Karlsruher Institut für Technologie

# Module Handbook
# Digital Economics (Master of Science (M.Sc.))

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KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT

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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 examamination. If the module examination is subdivided into partial examinations, the content of each course will be examined in corresponding partial examinations. Registration for examinations can be done online at the campus management portal. The following functions can be accessed on https://campus.studium.kit.edu/:

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

For further and more detailed information, 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 loosing 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

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

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# 2 Study plan

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

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

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

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

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

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

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

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

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

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

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

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

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

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

# 4 Key Skills

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

**Soft skills**

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

**Enabling skills**

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

**Orientational knowledge**

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

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

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

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

# 5 Field of study structure

| Mandatory | |
|---|---|
| Master's Thesis | 30 CR |
| Economics | 27 CR |
| Methods | 27 CR |
| Society | 9 CR |
| Electives | 27 CR |

## 5.1 Master's Thesis

**Credits**
30

| Mandatory | | |
|---|---|---|
| M-WIWI-106420 | Module Master's Thesis | 30 CR |

## 5.2 Economics

**Credits**
27

| Mandatory | | |
|---|---|---|
| M-WIWI-106408 | Digital Economics | 9 CR |
| M-WIWI-106409 | Digital Financial Economics | 9 CR |
| M-WIWI-106410 | Economics & Management | 9 CR |

## 5.3 Methods

**Credits**
27

| Mandatory | | |
|---|---|---|
| M-WIWI-106412 | Computation & Optimization | 9 CR |
| M-WIWI-105880 | Informatics & Machine Learning | 9 CR |
| M-WIWI-106411 | Statistics & Econometrics | 9 CR |

## 5.4 Society

**Credits**
9

| Mandatory | | |
|---|---|---|
| M-WIWI-106413 | Digitalization & Society | 9 CR |

## 5.5 Electives

**Credits**
27

| | | |
|---|---|---|
| **Mandatory** | | |
| M-WIWI-106425 | Seminar Module | 9 CR |
| **Economics (Election: at least 9 credits)** | | |
| M-WIWI-101497 | Agglomeration and Innovation | 9 CR |
| M-WIWI-101453 | Applied Strategic Decisions | 9 CR |
| M-WIWI-101504 | Collective Decision Making | 9 CR |
| M-WIWI-101505 | Experimental Economics | 9 CR |
| M-WIWI-101478 | Innovation and Growth | 9 CR |
| M-WIWI-101514 | Innovation Economics | 9 CR |
| M-WIWI-101500 | Microeconomic Theory | 9 CR |
| M-WIWI-101406 | Network Economics | 9 CR |
| M-WIWI-101638 | Econometrics and Statistics I | 9 CR |
| M-WIWI-101502 | Economic Theory and its Application in Finance | 9 CR |
| M-WIWI-101468 | Environmental Economics | 9 CR |
| M-WIWI-101485 | Transport Infrastructure Policy and Regional Development | 9 CR |
| M-WIWI-101511 | Advanced Topics in Public Finance | 9 CR |
| M-WIWI-101496 | Growth and Agglomeration | 9 CR |
| **Business Administration (Election: at most 9 credits)** | | |
| M-WIWI-105659 | Advanced Machine Learning and Data Science | 9 CR |
| M-WIWI-103119 | Advanced Topics in Strategy and Management | 9 CR |
| M-WIWI-101410 | Business & Service Engineering | 9 CR |
| M-WIWI-105714 | Consumer Research | 9 CR |
| M-WIWI-101498 | Management Accounting | 9 CR |
| M-WIWI-101510 | Cross-Functional Management Accounting | 9 CR |
| M-WIWI-103117 | Data Science: Data-Driven Information Systems | 9 CR |
| M-WIWI-101647 | Data Science: Evidence-based Marketing | 9 CR |
| M-WIWI-105661 | Data Science: Intelligent, Adaptive, and Learning Information Services | 9 CR |
| M-WIWI-104080 | Designing Interactive Information Systems | 9 CR |
| M-WIWI-106258 | Digital Marketing | 9 CR |
| M-WIWI-102808 | Digital Service Systems in Industry | 9 CR |
| M-WIWI-103720 | eEnergy: Markets, Services and Systems | 9 CR |
| M-WIWI-101409 | Electronic Markets | 9 CR |
| M-WIWI-101451 | Energy Economics and Energy Markets | 9 CR |
| M-WIWI-101452 | Energy Economics and Technology | 9 CR |
| M-WIWI-101488 | Entrepreneurship (EnTechnon) | 9 CR |
| M-WIWI-101482 | Finance 1 | 9 CR |
| M-WIWI-101483 | Finance 2 | 9 CR |
| M-WIWI-101480 | Finance 3 | 9 CR |
| M-WIWI-105894 | Foundations for Advanced Financial -Quant and -Machine Learning Research | 9 CR |
| M-WIWI-105923 | Incentives, Interactivity & Decisions in Organizations | 9 CR |
| M-WIWI-101471 | Industrial Production II | 9 CR |
| M-WIWI-101412 | Industrial Production III | 9 CR |
| M-WIWI-101411 | Information Engineering | 9 CR |
| M-WIWI-104068 | Information Systems in Organizations | 9 CR |
| M-WIWI-101507 | Innovation Management | 9 CR |
| M-WIWI-105312 | Marketing and Sales Management | 9 CR |
| M-WIWI-101446 | Market Engineering | 9 CR |
| M-WIWI-101506 | Service Analytics | 9 CR |
| M-WIWI-101503 | Service Design Thinking | 9 CR |
| M-WIWI-102754 | Service Economics and Management | 9 CR |
| M-WIWI-102806 | Service Innovation, Design & Engineering | 9 CR |
| M-WIWI-101448 | Service Management | 9 CR |

