible:** Prof. Dr. Hagen Lindstädt

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

**Part of:**
- M-WIWI-101425 - Strategy and Organization
- M-WIWI-101513 - Human Resources and Organizations

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**Competence Certificate**

The assessment consists of a written exam (30 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**

None
### Course: Process Mining [T-WIWI-109799]

**Responsible:** Prof. Dr. Andreas Oberweis  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101476 - Business Processes and Information Systems

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**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:

**Process Mining**
2511204, SS 2024, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
On-Site
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


Weitere Literatur wird in der Vorlesung bekannt gegeben.
6.125 Course: Production and Logistics [T-WIWI-111632]

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

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

**Part of:** M-WIWI-105267 - Business Administration

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**Exams**

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<td>Production and Logistics</td>
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**Competence Certificate**

Written examination on the course "Production and Logistics". The exam is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

**Prerequisites**

None
Course: Production Economics and Sustainability [T-WIWI-102820]

**Responsible:** Prof. Dr. Frank Schultmann  
Dr.-Ing. Rebekka Volk

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

**Part of:** M-WIWI-101437 - Industrial Production I

**Type**  
Written examination  
**Credits**  
3,5  
**Grading scale**  
Grade to a third  
**Recurrence**  
Each winter term  
**Version**  
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**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).

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

**Production Economics and Sustainability**  
2581960, WS 23/24, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**  
On-Site

**Content**

The analysis and management of material flows on the company level and above will be the focus of this lecture. Herein, the discussion will be about cost-effective and environmentally acceptable steps to avoid, abate and recycle emissions and waste as well as ways of efficient resources handling. As methods material flow analysis (MFA), life cycle assessment (LCA) and OR methods, e.g. for decision support, are introduced.

**Topics:**
- regulations related to materials and substances  
- raw materials, reserves and their availabilities/lifetimes  
- material and substance flow analysis (MFA/SFA)  
- material related ecoprofiles, e.g. Carbon Footprint  
- LCA  
- resource efficiency  
- emission abatement  
- waste management and closed-loop recycling  
- raw material oriented production systems  
- environmental management (EMAS, ISO 14001, Ecoprofit), eco-controlling

**Organizational issues**

Seminarraum Uni-West, Geb. 06.33

**Literature**

wird in der Veranstaltung bekannt gegeben
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### 6.128 Course: Programming Pass [T-INFO-101967]

**Responsible:** Prof. Dr.-Ing. Anne Koziolek  
Prof. Dr. Ralf Reussner  
**Organisation:** KIT Department of Informatics  
**Part of:**  
- M-INFO-101174 - Programming  
- M-WIWI-104843 - Orientation Exam

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### 6.129 Course: Project Management in Practice [T-INFO-101976]

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<th><strong>Responsible:</strong></th>
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## 6.130 Course: Public Economics [T-WIWI-112721]

**Responsible:** Prof. Dr. Berthold Wigger  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101403 - Public Finance

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**Competence Certificate**  
Depending on the further pandemic development the assessment will consist either of an open book exam, or of an 1h written exam.

**Prerequisites**  
None

**Annotation**  
The lecture will be held in English in the summer semester 2023.
## 6.131 Course: Public Law I & II [T-INFO-110300]

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-105247 - Constitutional and Administrative Law

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### Events

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### Exams

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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗂 On-Site, ❌ Cancelled
6.132 Course: Public Revenues [T-WIWI-102739]

**Responsible:** Prof. Dr. Berthold Wigger

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

**Part of:**
- M-WIWI-101403 - Public Finance
- M-WIWI-101499 - Applied Microeconomics
- M-WIWI-101668 - Economic Policy I

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**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:

**Public Revenues**

2560120, SS 2024, 2 SWS, Language: German, [Open in study portal](#)

**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. For further information see German version.

**Literature**

### 6.133 Course: Real-Time Systems [T-INFO-101340]

**Responsible:** Prof. Dr.-Ing. Thomas Längle  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-100803 - Real-Time Systems

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**Legend:**  
- 🖥 Online  
- 🧩 Blended (On-Site/Online)  
- 🗣 On-Site  
- 🗑 Cancelled

**Responsible:** PD Dr. Patrick Jochem  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101464 - Energy Economics

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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes, in English, answers are possible in German or English) (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:*

**Renewable Energy – Resources, Technologies and Economics**  
2581012, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V) On-Site**

**Content**
1. General introduction: Motivation, Global situation
2. Basics of renewable energies: Energy balance of the earth, potential definition
3. Hydro
4. Wind
5. Solar
6. Biomass
7. Geothermal
8. Other renewable energies
9. Promotion of renewable energies
10. Interactions in systemic context
11. Excursion to the "Energieberg" in Mühlburg

**Learning Goals:**
The student
- understands the motivation and the global context of renewable energy resources.
- gains detailed knowledge about the different renewable resources and technologies as well as their potentials.
- understands the systemic context and interactions resulting from the increased share of renewable power generation.
- understands the important economic aspects of renewable energies, including electricity generation costs, political promotion and marketing of renewable electricity.
- is able to characterize and where required calculate these technologies.

**Organizational issues**
Blockveranstaltung, freitags 14:00-17:00 Uhr, 27.10., 10.11., 24.11., 08.12., 19.01., 26.01. 09.02.
Literature
Weiterführende Literatur:

6.135 Course: Robotics I - Introduction to Robotics [T-INFO-108014]

**Responsible:** Prof. Dr.-Ing. Tamim Asfour  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-100893 - Robotics I - Introduction to Robotics

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**Exams**

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**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled

**Competence Certificate**
The assessment is carried out as a written examination (§ 4 Abs. 2 No. 1 SPO) lasting 60 minutes.

**Prerequisites**
none.
6.136 Course: Selling IT-Solutions Professionally [T-INFO-101977]

- **Responsible:** Prof. Dr.-Ing. Klemens Böhm
- **Organisation:** KIT Department of Informatics
- **Part of:** M-INFO-105589 - Introduction to Data and Information Management

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6.137 Course: Semantic Web Technologies [T-WIWI-110848]

**Responsible:** Dr.-Ing. Tobias Christof Käfer

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

**Part of:** M-WIWI-101438 - Semantic Knowledge Management

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**Events**

| ST 2024 | 2511310 | Semantic Web Technologies | 2 SWS | Lecture | Färber, Käfer, Braun |
| ST 2024 | 2511311 | Exercises to Semantic Web Technologies | 1 SWS | Practice | Färber, Käfer, Braun |

**Exams**

| WT 23/24 | 79AIFB_SWebT_A2 | Semantic Web Technologies | Käfer |

**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:*

**Semantic Web Technologies**

2511310, SS 2024, 2 SWS, Language: English, Open in study portal
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 preparation and postprocessing: 60 hours
- Exam and exam preparation: 30 hours

Literature


Weitere Literatur


Exercises to Semantic Web Technologies
2511311, SS 2024, 1 SWS, Language: English, Open in study portal
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 analyze and realize systems
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- 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.

Organizational issues
Die Übungen finden im Rahmen der Termine der Blockvorlesung statt.

Literature


Weitere Literatur

# 6.138 Course: Seminar in Business Administration (Bachelor) [T-WIWI-103486]

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

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**Exams**

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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:

**Entrepreneurship Seasonal School**
2500215, WS 23/24, 2 SWS, Language: English, [Open in study portal](https://portal.wiwi.kit.edu)

**Block (B)**
On-Site

Content
During the Entrepreneurship Seasonal School, students develop a business model based on innovative technologies and social problems in workshops in international teams for one week.

Course Content:
The Entrepreneurship Seasonal School brings together students from different universities to spend a week strengthening their knowledge of digital entrepreneurship in healthcare. Experience the life of an entrepreneur and learn how to attain resources to realize a product vision. During one week, you will develop a range of entrepreneurial competences crucial for establishing a successful venture. Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. By gaining a deep understanding of healthcare needs, you will utilize creativity techniques to uncover potential business ideas that provide value for patients and doctors. Additionally, you will learn how to create viable business models, dive into health regulations, and pitch your idea to a jury.

In WS 2023/24 the one-week program is being hosted by the Karlsruhe Institute of Technology, with co-teaching support from the EuCor partners University of Basel and the University of Strasbourg.

In the seminar you will work on a project in teams of max. 5 persons.

Learning Objectives:
After attending the event, you will be able to...

- describe the role of entrepreneurship
- develop innovative and technology-based solutions for societal problems,
- develop a viable business model for a problem,
- present a business idea to a panel of judges,
- and be empowered to work independently in multidisciplinary and multicultural teams
Organizational issues
19.02.24 – 23.02.24, Details will be announced later. Registration via wiwi portal.

Content
Within this seminar eLearning videos are produced to different topics out of the contents of our lectures. The student gets in touch with scientific work. Through profound working on a specific scientific topic the student is meant to learn the foundations of scientific research and reasoning in particular in finance. Through conduction of the video the student becomes familiar with the fundamental techniques for presentations and foundations of scientific reasoning. In addition, the student earns rhetorical skills. The success is monitored by the development of an eLearning video and by the writing of a project report (according to §4(2), 3 SPO).

The overall grade is made up of these partial performances.

Recommendations:
Knowledge of the content of the modules Essentials of Finance [WW3BWLFBV1] (for bachelor students) and F1 (Finance) [WW4BWLFBV1] (for master students) is assumed.

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

Organizational issues
Zwischenpräsentation am 11.12.23, 16 Uhr und Abschlusspräsentation am 23.01.24, 17:30 Uhr, beides am Campus B (Geb. 09.21), Raum 209

Content
wird auf deutsch und englisch gehalten

Organizational issues
Blockveranstaltung, siehe WWW

Literature
Weiterführende Literatur:
Content
Course Content:
This seminar explains important factors for becoming an entrepreneur and guides you through a structured process from the first business idea to a pitch of your final business model. Therefore, a business idea will be developed in the context of the UN Sustainable Development Goals. In small teams you create, develop, validate and present your business model. It simulates the basics of a start-up process up to the investor pitch.

Learning Objectives
After completing this course, the course participants will be able to

- Reflect on and define your personal and team core values
- Reflect on and define your personal and team competencies
- Reflect on and recall a definition for business opportunity
- Define your field of interest for opportunity recognition using the UN SDGs
- Analyze a specific domain to identify business opportunities
- Develop a first draft for your business model by using the Business Model Canvas
- Pitch / present your business idea

Credentials:
Registration is via the Wiwi portal.
Exam:
Presentation + active participation + paper.
Target group:
Bachelor students

Organizational issues
Registration is via the Wiwi portal.
In the seminar you will work on a project in teams of max. 5 persons. The groups are formed in the seminar.

Entrepreneurship Basics (Track 2)
2545011, WS 23/24, 2 SWS, Language: English, Open in study portal

Content
Course Content:
The seminar introduces the basics of planning and modeling of business ideas. Based on a structured process, you will be guided through the development of your own business ideas, the derivation and testing of initial business model hypotheses, and the final creation of a business plan. In small teams you will create, develop, validate and present your business model. The basic steps of a start-up process are simulated.

Learning Objectives
After completing this seminar, students will have learned and actually practiced the whole business model development process. In particular this means that students will know:

- how business ideas are created and how they can be developed
- what the value proposition of a business idea is
- how a business model hypothesis can be generated and tested
- which successful business model patterns exist and how they can be used for one’s own business
- how to pitch business ideas and convince potential investors

Credentials:
Registration is via the Wiwi portal.
Exam:
Presentation + active participation + paper.
Target group:
Bachelor students

Organizational issues
Registration is via the Wiwi portal.
In the seminar you will work on a project in teams of 4-5 persons. The groups are formed in the seminar.

Seminar: Human Resources and Organizations (Bachelor)
2573010, WS 23/24, 2 SWS, Language: German, Open in study portal

Information Systems B.Sc.
Module Handbook as of 27/02/2024
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

Seminar: Human Resource Management (Bachelor)
2573011, WS 23/24, 2 SWS, Language: German, Open in study portal

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

Seminar Management Accounting - Special Topics
2579911, WS 23/24, 2 SWS, Language: English, Open in study portal
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. For further information see German version.

Note:
- Maximum of 12 students.

Organizational issues
Ort und Zeit werden noch bekannt gegeben bzw. über ILIAS

Literature
Will be announced in the course.

Seminar Management Accounting - Sustainability Topics
2579919, WS 23/24, 2 SWS, Language: English, Open in study portal
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. For further information see German version.

Note:
- Maximum of 8 students.

Organizational issues
Ort und Zeit werden noch bekannt gegeben bzw. über ILIAS

Literature
Will be announced in the course.

Design Seminar: Digital Citizen Science
2500027, SS 2024, 2 SWS, Open in study portal

Content
TBA

Human-Centered Systems Seminar: Engineering
2500125, SS 2024, 3 SWS, Language: English, Open in study portal

Content
Formerly known as "Current Topics in Digital Transformation"
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 human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

User-Adaptive Systems Seminar
2540553, SS 2024, 2 SWS, Language: English, Open in study portal

Seminar (S) Blended (On-Site/Online)
Content
User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

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). It is offered as part of the DFG-funded graduate school “KD2School: Designing Adaptive Systems for Economic Decisions” (https://kd2school.info/)

Learning objectives of the seminar
- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

Prerequisites
Strong analytical abilities and profound software development skills are required.

Organizational issues
Termine werden bekannt gegeben

Literature
Required literature will be made available in the seminar.

Human-Centered Systems Seminar: Research
2540557, SS 2024, 3 SWS, Language: English, Open in study portal
Content
Formerly known as "Information Systems and Service Design Seminar"

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 IS 1 (Prof. Mädche). The research group "Information Systems I" (IS 1) 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

Entrepreneurship Basics (Track 1)
2545010, SS 2024, 2 SWS, Language: English, Open in study portal

Content

This seminar explains important factors for becoming an entrepreneur and guides you through a structured process from the first business idea to a pitch of your final business model. Therefore, a business idea will be developed in the context of the UN Sustainable Development Goals. In small teams you create, develop, validate and present your business model. It simulates the basics of a start-up process up to the investor pitch.

Learning Objectives

After completing this course, the course participants will be able to

- Reflect on and define your personal and team core values
- Reflect on and define your personal and team competencies
- Reflect on and recall a definition for business opportunity
- Define your field of interest for opportunity recognition using the UN SDGs
- Analyze a specific domain to identify business opportunities
- Develop a first draft for your business model by using the Business Model Canvas
- Pitch / present your business idea

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students
Organizational issues
Registration is via the Wiwi-Portal.

In the seminar you will work on a project in teams of max. 5 persons. The groups are formed in the seminar.

**Entrepreneurship Basics (Track 2)**
2545011, SS 2024, 2 SWS, Language: English, Open in study portal

Content
Course Content:
This seminar shows what is important for entrepreneurs and it guides you through a structured process from the first business idea to a pitch of your final business model. In teams you create, develop, validate and present your business model. It partially simulates a start-up process up to the investor pitch.

Starting with a rough business idea, you learn to understand and validate the customer problems. Together with your teammates and the feedback from the other teams and the lecturer, you will create a sharp business model by using tools like the Value Proposition Canvas, the Business Model Canvas and customer interviews. With some further information about rapid prototyping and structuring a pitch and a one-pager for business angels, you will learn, how to present the developed business. This seminar is teamwork. You grow as a team, learn to communicate and to work efficient in a team so all your results (the pitch and the written outline) are presented by the team.

Learning Objectives
- Learning of entrepreneurial skills.
- Understanding of value creation importance.
- Experience on how to derive and test hypothesis.
- Transition from ideas to a business model that works.
- Learning how to pitch and to convince investors.

Exam:
Presentation + active participation + paper.

Target group:
Bachelor students

Organizational issues
Saturday, 20.04.2024, 10.00 - 17.00
Saturday, 04.05.2024, 10.00 - 17.00
Saturday, 01.06.2024, 10.00 - 12.30

Registration is via the Wiwi-Portal.

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.

**Seminar Management Accounting - Special Topics**
2579909, SS 2024, 2 SWS, Language: English, Open in study portal
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. For further information see German version.