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

# 6 Modules

## M 6.1 Module: Advanced Machine Learning and Data Science [M-WIWI-105659]

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

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

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

**Competence Certificate**
**Due to the professor's research sabbatical, the BSc module "Financial Data Science" and MSc module "Foundations for Advanced Financial -Quant and -Machine Learning Research" and the MSc module "Advanced Machine Learning and Data Science" along with the respective examinations will not be offered in SS2023. Bachelor and Master thesis projects are not affected and will be supervised.**

The assessment is carried out in an alternative form.The final grade is evaluated based on the intermediate presentations during the project, the quality of the implementation, the final written thesis and a final presentation.

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

**Competence Goal**
After a successful project, the students can:

- select and apply modern machine learning methods to solve a data science problem;
- organize themselves in a team in a goal-oriented manner and bring an extensive software project in the field of data science and machine learning to success;
- deepen their data science and machine learning skills
- solve a finance problem with the help of data science and machine learning algorithm.

**Content**
The course is targeted at students with a major in Data Science and/or Machine Learning and/or Quantitative Finance. It offers students the opportunity to develop hands-on knowledge on new developments in the intersection of quantitative financial markets, data science and machine learning. The result of the project should not only be a final thesis, but the implementation of methods or development of an algorithm in machine learning and data science. Typically, problems and data are taken from current research and innovations in the field of quantitative asset and risk management.

**Workload**
Total effort for 9 credit points: approx. 270 hours are divided into the following parts: Communication:Exchange during the project: 30 h, Final presentation: 10 h; Implementation and thesis: Preparation before development (Problem analysis and solution design): 70 h, Solution implementation: 110 h, Tests and quality assurance: 50 h.

**Recommendation**
None

# M 6.2 Module: Advanced Topics in Public Finance (WW4VWL18) [M-WIWI-101511]

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

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

| | | | |
|---|---|---|---|
| **Electives (Election: between 1 and 2 items)** | | | |
| T-WIWI-108711 | Basics of German Company Tax Law and Tax Planning | 4,5 CR | Gutekunst, Wigger |
| T-WIWI-102740 | Public Management | 4,5 CR | Wigger |
| **Supplementary Courses (Election: between 0 and 1 items)** | | | |
| T-WIWI-111304 | Fundamentals of National and International Group Taxation | 4,5 CR | Wigger |
| T-WIWI-102739 | Public Revenues | 4,5 CR | Wigger |

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

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

**Prerequisites**
At least one of the courses "Public Management" or "Basics of German Company Tax Law and Tax Planning" is mandatory in the module and must be successfully examined.