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.
6 COURSES

Course: Seminar in Economics (Bachelor) [T-WIWI-103487]

<table>
<thead>
<tr>
<th>Events</th>
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<th>Grading scale</th>
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<td>WT 23/24</td>
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<td>2 SWS</td>
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<td>Predictive Data Analytics - An Introduction to Statistical Machine Learning</td>
<td>2 SWS</td>
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<td>ST 2024</td>
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<td>2 SWS</td>
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<td>2560553</td>
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<td>2 SWS</td>
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**Exams**

| WT 23/24 | 7900124 | Seminar Lying and Cheating in Economic Experiments (Bachelor) | Puppe |
| WT 23/24 | 7900139 | Selected Aspects of European Transport Planning and Modelling | Mitusch |
| WT 23/24 | 7900212 | Seminar in Economic Policy | Ott |
| WT 23/24 | 7900254 | Topics in Econometrics. Seminar in Economics (Bachelor) | Schienle |
| WT 23/24 | 7900278 | Seminar AI and Digitization for Society (Bachelor) | Puppe |
| WT 23/24 | 7900292 | Seminar: Debt The First 5000 Years (Bachelor) | Puppe |
| WT 23/24 | 7900298 | Seminar Disruption in the Digital Economy (Bachelor) | Puppe |
| WT 23/24 | 7900354 | Die Herausforderungen der Mobilitätswende im urbanen Bereich - welche Beiträge kann das Serious Game "MobileCityGame" liefern? | Mitusch |
| WT 23/24 | 79100005 | Topics in Experimental Economics | Reiß |
| WT 23/24 | 79sefi1 | Seminar Public Finance (Bachelor) | Wigger |
| ST 2024 | 7900051 | Seminar in Economic Policy | Ott |

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:

**Topics in Experimental Economics**

2520405, WS 23/24, SWS, Language: English, Open in study portal

**Organizational issues**

(im WS2021/22 online; sonst Blockseminar; Blücherstraße 17); Termine werden separat bekannt gegeben

**Literature**

Als Pflichtliteratur dienen ausgewählte Paper.

**Topics in Econometrics**

2521310, WS 23/24, 2 SWS, Language: German, Open in study portal

**Organizational issues**

Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

**Lying and Cheating in Economic Experiments (Bachelor)**

2560140, WS 23/24, 2 SWS, Language: English, Open in study portal
Content
For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminars 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

Kick-off: 24.10.23, 15.00 - 16.30 h, Geb. 01.85, KD2 Lab (1. OG über Außentreppe), Teamraum

Präsentationen: 08.01.2024 08:00 - 13.00 h, KD2 Lab (1. OG über Außentreppe), Teamraum

AI and Digitization for Society (Bachelor)
2560141, WS 23/24, 2 SWS, Language: English, Open in study portal

Seminar (S) Blended (On-Site/Online)

Content
For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminars 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

Kick-off: 25.10.2023, 11.00 - 12.00 (online)

Presentations: 12.01.2024, 08:00 - 13.00 h, Geb. 01.85, KD2 Lab (1. OG über Außentreppe), Teamraum

Disruption and the Digital Economy: Markets, Strategies, and Society (Bachelor)
2560145, WS 23/24, 2 SWS, Language: English, Open in study portal

Seminar (S) On-Site

Content
For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminars 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

Kick-off: 27.10.2023, 14.00 - 15.30 Uhr, Geb. 01.85, KD2 Lab (1. OG über Außentreppe), Teamraum

Präsentationen: 15.01.2024 09.00 - 13.00 Uhr, Geb. 01.85, KD2 Lab (1. OG über Außentreppe), Teamraum

Predictive Data Analytics - An Introduction to Statistical Machine Learning
2500004, SS 2024, 2 SWS, Language: German/English, Open in study portal

Seminar (S) On-Site

Organizational issues
Blockveranstaltung, Termine werden bekannt gegeben

Seminar Public Finance
2560130, SS 2024, 2 SWS, Language: German, Open in study portal

Block (B) Blended (On-Site/Online)
Content
See German version.

Organizational issues
Termine werden bekannt gegeben.

Literature
Literatur wird zu Beginn des jeweiligen Seminars vorgestellt.

Seminar Shaping AI and Digitization for Society (Bachelor)
2560553, SS 2024, 2 SWS, Language: English, Open in study portal

V
Seminar (S)
Blended (On-Site/Online)

Content
Participation will be limited to 12 students.

For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. 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.

Grading: Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (60%). Students can improve their grades by actively participating in the discussions of the presentations.

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
Registration via WiWi-Portal

Blockveranstaltungen:
Introductory Meeting April 17 (online)
Seminar Presentations June 14 (in person) KD2Lab Team Room
Course: Seminar in Informatics (Bachelor) [T-WIWI-112836]

**Responsibility:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-INFO-106327 - Informatics Seminar

<table>
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**Events**

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<tr>
<td>WT 23/24 2500046</td>
<td>Machine Learning on Graphs (Bachelor)</td>
<td>Seminar / On-Site</td>
<td>Shao, Färber</td>
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<tr>
<td>WT 23/24 2513100</td>
<td>Seminar Data-driven Simulation for Industrial Systems (Master)</td>
<td>Seminar / On-Site</td>
<td>Lazarova-Molnar, Götz, Khodadadi</td>
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**Exams**

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<td>Security and Privacy Awareness</td>
<td>Seminar / On-Site</td>
<td>Volkamer</td>
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</table>

**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:**

**Machine Learning on Graphs (Bachelor)**

2500046, WS 23/24, SWS, Language: English, Open in study portal

**Content**

Graph representation learning deals with capturing and understanding the complex relationships and patterns inherent in graph-structured data. It focuses on developing techniques and algorithms to extract meaningful representations from graphs, enabling tasks such as node classification, link prediction, community detection, and graph generation.

This seminar will cover the fundamental concepts of graph representation learning, such as knowledge graphs, graph theory, and graph spectral theory. Additionally, you will have the chance to engage in collaborative reading of recent technical reports and research papers with your peers, encompassing machine learning algorithms pertaining to large language models, knowledge embedding, and social attribute prediction.
6 COURSES

Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]

6.141 Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]

**Responsible:** Professorenschaft des Instituts AIFB

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

**Part of:** M-INFO-102058 - Seminar Module Informatics

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**Exams**

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**Legend:**  📂  Online,  📂  Blended (On-Site/Online),  🗣️  On-Site,  ❌  Cancelled

Information Systems B.Sc.
Module Handbook as of 27/02/2024
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:

### Machine Learning on Graphs (Bachelor)
2500046, WS 23/24, SWS, Language: English, [Open in study portal]

**Content**
Graph representation learning deals with capturing and understanding the complex relationships and patterns inherent in graph-structured data. It focuses on developing techniques and algorithms to extract meaningful representations from graphs, enabling tasks such as node classification, link prediction, community detection, and graph generation. This seminar will cover the fundamental concepts of graph representation learning, such as knowledge graphs, graph theory, and graph spectral theory. Additionally, you will have the chance to engage in collaborative reading of recent technical reports and research papers with your peers, encompassing machine learning algorithms pertaining to large language models, knowledge embedding, and social attribute prediction.

### Seminar Programming 3 (Bachelor)
2513200, WS 23/24, 2 SWS, [Open in study portal]

**Content**
Registration information and the content of the seminar will be announced on the course page. Only bachelor students are allowed to attend this seminar.

### Seminar Linked Data and the Semantic Web (Bachelor)
2513312, WS 23/24, 3 SWS, Language: German/English, [Open in study portal]
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.

Seminar Real-World Challenges in Data Science and Analytics (Bachelor)
2513314, WS 23/24, 3 SWS, Language: German/English, Open in study portal

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.

Seminar Real-World Challenges in Data Science and Analytics (Master)
2513315, WS 23/24, 3 SWS, Language: German/English, Open in study portal

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.

Seminar Knowledge Discovery and Data Mining (Bachelor)
2513308, SS 2024, 3 SWS, Language: English, Open in study portal
**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
- Scientific Publications

Further Information: [https://aifb.kit.edu/web/Lehre/Praktikum_Knowledge_Discovery_and_Data_Science](https://aifb.kit.edu/web/Lehre/Praktikum_Knowledge_Discovery_and_Data_Science)

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/](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 jeweiligen Themen angegeben. Allgemeine Hintergrundinformationen ergeben sich z.B. aus den folgenden Lehrbüchern:

- Mitchell, T.; Machine Learning

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**Seminar Data Science & Real-time Big Data Analytics (Bachelor)**

2513310, SS 2024, 2 SWS, Language: English, [Open in study portal](Open in study portal)

**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 seminar is given under the following Link: [http://seminar-cep.fzi.de](http://seminar-cep.fzi.de)

Questions are answered via the e-mail address sem-ep@fzi.de.

**Organizational issues**

Questions are answered via the e-mail address sem-ep@fzi.de.

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**Cognitive Automobiles and Robots**

2513500, SS 2024, 2 SWS, Language: German/English, [Open in study portal](Open in study portal)

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## 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.