**Competence Goal**
The student

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

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

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

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

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

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

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

# M 6.3 Module: Advanced Topics in Strategy and Management [M-WIWI-103119]

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

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

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

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

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

**Prerequisites**
None

**Competence Goal**
Students

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

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

The students

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

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

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

**Recommendation**
None

# M 6.4 Module: Agglomeration and Innovation (WW4VWL13) [M-WIWI-101497]

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

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | 4 | 3 |

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-102609 | Advanced Topics in Economic Theory | 4,5 CR | Mitusch |
| T-WIWI-109194 | Dynamic Macroeconomics | 4,5 CR | Brumm |
| T-WIWI-112822 | Economics of Innovation | 4,5 CR | Ott |
| T-WIWI-103107 | Spatial Economics | 4,5 CR | Ott |

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

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

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-102708 - Economics I: Microeconomics must have been started.
2. The course T-WIWI-102709 - Economics II: Macroeconomics must have been started.

**Competence Goal**
The student

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

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

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

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

# M 6.5 Module: Analytics and Statistics [M-WIWI-101637]

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

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

| Compulsory Elective Courses (Election: ) | | | |
|---|---|---|---|
| T-WIWI-106341 | Machine Learning 2 – Advanced Methods | 4,5 CR | Zöllner |
| T-WIWI-111247 | Mathematics for High Dimensional Statistics | 4,5 CR | Grothe |
| T-WIWI-103124 | Multivariate Statistical Methods | 4,5 CR | Grothe |
| T-WIWI-103123 | Advanced Statistics | 4,5 CR | Grothe |
| T-WIWI-112109 | Topics in Stochastic Optimization | 4,5 CR | Rebennack |

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

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

**Competence Goal**
A Student

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

**Content**

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

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

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

# M 6.6 Module: Applied Strategic Decisions (WW4VWL2) [M-WIWI-101453]

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

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

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-102861 | Advanced Game Theory | 4,5 CR | Ehrhart, Puppe, Reiß |
| **Supplementary Courses (Election: between 4,5 and 5 credits)** | | | |
| T-WIWI-102613 | Auction Theory | 4,5 CR | Ehrhart |
| T-WIWI-102614 | Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-102622 | Corporate Financial Policy | 4,5 CR | Ruckes |
| T-WIWI-102623 | Financial Intermediation | 4,5 CR | Ruckes |
| T-WIWI-112823 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | 4,5 CR | Weinhardt |
| T-WIWI-102862 | Predictive Mechanism and Market Design | 4,5 CR | Reiß |
| T-WIWI-105781 | Incentives in Organizations | 4,5 CR | Nieken |

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

**Competence Goal**
Students

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

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

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

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

**Recommendation**
Basic knowledge in game theory is assumed.

# M 6.7 Module: Business & Service Engineering (WW4BWLISM4) [M-WIWI-101410]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 8 |

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-113160 | Digital Democracy | 4,5 CR | Fegert |
| T-WIWI-112757 | Digital Services: Innovation & Business Models | 4,5 CR | Satzger |
| T-WIWI-110887 | Practical Seminar: Service Innovation | 4,5 CR | Satzger |
| T-WIWI-102847 | Recommender Systems | 4,5 CR | Geyer-Schulz |
| T-WIWI-109940 | Special Topics in Information Systems | 4,5 CR | Weinhardt |

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

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

**Prerequisites**
None

**Competence Goal**
The student should

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

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

**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 .

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

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

**Recommendation**
None

# M 6.8 Module: Collective Decision Making (WW4VWL16) [M-WIWI-101504]

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

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

| Compulsory Elective Courses (Election: ) | | | |
|---|---|---|---|
| T-WIWI-102740 | Public Management | 4,5 CR | Wigger |
| T-WIWI-102859 | Social Choice Theory | 4,5 CR | Puppe |

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

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

**Prerequisites**
None

**Competence Goal**
Students

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

**Content**
The focus of the module is on mechanisms for public decision making including voting and the aggregation of preferences and judgements.

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

# M 6.9 Module: Computation & Optimization [M-WIWI-106412]

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

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

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

**Competence Certificate**
The assessment is carried out as partial exams of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module seperately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

**Competence Goal**
The student

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

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

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

# M 6.10 Module: Consumer Research [M-WIWI-105714]

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

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

| Compulsory Elective Courses (Election: ) | | | |
|---|---|---|---|
| T-WIWI-111393 | Behavioral Experiments in Action | 4,5 CR | Scheibehenne |
| T-WIWI-113095 | Behavioral Lab Exercise | 4,5 CR | Nieken, Scheibehenne |
| T-WIWI-111392 | Cognitive Modeling | 4,5 CR | Scheibehenne |
| T-WIWI-111100 | Current Directions in Consumer Psychology | 4,5 CR | Scheibehenne |
| T-WIWI-111395 | Experimental Design | 4,5 CR | Scheibehenne |
| T-WIWI-111099 | Judgement and Decision Making | 4,5 CR | Scheibehenne |
| T-WIWI-111109 | KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-107720 | Market Research | 4,5 CR | Klarmann |