### User-Adaptive Systems Seminar
2540553, SS 2024, 2 SWS, Language: English, Open in study portal

## Content
User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

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). It is offered as part of the DFG-funded graduate school "KD2School: Designing Adaptive Systems for Economic Decisions" (https://kd2school.info/)

### Learning objectives of the seminar
- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

### Prerequisites
Strong analytical abilities and profound software development skills are required.

### Organizational issues
Termine werden bekannt gegeben

### Literature
Required literature will be made available in the seminar.
Course: Seminar in Operations Research (Bachelor) [T-WIWI-103488]

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

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

**Part of:** M-WIWI-101826 - Seminar Module Economic Sciences

### Events

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### Exams

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**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:

Seminar on Methodical Foundations of Operations Research (B)
2550131, WS 23/24, 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 students 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 scientific reasoning. Also rhetorical 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. For further information see German version.

Literature
Die Literatur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbereitung bekannt gegeben.
References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a preparatory meeting.

Seminar: Modern OR and Innovative Logistics
2550491, WS 23/24, 2 SWS, Language: German, Open in study portal
Seminar (S) Blended (On-Site/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 rhetorical skills.

Organizational issues
Anmeldezeitraum: 11.09.23 bis 30.09.23 im Wiwi Portal

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

Seminar: Modern OR and Innovative Logistics
2500028, SS 2024, 2 SWS, Language: German, Open in study portal
Seminar (S) Blended (On-Site/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.

Organizational issues
Anmeldung erfolgt über das Wiwi-Portal. Nähere Informationen hierzu finden Sie hier zu einem späteren Zeitpunkt.

Literature
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

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<td>2550131, SS 2024, 2 SWS, Language: German, Open in study portal</td>
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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 students are introduced to the style of scientific work. By focused 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 scientific reasoning. Also rhetoric 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. For further information see German version.

Literature
Die Literatur 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.
### 6.143 Course: Seminar in Statistics (Bachelor) [T-WIWI-103489]

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

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

**Part of:** M-WIWI-101826 - Seminar Module Economic Sciences

<table>
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<td>Seminar</td>
<td>Grothe, Kaplan, Liu</td>
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<td>ST 2024</td>
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<td>Predictive Data Analytics - An Introduction to Statistical Machine Learning</td>
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<td>Seminar / 🗣</td>
<td>Schienle, Rüter</td>
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<td>Spezielle Themen zu Statistik, Datenanalyse und maschinelm Lernen</td>
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<td>Seminar / 🗣</td>
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**Exams**

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**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.

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

**Topics in Econometrics**

2521310, WS 23/24, 2 SWS, Language: German, Open in study portal

**Organizational issues**

Blockveranstaltung. Termine werden auf Homepage und über Ilias bekannt gegeben.
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**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben
6 COURSES

Course: Seminar Informatics [T-INFO-112835]

6.144 Course: Seminar Informatics [T-INFO-112835]

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<th>Prof. Dr. Sebastian Abeck</th>
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<td>Advanced Methods of Information Fusion</td>
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<td>Human-Centered Systems Seminar: Engineering</td>
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<td>User-Adaptive Systems Seminar</td>
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Below you will find excerpts from events related to this course:

**Advanced Methods of Information Fusion**

24344, SS 2024, 2 SWS, Language: German/English, [Open in study portal](#)

**Content**

The growing spread and performance of modern information and communication technologies produces an ever-increasing amount of data. It is one of the central challenges of our time to extract meaningful information from these data sets. The approach to address these issues, often called data science, combines strategies and methods from the fields of machine learning, mathematics, state estimation, visualization and pattern recognition. During this seminar, the students will familiarize themselves with concepts and methods particularly focusing on estimation theory and its application.

The seminar targets master students in computer science and bachelor students in Information engineering and management.

**Human-Centered Systems Seminar: Engineering**

2500125, SS 2024, 3 SWS, Language: English, [Open in study portal](#)

**Content**

Formerly known as "Current Topics in Digital Transformation"

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 human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.

**User-Adaptive Systems Seminar**

2540553, SS 2024, 2 SWS, Language: English, [Open in study portal](#)
Content
User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g., glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

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. Mändche). It is offered as part of the DFG-funded graduate school “KD2School: Designing Adaptive Systems for Economic Decisions” (https://kd2school.info/)

Learning objectives of the seminar
- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

Prerequisites
Strong analytical abilities and profound software development skills are required.

Organizational issues
Termine werden bekannt gegeben

Literature
Required literature will be made available in the seminar.
Content
Formerly known as "Information Systems and Service Design Seminar"
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 IS I (Prof. Mädche). The research group "Information Systems I" (IS I) 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
### 6.145 Course: Seminar Informatics A [T-INFO-104336]

**Responsible:** Prof. Dr. Sebastian Abeck  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-102058 - Seminar Module Informatics

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|                       |         |                 |         | 2400078 Seminar: Neuronale Netze und künstliche Intelligenz           |
|                       |         |                 |         | 2400137 Embedded Machine Learning Seminar                           |
|                       |         |                 |         | 2400148 Embedded Security and Architectures                         |
|                       |         |                 |         | 2400210 Seminar: Critical topics in AI                             |
|                       |         |                 |         | 24344 Advanced Methods of Information Fusion                        |
|                       |         |                 |         | 24844 Seminar: Ubiquitous Systems                                   |
|                       |         |                 |         | 2500125 Engineering Seminar: Human-Centered Systems                |
|                       |         |                 |         | 2400011 Hot Topics in Bioinformatics                               |
|                       |         |                 |         | 2400072 Seminar: Service-oriented Architectures                     |
|                       |         |                 |         | 2400210 Seminar: Critical topics in AI                             |
|                       |         |                 |         | 24344 Advanced Methods of Information Fusion                        |
|                       |         |                 |         | 2500125 Human-Centered Systems Seminar: Engineering                |
|                       |         |                 |         | 2540553 User-Adaptive Systems Seminar                               |
|                       |         |                 |         | 2540557 Human-Centered Systems Seminar: Research                   |

| Exams                  |         |                 |         | **WT 23/24**  
|                       |         |                 |         | 7500018 Seminar Hot Topics in Networking                           |
|                       |         |                 |         | 7500021 Advanced Methods of Information Fusion                     |
|                       |         |                 |         | 7500175 Seminar: Energy Informatics                               |
|                       |         |                 |         | 7500224 Seminar: Neural Networks and Artificial Intelligence      |
|                       |         |                 |         | 7500267 Seminar Advanced Topics in Machine Translation             |
|                       |         |                 |         | 7500287 Seminar Information Systems                               |
|                       |         |                 |         | 7500311 Seminar: Critical topics in AI                            |
|                       |         |                 |         | 7500378 Seminar: Moral Autonomous Agents                          |
|                       |         |                 |         | 7900069 Engineering Seminar: Human-Centered Systems              |
|                       |         |                 |         | 7900233 Research Seminar: Human-Centered Systems                 |
|                       |         |                 |         | 7500014 Seminar: Hot Topics in Bioinformatics                     |

Organisation: KIT Department of Informatics

Part of: M-INFO-102058 - Seminar Module Informatics
Below you will find excerpts from events related to this course:

**Seminar: Neuronale Netze und künstliche Intelligenz**

2400078, WS 23/24, SWS, Language: German/English, Open in study portal

**Content**

In many tasks that appear natural to us, the fastest computers are unable to match the performance of the human brain. Neural networks attempt to simulate the parallel and distributed architecture of the brain in order to master these skills with learning algorithms. In this context, focus is being put on neural network approaches to computer vision and speech recognition, robotics and other areas.

In this seminar students will acquaint themselves with literature from provided topics and will present their results as a talk supported by slides to the other participants of the seminar.

**Recommendations:**

- Finishing the module "Kognitive Systeme" prior to the seminar is recommended.
- Attending the lecture "Deep Learning und Neuronale Netze" prior to the seminar is of advantage

**Embedded Machine Learning Seminar**

2400137, WS 23/24, SWS, Language: German/English, Open in study portal

**Content**

In our seminars, students learn about cutting-edge research in the research fields presented below. Students are offered topics by the supervisors, but also can suggest their own topics in these fields. The seminar is offered in both English and German.

**Machine Learning on On-Chip Systems**

Machine learning and on-chip systems form a symbiosis where each research area benefits from advances in the other. In this seminar, students review cutting-edge research on both areas.