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

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

**Prerequisites**
Willingness to actively engage with the topic.

**Competence Goal**

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

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

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

**Recommendation**
Interest in behavioral research.

# M 6.11 Module: Cross-Functional Management Accounting (WW4BWLIBU2) [M-WIWI-101510]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 11 |

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-102885 | Advanced Management Accounting | 4,5 CR | Wouters |
| **Supplementary Courses (Election: 4,5 credits)** | | | |
| T-WIWI-105777 | Business Intelligence Systems | 4,5 CR | Mädche, Nadj, Toreini |
| T-WIWI-105781 | Incentives in Organizations | 4,5 CR | Nieken |
| T-WIWI-102835 | Marketing Strategy Business Game | 1,5 CR | Klarmann |
| T-WIWI-107720 | Market Research | 4,5 CR | Klarmann |
| T-WIWI-111848 | Online Concepts for Karlsruhe City Retailers | 3 CR | Klarmann |
| T-WIWI-109864 | Product and Innovation Management | 3 CR | Klarmann |
| T-WIWI-102621 | Valuation | 4,5 CR | Ruckes |
| T-WIWI-108651 | Extraordinary Additional Course in the Module Cross-Functional Management Accounting | 4,5 CR | Wouters |

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

**Prerequisites**
The course "Advanced Management Accounting" is compulsory.

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

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

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

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

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

**Recommendation**
None

# M 6.12 Module: Data Science: Data-Driven Information Systems [M-WIWI-103117]

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

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

| Compulsory Elective Courses (Election: ) | | | |
|---|---|---|---|
| T-WIWI-108715 | Artificial Intelligence in Service Systems | 4,5 CR | Satzger |
| T-WIWI-111219 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 4,5 CR | Satzger |
| T-WIWI-109863 | Business Data Analytics: Application and Tools | 4,5 CR | Weinhardt |
| T-WIWI-106187 | Business Data Strategy | 4,5 CR | Weinhardt |
| T-WIWI-105777 | Business Intelligence Systems | 4,5 CR | Mädche, Nadj, Toreini |
| T-WIWI-113160 | Digital Democracy | 4,5 CR | Fegert |
| T-WIWI-110918 | Introduction to Bayesian Statistics for Analyzing Data | 4,5 CR | Scheibehenne |
| T-WIWI-111385 | Responsible Artificial Intelligence | 4,5 CR | Weinhardt |
| T-WIWI-106207 | Practical Seminar: Data-Driven Information Systems | 4,5 CR | Mädche, Satzger, Setzer, Weinhardt |

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

**Prerequisites**
None.

**Competence Goal**
The student

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

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

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

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

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

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

Texteintrag

**Annotation**
The course „Business Data Strategy“ can be chosen from winter term 2016 on.

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

# M 6.13 Module: Data Science: Evidence-based Marketing (WW4BWLMAR8) [M-WIWI-101647]

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

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

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

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

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

**Prerequisites**
Keine.

**Competence Goal**
Students

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

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

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

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

**Recommendation**
None

# M 6.14 Module: Data Science: Intelligent, Adaptive, and Learning Information Services [M-WIWI-105661]

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

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

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

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

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

**Prerequisites**
None

**Competence Goal**
The student

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

**Content**
The Intelligent Architectures course addresses how to design modern agent-based systems. The focus here is on software architecture and design patterns relevant to learning systems. In addition, important machine learning methods that complete the intelligent system are discussed. Examples of systems presented include key-map architectures and genetic methods.
The impact of management decisions in complex systems is considered in Business Dynamics. Understanding, modeling, and simulating complex systems enables analysis, purposeful design, and optimization of markets, business processes, regulations, and entire enterprises.
Special problems of intelligent systems are covered in Personalization and Services and Recommendersystems. The content includes approaches and methods to design user-oriented services. The measurement and monitoring of service systems is discussed, the design of personalized offers is discussed and the generation of recommendations based on collected data from products and customers is shown. The importance of user modeling and recognition is addressed, as well as data security and privacy.

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

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

**Recommendation**
None

# M 6.15 Module: Designing Interactive Information Systems [M-WIWI-104080]

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

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

| | | | |
|---|---|---|---|
| **Compulsory Elective Courses (Election: at least 1 item)** | | | |
| T-WIWI-110851 | Designing Interactive Systems | 4,5 CR | Mädche |
| T-WIWI-110877 | Engineering Interactive Systems | 4,5 CR | Mädche |
| **Supplementary Courses (Election: at most 1 item)** | | | |
| T-WIWI-111109 | KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-108437 | Practical Seminar: Information Systems and Service Design | 4,5 CR | Mädche |

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

**Prerequisites**
In this module, the courses "Designing Interactive Systems" or "Enineering Interactive Systems" must be compulsorily taken.

**Competence Goal**
The student

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

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

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

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

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

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

# M 6.16 Module: Digital Economics [M-WIWI-106408]

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

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

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-112990 | Advanced Digital Economics | 4,5 CR | Rosar |
| **Compulsory Elective Courses (Election: 1 item)** | | | |
| T-WIWI-102861 | Advanced Game Theory | 4,5 CR | Ehrhart, Puppe, Reiß |
| T-WIWI-102613 | Auction Theory | 4,5 CR | Ehrhart |
| T-WIWI-102840 | Innovation Theory and Policy | 4,5 CR | Ott |
| T-WIWI-102862 | Predictive Mechanism and Market Design | 4,5 CR | Reiß |
| T-WIWI-112991 | Seminar in Digital Economics Master | 4,5 CR | Szech |
| T-WIWI-102859 | Social Choice Theory | 4,5 CR | Puppe |
| T-WIWI-102713 | Telecommunication and Internet Economics | 4,5 CR | Mitusch |

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

**Competence Goal**
The student

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

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

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

# M 6.17 Module: Digital Financial Economics [M-WIWI-106409]

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

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

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

**Competence Certificate**
The assessment is carried out as partial exams of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module seperately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

**Competence Goal**
The student

- is able to explain, analyze and derive answers to advanced economic and methodological issues in finance,
- has the ability to understand novel methods and to identify and evaluate their advantages and disadvantages

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

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

# M 6.18 Module: Digital Marketing [M-WIWI-106258]

**Responsible:** Prof. Dr. Ann-Kristin Kupfer
**Organisation:** KIT Department of Economics and Management
**Part of:** Electives (Business Administration)

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

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-112693 | Digital Marketing | 4,5 CR | Kupfer |
| **Supplementary Courses (Election: at most 1 item)** | | | |
| T-WIWI-106981 | Digital Marketing and Sales in B2B | 1,5 CR | Klarmann, Konhäuser |
| T-WIWI-111099 | Judgement and Decision Making | 4,5 CR | Scheibehenne |
| T-WIWI-107720 | Market Research | 4,5 CR | Klarmann |
| T-WIWI-112711 | Media Management | 4,5 CR | Kupfer |
| T-WIWI-111848 | Online Concepts for Karlsruhe City Retailers | 3 CR | Klarmann |

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

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

- have an advanced knowledge about central marketing contents
- have a fundamental understanding of the marketing instruments
- know current fundamental principles and latest trends in the field of digital marketing
- know and understand several strategic concepts and how to implement them
- are able to implement their extensive marketing knowledge in a practical context
- are able to critically discuss and question theoretical concepts and current practices in marketing
- have theoretical knowledge that is fundamental for writing a master thesis in the field of marketing
- have gained insight into scientific research that prepares them to independently write a master's thesis
- have the theoretical knowledge and skills necessary to work in or collaborate with the marketing department of a company

**Content**
The aim of this module is to deepen central marketing contents in different areas.

**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.

# M 6.19 Module: Digital Service Systems in Industry (WW4BWLKSR6) [M-WIWI-102808]

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

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

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-102872 | Challenges in Supply Chain Management | 4,5 CR | Mohr |
| T-WIWI-107043 | Liberalised Power Markets | 5,5 CR | Fichtner |
| T-WIWI-106200 | Modeling and OR-Software: Advanced Topics | 4,5 CR | Nickel |
| T-WIWI-106563 | Practical Seminar Digital Service Systems | 4,5 CR | Mädche, Satzger |
| T-WIWI-102641 | Service Innovation | 4,5 CR | Satzger |