Machine learning (ML) gains importance in all aspects of information systems. From high-level algorithms like image recognition to lower-level intelligent CPU management - ML is ubiquitous. On-chip systems also benefit from advances in ML techniques. Examples include adaptive resource management or workload prediction. However, ML techniques also benefit from advances in on-chip systems. A prominent example is acceleration of neural networks in recent desktop GPUs and even smartphone chips.

In this seminar, students will review cutting-edge state-of-the-art research (publications) to a specific topic related to ML on on-chip systems. The findings will be summarized in a seminar report and presented to the other members of the course. Students are welcome to suggest own topics, but this is not required. The seminar can be held in English or German.

**DNN Pruning and Quantization**

As DNNs become more computationally hungry, their hardware implementation becomes more challenging, since embedded devices have limited resources. DNN compression techniques, such as pruning and quantization, can be applied for efficient utilization of computational resources. While pruning involves removing unimportant elements of a DNN structure (connections, filters, channels etc), quantization decreases the precision for representing DNN-related tensors (weights and activations). Both promise to trade-off some of the application's accuracy for limited energy consumption and reduced memory footprint. Students will review state-of-the-art research works on hardware-aware DNN pruning and quantization. The findings will be summarized in a seminar report and presented to the other members of the course.

**Organizational issues**

Bitte im ILIAS zur Teilnahme anmelden.
Content
In our seminars, students learn about cutting-edge research in the research fields presented below. Students are offered topics by the supervisors, but also can suggest their own topics in these fields. The seminar is offered in both English and German.

Dependability for Reconfigurable Architectures
Dependability has become one of the prime concerns in recent nano-era. Reliability (the ability of the system to deliver services as specified) and Security (the ability of the system to protect itself against deliberate or accidental intrusion) are the two crucial attributes of dependable systems. Among the other reliability threats due to physical limits of CMOS technology, radiation induced soft errors or transient faults are also the most challenging threat to be handled. During this seminar, we will explore state-of-the-art for the power-efficient soft-error reliability and study different research solutions to improve soft-error resiliency in power efficient manner leveraging power-performance-reliability trade-offs. During this seminar, the students will also be able to understand hardware security in reconfigurable architectures.

Thermal and Power Aware Embedded Systems
Power densities are continuously increasing along with technology scaling and the integration of more transistors into smaller areas, potentially resulting in thermal emergencies on the chip. To mitigate such emergencies, power and thermal management techniques are employed. The state-of-the-art power and thermal management techniques can be classified into several categories, such as reactive and proactive techniques, centralized and distributed ones. Recently, machine learning algorithms are employed in power and thermal management techniques to make them more proactive and adaptive. Those various categories of the state-of-the-art techniques need to be reviewed in this seminar to demonstrate the advantage and disadvantage of each of them.

Security of Reconfigurable Embedded Systems
Various types of (re)configurable systems have emerged in recent years. The spectrum ranges from one-time configurable systems that are programmed at the design time for product-specific requirements, to reconfigurable systems that can also be adapted after commissioning, to dynamically reconfigurable systems whose configuration can be changed at runtime and their ability to dynamic reconfiguration is an important part of their system functionality. This seminar focuses on the runtime reconfigurable systems, their security aspects and methods. It investigates the current state of research for securing the runtime reconfigurable systems, as well as the feasibility of using the security measures from general processing architectures to runtime reconfigurable systems.

Security in Resource Management
Efficient resource management in many-core systems (i.e., systems with more than 100 cores, not only a dozen) has become a research challenge in the last years. As complexity and the demand for scalability increase, this new paradigm should also consider new security features to avoid or mitigate the effects of malicious applications both on critical information and the system as a whole.

In this seminar, we will focus on the state-of-the-art of security attacks such as Side Channel Attacks (SCA), Covert channel attacks, as well as other similar resource-based attacks and their effects on other critical applications running on many-core systems. During this seminar, student will dive into the security aspects of resource management, while investigating answers to the following research questions:

- How do these attacks work?
- Which are the associated vulnerabilities? What resources are vulnerable?
- What’s their impact on critical information or other resources?
- What are the current countermeasures for the attacks?

Organizational issues
Please register in ILIAS to participate.

Advanced Methods of Information Fusion
24344, WS 23/24, 2 SWS, Language: German. Open in study portal

Hot Topics in Bioinformatics
2400011, SS 2024, 2 SWS, Language: English. Open in study portal
Content
Prerequisites: CS Master’s level seminar. Participants must have attended and passed the course on "Introduction to Bioinformatics for Computer Scientists" in one of the preceding winter terms.

Task: You will need to select papers to present, give a presentation and write a report.

This main seminar allows students to understand and present the contents of current papers in Bioinformatics such as published for instance in the journals Bioinformatics, BMC Bioinformatics, Journal of Computational Biology etc. or at conferences such as ISMB or RECOMB.

We will provide a list of interesting papers, but students can also propose papers they are interested in. Students may also chose to cover broader topics of more general interest such as multiple sequence alignment, Bayesian phylogenetic inference, read assembly etc.

Each student will be assigned a lab member for help with understanding the article and preparing the slides as well as the report. Students should give a 35 minute presentation on their topic of choice and write a report (Seminararbeit) comprising 8 pages.

Goals: Participants are able to understand, critically assess, and compare current research papers in Bioinformatics. They are able to present algorithms and models from current research papers in oral and written form at a level that corresponds to that of scientific publications and conference presentations. Participants are able to suggest extension to current methods.

Credits: 3 ECTS

Organizational issues
IMPORTANT: Register for the seminar mailing list by sending an email to Alexandros.Stamatakis@h-its.org

Please also register for the seminar via the campus system.

All information on the seminar is provided at: Seminar page.

We will start with a kick-off meeting in the first week of the summer term on Thursday April 20.

Seminar presentations will be conducted in a block toward the end of the semester - date and time to be determined.

Advanced Methods of Information Fusion
24344, SS 2024, 2 SWS, Language: German/English, Open in study portal

Human-Centered Systems Seminar: Engineering
2500125, SS 2024, 3 SWS, Language: English, Open in study portal

User-Adaptive Systems Seminar
2540553, SS 2024, 2 SWS, Language: English, Open in study portal

Content
The growing spread and performance of modern information and communication technologies produces an ever-increasing amount data. It is one of the central challenges of our time to extract meaningful information from these data sets. The approach to address these issues, often called data science, combines strategies and methods from the fields of machine learning, mathematics, state estimation, visualization and pattern recognition. During this seminar, the students will familiarize themselves with concepts and methods particularly focusing on estimation theory and its application.

The seminar targets master students in computer science and bachelor students in Information engineering and management.

Content
Formerly known as "Current Topics in Digital Transformation"

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 human-centered systems lab (Prof. Mädche). Students will work on a dedicated topic in the context of human-centered systems and apply a pre-defined research method. A broad spectrum of topics is offered every semester, topics may range from creating an experimental design, analyzing collected data, or systematically comparing existing software prototypes in a specific field of interest.
Content
User-adaptive systems collect and analyze biosignals from users to recognize user states as a basis for adaptation. Thermic, mechanical, electric, acoustic, and optical signals are collected using sensors which are integrated in wearables, e.g. glasses, earphones, belts, or bracelets. The collected data is processed with analytics and machine learning techniques in order to determine short-term, evolving over time, and long-term user states in the form of user characteristics, affective-cognitive states, or behavior. Finally, the recognized user states are leveraged for realizing user-centric adaptations.

In this seminar, interdisciplinary teams of students design, develop, and evaluate a user-adaptive system prototype leveraging state-of-the-art hard- and software. This seminar follows an interdisciplinary approach. Students from the fields of computer science, information systems and industrial engineering & management collaborate in the prototype design, development, and evaluation.

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). It is offered as part of the DFG-funded graduate school “KD2School: Designing Adaptive Systems for Economic Decisions” (https://kd2school.info/)

Learning objectives of the seminar
- Explain what a user-adaptive system is and how it can be conceptualized
- Suggest and evaluate different design solutions for addressing the identified problem
- Build a user-adaptive system prototype using state-of-the-art hard- and software
- Perform a user-centric evaluation of the user-adaptive system prototype

Prerequisites
Strong analytical abilities and profound software development skills are required.

Organizational issues
Termine werden bekannt gegeben

Literature
Required literature will be made available in the seminar.
**Content**
Formerly known as “Information Systems and Service Design Seminar”

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 IS I (Prof. Mädche). The research group “Information Systems I” (IS I) 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
### 6.146 Course: Seminar: Legal Studies I [T-INFO-101997]

**Responsible:** N.N.  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101218 - Seminar Module Law

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#### Events

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<tr>
<td>WT 23/24</td>
<td>2400060</td>
<td>Data in Software-Intensive Technical Systems - Modeling – Analysis – Protection</td>
<td>Seminar</td>
<td>Seminar / 🗣</td>
<td>Each term</td>
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</tr>
<tr>
<td>WT 23/24</td>
<td>2400184</td>
<td>EU Digital Regulatory Framework</td>
<td>Seminar</td>
<td>Seminar / 🗣</td>
<td>Each term</td>
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</tr>
<tr>
<td>WT 23/24</td>
<td>2400203</td>
<td>(Smart) City in and as a Network</td>
<td>Seminar</td>
<td>Seminar / 🗣</td>
<td>Each term</td>
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<tr>
<td>WT 23/24</td>
<td>2513214</td>
<td>Seminar Information security and Data protection (Bachelor)</td>
<td>Seminar</td>
<td>Seminar / 🗣</td>
<td>Each term</td>
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<td>ST 2024</td>
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<td>Each term</td>
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<td>Intelligente Chatbots und Recht</td>
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<td>Seminar / 🗣</td>
<td>Each term</td>
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<td>2400194</td>
<td>(Generative) KI und Recht</td>
<td>Seminar</td>
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<td>Current Issues in Patent Law</td>
<td>Seminar</td>
<td>Seminar / 🗣</td>
<td>Each term</td>
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Legend: 🗣 Online, 🗩 Blended (On-Site/Online), 📈 On-Site, ✗ Canceled

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

#### EU Digital Regulatory Framework

2400184, WS 23/24, 2 SWS, Language: English, Open in study portal

#### Content

This class aims to provide an overview on the legal instruments forming the EU digital regulatory framework. Following its Digital Single Market Strategy, the EU has set up a new strategic programme for a "Digital Decade". Existing regulations like the General Data Protection Regulation (GDPR), or the E-Commerce Directive, are being complemented by a variety of new instruments that aim to set binding rules on online markets, to regulate data flows in various ways, but also to pioneer a legal framework on AI. Prominent instruments include the new AI Act (proposal), the Digital Services Act (DSA) and Digital Markets Act (DMA), the Data Act, Data Governance Act, or Open Data Directive.

The class will provide an overview on the existing framework: Which regulations and directives are relevant? How do they apply and interact which each other in a broader context?

Another objective is to provide students with the ability to read these legal instruments: How to access regulatory instruments that often have more than 100 pages (without having to read every single sentence)? How to gain a comprehensive, high-level understanding of the instrument? How to identify parts relevant to a particular legal problem?

The class will start with an introduction into EU law and regulatory instruments in general. Concrete guidance on reading, analysing and working with legal instruments in English will be given. Based on these instructions, students will be assigned legal instruments to present in the final unit along with a two-pages report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 40%, two-pages report: 40%, discussion: 20%).
Organizational issues
WS 2023/24
### Course: Software Engineering I [T-INFO-101968]

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Prof. Dr.-Ing. Ina Schaefer</th>
</tr>
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<tbody>
<tr>
<td>Organisation</td>
<td>KIT Department of Informatics</td>
</tr>
<tr>
<td>Part of</td>
<td>M-INFO-101175 - Software Engineering I</td>
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<tr>
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<td>24518</td>
<td>Softwaretechnik I</td>
<td>4 SWS</td>
<td>Lecture / Practice</td>
<td>Schaefer, Eichhorn</td>
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**Exams**

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<tr>
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<td>7500123</td>
<td>Software Engineering I</td>
<td>Schaefer</td>
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<td>ST 2024</td>
<td>7500152</td>
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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Canceled
## 6.148 Course: Software Engineering I Pass [T-INFO-101995]

**Responsible:** Prof. Dr.-Ing. Ina Schaefer  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101175 - Software Engineering I

<table>
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<th>4 SWS</th>
<th>Lecture / Practice (!)</th>
<th>Schaefer, Eichhorn</th>
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### Exams

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<th>Software Engineering I Pass</th>
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</table>

**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ☢️ Cancelled
6.149 Course: Software Engineering II [T-INFO-101370]

**Responsible:** Prof. Dr.-Ing. Anne Koziolek
Prof. Dr. Ralf Reussner

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-100833 - Software Engineering II

<table>
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<td>Each winter term</td>
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<td>24076</td>
<td>Software Engineering II</td>
<td>Lecture / ⏰ Reussner</td>
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**Exams**

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<td>7500054</td>
<td>Software Engineering II</td>
<td>Reussner</td>
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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), ⏰ On-Site, ✗ Cancelled

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

**Software Engineering II**

24076, WS 23/24, 4 SWS, Language: German, [Open in study portal](#)

**Literature**

6 COURSES  

**Course: Special Topics in Information Systems [T-WIWI-109940]**

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Prof. Dr. Christof Weinhardt</th>
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<td>Organisation</td>
<td>KIT Department of Economics and Management</td>
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<td>Part of</td>
<td>M-WIWI-101434 - eBusiness and Service Management</td>
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<td>Each term</td>
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<td>WT 23/24</td>
<td>7900263</td>
<td>Special Topics in Information Systems</td>
<td>Weinhardt</td>
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</table>

**Competence Certificate**

The assessment of this course is in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The overall grade is composed as follows:

A total of 60 points can be achieved, of which

- A maximum of 30 points for the written documentation
- A maximum of 30 points for the practical component

In order to pass the success control, at least 15 points (written documentation / practical component) must be achieved.

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

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Systems" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.

The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.
Course: Statistical Modeling of Generalized Regression Models [T-WIWI-103065]

### Responsible
apl. Prof. Dr. Wolf-Dieter Heller

### Organisation
KIT Department of Economics and Management

### Part of
M-WIWI-101599 - Statistics and Econometrics
M-WIWI-105414 - Statistics and Econometrics II

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### Events

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<th>Recurrence</th>
<th>Version</th>
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<tbody>
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<td>WT 23/24</td>
<td>Statistical Modeling of Generalized Regression Models</td>
<td>2 SWS</td>
<td>Lecture</td>
<td>Heller</td>
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<td>Exams</td>
<td>WT 23/24</td>
<td>7900146 (WS23/24)</td>
<td>Statistical Modeling of generalized regression models</td>
<td>Heller</td>
<td></td>
</tr>
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</table>

### 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:

**Statistical Modeling of Generalized Regression Models**
2521350, WS 23/24, 2 SWS, Open in study portal

### 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
6.152 Course: Statistics I [T-WIWI-102737]

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

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

**Part of:** M-WIWI-101432 - Introduction to Statistics

<table>
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<td>Each summer term</td>
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**Events**

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<th>Grade</th>
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<tbody>
<tr>
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<td>2600008</td>
<td>Statistics I</td>
<td>4 SWS</td>
<td>Lecture / Grothe</td>
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<tr>
<td>ST 2024</td>
<td>2600009</td>
<td>Tutorien zu Statistik</td>
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<td>Tutorial (Lerch, Becker, Grothe)</td>
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**Exams**

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<th>Credits</th>
<th>Type</th>
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</thead>
<tbody>
<tr>
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<td>7900022</td>
<td>Statistics I</td>
<td>Krüger, Lerch</td>
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<tr>
<td>ST 2024</td>
<td>7900104</td>
<td>Statistics I</td>
<td>Grothe, Lerch</td>
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</table>

**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

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

<table>
<thead>
<tr>
<th>Statistics I</th>
<th>Credits</th>
<th>Grade</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>2600008</td>
<td>4 SWS, SS 2024, Language: German, Open in study portal</td>
<td></td>
<td>Lecture (V) On-Site</td>
</tr>
</tbody>
</table>

**Content**

**Learning objectives:**

Students understand and apply

- basic concepts of statistical data exploration as well as
- basic definitions and theorems of probability theory.

**Content:**

A. Descriptive Statistics: univariate und bivariate analysis  
B. Probability Theory: probability space, conditional and product probabilities  
C. Random variables: location and shape parameters, dependency measures, concrete distribution models

**Workload:**

Total workload for 5 CP: approx. 150 hours  
Attendance: 60 hours  
Preparation and follow-up: 90 hours
Literature
Skriptum: Kurzfassung Statistik I

Weiterführende Literatur:
6.153 Course: Statistics II [T-WIWI-102738]

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

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

**Part of:** M-WIWI-101432 - Introduction to Statistics

<table>
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<td>Each winter term</td>
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**Events**
- WT 23/24 2610020 Statistics II 4 SWS Lecture / 🗣 Krüger
- WT 23/24 2610021 PC-Praktikum zu Statistik II 2 SWS Tutorial (Krüger, Lerch, Becker)
- WT 23/24 2610022 Statistics II 2 SWS

**Exams**
- WT 23/24 7900001 Statistics II
- ST 2024 7900082 Statistics II

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 takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

**Prerequisites**
None

**Recommendation**
It is recommended to attend the course Statistics I [2600008] before the course Statistics II [2610020].

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

**Statistics II**
2610020, WS 23/24, 4 SWS, Language: German, Open in study portal

**Content**

**Learning objectives:**
The student
- understands and applies the basic definitions and theorems of probability theory,
- transfers these theoretical foundations to problems in parametrical mathematical statistics.

**Content:**
D. Sampling and Estimation Theory: Sampling distributions, estimators, point and interval estimation
E. Test Theory: General Principles of Hypothesis Testing, Concrete 1- and 2-Sampling Tests
F. Regression analysis: Simple and multiple linear regression, statistical inference

**Requirements:**
It is recommended to attend the course Statistics I [2600008] before the course Statistics II [2610020].

**Workload:**
Total workload: 150 hours (5.0 Credits).
Attendance: 30 hours
Preparation and follow-up: 90 hours
Literature
Skriptum: Kurzfassung Statistik II

Weiterführende Literatur:
### 6.154 Course: Strategic Finance and Technology Change [T-WIWI-110511]

**Responsible:** Prof. Dr. Martin Ruckes

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

**Part of:**
- M-WIWI-101423 - Topics in Finance II
- M-WIWI-101465 - Topics in Finance I

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<td>Each summer term</td>
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</table>

**Exams**

| WT 23/24 | 7900219 | Strategic Finance and Technology Change | Ruckes |

**Competence Certificate**

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The exam is offered each semester. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.

**Prerequisites**

None

**Recommendation**

Attending the lecture "Financial Management" is strongly recommended.
### Course: Strategic Management [T-WIWI-113090]

**Responsible:** Prof. Dr. Hagen Lindstädt  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101425 - Strategy and Organization

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**Events**

| 2024          | 2577900 | Strategic Management | 2 SWS | Lecture / On-Site | Lindstädt |

**Exams**

| 2023/24       | 7900199 | Management and Strategy | Lindstädt |

**Legend:** 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled

### Competence Certificate

The assessment consists of a written exam (60 min) taking place at the beginning of the recess period (according to §4 (2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

### Prerequisites

None

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

#### Strategic Management

2577900, SS 2024, 2 SWS, Language: German, [Open in study portal](#)
Content
Students learn central concepts of strategic management along the ideal-typical strategy process. An overview of fundamental frameworks and models will be provided and an action-oriented integration performance will be achieved through the transfer of theory to practical issues.

Through intensive exposure to real-world case studies, students will be encouraged to learn and apply strategic measures in a targeted manner in the real business world. The course features an action-oriented approach and provides students with a realistic understanding of the possibilities and limitations of rational design approaches.

Content in Keywords:
- Corporate governance and strategic management: concepts, levels, process.
- Strategic analysis: internal and external analysis
- Competitive strategy: formulation, evaluation and selection of strategic action alternatives at business unit level
- Strategic interaction and strategic commitment
- Corporate strategy: diversification strategy, M&A and management of the corporate portfolio
- Implementation of strategies in companies

Structure:
Lectures in the course are available to students online as recordings, while class dates are reserved for active discussion of real-world case studies.

Learning Objectives:
Upon completion of the course, students will be able to,
- Prepare strategic decisions along the ideal strategic process in a practical setting,
- Identify sources of competitive advantage,
- Explain interrelationships of companies in competition,
- Evaluate the portfolio management of companies,
- To classify actions and decisions of companies strategically,
- Apply knowledge from theoretical frameworks to the analysis of real-life situations.

Recommendations:
None.

Workload:
Total workload for 3.5 credit hours: approximately 105 hours.

Attendance: 30 hours
Self-study: 75 hours

Verification:
Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as an open-book examination (examination performance of another kind according to SPO § 4 Abs. 2, Pkt. 3), or as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1).

It is expected that the exam will take place at the beginning of the semester's lecture-free period. The examination is offered every semester and can be repeated at any regular examination date.

Literature

Die relevanten Auszüge und zusätzliche Quellen werden in der Veranstaltung bekannt gegeben.
6.156 Course: Supplement Applied Informatics [T-WIWI-110711]

**Responsible:** Professorenschaft des Instituts AIFB
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101476 - Business Processes and Information Systems

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<td>Grade to a third</td>
<td>Each term</td>
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</table>

**Competence Certificate**
The assessment of this course is a written or (if necessary) oral examination. Depending on the particular course associated with this placeholder a bonus on the examination grade is possible.

**Prerequisites**
None

**Annotation**
This course can be used in particular for the acceptance of external courses whose content is in the broader area of applied informatics, but is not equivalent to another course of this topic.
6.157 Course: Surfaces for Computer aided Design [T-INFO-102073]

| Responsible: | Prof. Dr. Hartmut Prautzsch |
| Organisation: | KIT Department of Informatics |
| Part of: | M-INFO-101254 - Surfaces for Computer Aided Design |

<table>
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<td>WT 23/24 7500273</td>
<td>Surfaces for Computer aided Design</td>
<td>Prautzsch</td>
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Course: Tactical and Operational Supply Chain Management [T-WIWI-102714]

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

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

**Part of:**
- M-WIWI-101413 - Applications of Operations Research
- M-WIWI-101421 - Supply Chain Management
- M-WIWI-103278 - Optimization under Uncertainty

**Type:** Written examination  
**Credits:** 4.5  
**Grading scale:** Grade to a third  
**Recurrence:** Each summer term  
**Version:** 3

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<td>3</td>
<td>Tactical and operational SCM</td>
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<td>Lecture /жить</td>
<td>Nickel</td>
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<td>ST 2024 2550487</td>
<td>1.5</td>
<td>Übungen zu Taktisches und operatives SCM</td>
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<td>Practice /жить</td>
<td>Pomes, Linner, Hoffmann</td>
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<td>Lecture (V)</td>
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<td>Lecture (V)</td>
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**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 in every semester.

Prerequisite for admission to examination is the successful completion of the online assessments.

**Prerequisites**

Prerequisite for admission to examination is the successful completion of the online assessments.

**Recommendation**

None

**Annotation**

The lecture is held in every 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:

**Tactical and operational SCM**  
2550486, SS 2024, 3 SWS, Language: German, Open in study portal

**Lecture (V)**  
On-Site

**Content**

The planning of material transport is an essential element of Supply Chain Management. By linking transport connections across different facilities, the material source (production plant) is connected with the material sink (customer). The general supply task can be formulated as follows (cf. Gudehus): For given material flows or shipments, 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. The main goal of the inventory management is the optimal determination of order quantities in terms of minimization of fixed and variable costs subject to resource constraints, supply availability and service level requirements. Similarly, the problem of lot sizing in production considers the determination of the optimal amount of products to be produced in a time slot. The course includes an introduction to basic terms and definitions of Supply Chain Management and a presentation of fundamental quantitative planning models for distribution, vehicle routing, inventory management and lot sizing. Furthermore, case studies from practice will be discussed in detail.

Passing the online exercise is a prerequisite for admission to the exam.
Literature
Weiterführende Literatur

- Domschke: Logistik: Transporte, 5. Auflage, Oldenbourg, 2005
- Ghiani, Laporte, Musmanno: Introduction to Logistics Systems Planning and Control, Wiley, 2004
- Gudehus: Logistik, 3. Auflage, Springer, 2005
T 6.159 Course: Team Project Software Development [T-INFO-109823]

**Responsible:** Prof. Dr. Sebastian Abeck
Prof. Dr. Ralf Reussner

**Organisation:** KIT Department of Informatics

**Part of:** M-INFO-104809 - Team Project Software Development

**Type:** Examination of another type
**Credits:** 8
**Grading scale:** Grade to a third
**Recurrence:** Each term
**Version:** 2

### Events

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<tr>
<td>WT 23/24</td>
<td>2400101</td>
<td>Team Project Software Development</td>
<td>Practical course / 📣</td>
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<tr>
<td>ST 2024</td>
<td>2424901</td>
<td>Team Project Software Development</td>
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### Exams

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<tr>
<td>WT 23/24</td>
<td>7500317</td>
<td>Team Project Software Development: Development of a Connected Car Application for Providing Automotive Services</td>
<td>Abeck</td>
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<td>WT 23/24</td>
<td>7500355</td>
<td>Team Project Software Development: Write Your Own Android App</td>
<td>Koziolek</td>
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<tr>
<td>WT 23/24</td>
<td>7500359</td>
<td>Teamprojekt Softwareentwicklung: Recycle Smarter - Deep Learning für die Trennqualitätsbestimmung von Altglas</td>
<td>Neumann</td>
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<tr>
<td>WT 23/24</td>
<td>7900262</td>
<td>Team Project Software Development – Development of an Analysis Pipeline for Trajectory Data Sets</td>
<td>Zöllner</td>
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<td>WT 23/24</td>
<td>7900312</td>
<td>Team Project Software Development: Designing a Large Language Model-based Multilingual Open Data Assistant</td>
<td>Mädche</td>
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<td>WT 23/24</td>
<td>7900336</td>
<td>Team Project Software Development: Development of a cloud-based platform and smartwatch app for collecting and analyzing biosignals and emotions</td>
<td>Mädche</td>
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<tr>
<td>WT 23/24</td>
<td>7900337</td>
<td>Team Project Software Development: Automated checking of scientific references with the help of large language models</td>
<td>Oberweis</td>
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<tr>
<td>WT 23/24</td>
<td>7900338</td>
<td>Team Project Software Development: Development of a testframework for mobile applications</td>
<td>Oberweis</td>
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Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Cancelled
Below you will find excerpts from events related to this course:

**Telematics**
24128, WS 23/24, 3 SWS, Language: German, [Open in study portal](#)

**Lecture (V)**
On-Site

**Content**

The lecture covers (i.a.) protocols, architectures, as well as methods and algorithms, for routing and establishing reliable end-to-end connections in the Internet. In addition to various methods for media access control in local area networks, the lecture also covers other communication systems, e.g. circuit-switched systems such as ISDN. Participants should also have understood the possibilities for managing and administering networks.

Familiar with the contents of the lecture *Einführung in Rechnernetze* or comparable lectures is assumed.

**Learning Objectives**

After attending this lecture, the students will

- have a profound understanding of protocols, architectures, as well as procedures and algorithms used for routing and for establishing reliable end-to-end connections in the Internet
- have a profound understanding of different media access control procedures in local networks and other communication systems like circuit-switched ISDN
- have a profound understanding of the problems that arise in large scale dynamic communication systems and are familiar with mechanism to deal with these problems
- be familiar with current developments such as SDN and data center networking
- be familiar with different aspects and possibilities for network management and administration

Students have a profound understanding of the basic protocol mechanisms that are necessary to establish reliable end-to-end communication. Students have detailed knowledge about the congestion and flow control mechanisms used in TCP and can discuss fairness issue in the context of multiple parallel transport streams. Students can analytically determine the performance of transport protocols and know techniques for dealing with specific constraints in the context of TCP, e.g., high data rates and low latencies. Students are familiar with current topics such as the problem of middle boxes on the Internet, the usage of TCP in data centers or multipath TCP. Students are also familiar with practical aspects of modern transport protocols and know practical ways to overcome heterogeneity in the development of distributed applications.

Students know the functions of (Internet) routing and routers and can explain and apply common routing algorithms. Students are familiar with routing architectures and different alternatives for buffer placement as well as their advantages and disadvantages. Students understand the classification into interior and exterior gateway protocols and have in-depth knowledge of the functionality and features of common protocols such as RIP, OSPF, and BGP. Students are also familiar with current topics such as label switching, IPv6 and SDN.

Students know the function of media access control and are able to classify and analytically evaluate different media access control mechanisms. Students have an in-depth knowledge of Ethernet and various Ethernet variants and characteristics, which especially includes current developments such as real-time Ethernet and data center Ethernet. Students can explain and apply the Spanning Tree Protocol.

Students know the architecture of ISDN and can reproduce the peculiarities of setting up the ISDN subscriber line. Students are familiar with the technical features of DSL.
Literature
Weiterführende Literatur
• Internet-Standards
• Artikel in Fachzeitschriften
# 6.161 Course: Theoretical Foundations of Computer Science [T-INFO-103235]

**Responsible:** Prof. Dr.-Ing. Marvin Künnemann  
Dr. rer. nat. Torsten Ueckerdt  
**Organisation:** KIT Department of Informatics  
**Part of:** M-INFO-101189 - Theoretical Informatics

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**Events**

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<td>3/1 SWS</td>
<td>Lecture / Practice ( / )</td>
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**Exams**

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<th>Credits</th>
<th>Grading scale</th>
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<td>Theoretical Foundations of Computer Science</td>
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<td>Wagner, Ueckerdt</td>
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<td>ST 2024</td>
<td>7500314</td>
<td>Theoretical Foundations of Computer Science</td>
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<td>Ueckerdt</td>
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Legend: 🖥 Online, ☑ Blended (On-Site/Online), 🗣 On-Site, ❌ Cancelled
6.162 Course: Topics in Human Resource Management [T-WIWI-111858]

**Responsible:** Prof. Dr. Petra Nieken

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

**Part of:**
- M-WIWI-101513 - Human Resources and Organizations
- M-WIWI-105928 - HR Management & Digital Workplace

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<td>Grade to a third</td>
<td>Each term</td>
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**Events**

| ST 2024 | 2573015 | Topics in Human Resource Management | 2 SWS | Colloquium (K/🗣) | Nieken, Mitarbeiter |

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✗ Canceled

**Competence Certificate**

Alternative exam assessment.

The grade is made up of the presentation of a given research topic and active participation in the discussions in the course. The weighting depends on the course and will be announced at the beginning of the course.

**Prerequisites**

This course cannot be combined with T-WIWI-102871 "Problem Solving, Communication and Leadership".

**Recommendation**

We recommend visiting the course "Human Resource Management" before taking this course. The course is strongly recommended for students interested in empirical research in the areas HRM, personnel economics, and leadership.

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

**Topics in Human Resource Management**

2573015, SS 2024, 2 SWS, Language: German, Open in study portal

**Colloquium (KOL)**

On-Site

**Content**

The students will discuss and analyze selected research papers in the areas HRM, personnel economics, and leadership. The students will present research papers and discuss research methods and designs as well as content.

**Aim**

The student

- Looks into current research topics in the areas HRM, personnel economics, and leadership.
- Analyzes research papers in detail and evaluates the research outcomes.
- Trains their presentation skills.
- Learns to critically evaluate research methods and trains the scientific discussion culture.
- Gains deeper knowledge in the area of HRM.
- Learns to evaluate research designs and takes into account the ethical dimension of research.

**Notes**

Due to the interactive nature of the course, the number of participants is limited. If you are interested, please contact Prof. Nieken by email.

**Workload**

The total workload for this course is approximately 90 hours.

Lecture: 30 hours
Preparation: 45 hours
Exam preparation: 15 hours

**Literature**

Selected research papers
Organizational issues
Geb. 05.20, Raum 2A-12.1
### 6.163 Course: Web Applications and Service-Oriented Architectures (I) [T-INFO-103122]

- **Responsible:** Prof. Dr. Sebastian Abeck
- **Organisation:** KIT Department of Informatics
- **Part of:** M-INFO-101636 - Web Applications and Service-Oriented Architectures (I)

#### Type
- Oral examination

#### Credits
- 4

#### Grading scale
- Grade to a third

#### Recurrence
- Each winter term

#### Version
- 1

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<td>24153</td>
<td>2 SWS</td>
<td>Lecture / ☑️</td>
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<td>Abeck</td>
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**Legend:** 🖥 Online, ☐ Blended (On-Site/Online), ☑️ On-Site, ☑️ Cancelled
6.164 Course: Welfare Economics [T-WIWI-102610]

**Responsible:** Prof. Dr. Clemens Puppe  
**Organisation:** KIT Department of Economics and Management  
**Part of:** M-WIWI-101501 - Economic Theory

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<td>Welfare Economics</td>
<td>Written examination</td>
<td>Grade to a third</td>
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**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**

The course *Economics I: Microeconomics [2610012]* has to be completed beforehand.

**Recommendation**

None

**Annotation**

The course only takes place every second summer semester, the next course is planned for summer semester 2021.