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

**Prerequisites**
This module can only be assigned as an elective module.

**Competence Goal**
Students

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

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

**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

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

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

**Recommendation**
None

# M 6.20 Module: Digitalization & Society [M-WIWI-106413]

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

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

| Compulsory Elective Courses (Election: ) | | | |
|---|---|---|---|
| T-WIWI-110851 | Designing Interactive Systems | 4,5 CR | Mädche |
| T-GEISTSOZ-112798 | Introduction to Sociology | 4,5 CR | Mäs |
| T-WIWI-109270 | Human Factors in Security and Privacy | 4,5 CR | Volkamer |
| T-WIWI-102640 | Market Engineering: Information in Institutions | 4,5 CR | Weinhardt |
| T-GEISTSOZ-101170 | Practical Philosophy 1.1 | 4,5 CR | Schefczyk |
| T-WIWI-112993 | The Future of Work | 4,5 CR | Nieken |

**Competence Certificate**
The assessment is carried out as partial exams of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module seperately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

**Competence Goal**
The student

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

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

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

# M 6.21 Module: Econometrics and Statistics I [M-WIWI-101638]

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

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

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

**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4(2), 1-3 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 "Applied Econometrics" [2520020] is compulsory and must be examined.

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

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

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

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

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

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

**Election notes**
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**This module will not count towards the degree until the module "Econometrics and Statistics I" has also been successfully completed.** If the module "Econometrics and Statistics I" is booked out to the additional examinations, the "Econometrics and Statistics II" module loses its curricular validity/valuation for the degree.

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

**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4(2), 1-3 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**
This module can only be passed if the module *"Econometrics and Statistics I"* has been finished successfully before.

**Modeled Conditions**
The following conditions have to be fulfilled:

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

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

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

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

# M 6.23 Module: Economic Theory and its Application in Finance (WW4VWL14) [M-WIWI-101502]

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

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

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

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

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

**Competence Goal**
The students

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

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

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

# M 6.24 Module: Economics & Management [M-WIWI-106410]

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

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

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

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

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

**Competence Goal**
The student

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

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

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

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

# M 6.25 Module: eEnergy: Markets, Services and Systems [M-WIWI-103720]

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

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

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

**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of 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 student

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

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

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

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

# M 6.26 Module: Electives in Informatics (WW4INFO3) [M-WIWI-101630]

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

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

**Part of:** Electives (Informatics)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 18 |

| | | | |
|---|---|---|---|
| **Compulsory Elective Area (Election: )** | | | |
| T-WIWI-110339 | Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services | 4,5 CR | Sunyaev |
| T-WIWI-102680 | Computational Economics | 4,5 CR | Shukla |
| T-WIWI-112690 | Cooperative Autonomous Vehicles | 4,5 CR | Vinel |
| T-WIWI-109248 | Critical Information Infrastructures | 4,5 CR | Sunyaev |
| T-WIWI-109246 | Digital Health | 4,5 CR | Sunyaev |
| T-WIWI-109270 | Human Factors in Security and Privacy | 4,5 CR | Volkamer |
| T-WIWI-102661 | Database Systems and XML | 4,5 CR | Oberweis |
| T-WIWI-110346 | Supplement Enterprise Information Systems | 4,5 CR | Oberweis |
| T-WIWI-110372 | Supplement Software- and Systemsengineering | 4,5 CR | Oberweis |
| T-WIWI-106423 | Information Service Engineering | 4,5 CR | Sack |
| T-WIWI-102666 | Knowledge Discovery | 4,5 CR | Färber |
| T-WIWI-112599 | Management of IT-Projects | 4,5 CR | Schätzle |
| T-WIWI-106340 | Machine Learning 1 - Basic Methods | 4,5 CR | Zöllner |
| T-WIWI-106341 | Machine Learning 2 – Advanced Methods | 4,5 CR | Zöllner |
| T-WIWI-112685 | Modeling and Simulation | 4,5 CR | Lazarova-Molnar |
| T-WIWI-102697 | Business Process Modelling | 4,5 CR | Oberweis |
| T-WIWI-102679 | Nature-Inspired Optimization Methods | 4,5 CR | Shukla |
| T-WIWI-109799 | Process Mining | 4,5 CR | Oberweis |
| T-WIWI-110848 | Semantic Web Technologies | 4,5 CR | Käfer |
| T-WIWI-102895 | Software Quality Management | 4,5 CR | Oberweis |
| **Seminars and Advanced Labs (Election: )** | | | |
| T-WIWI-110144 | Emerging Trends in Digital Health | 4,5 CR | Sunyaev |
| T-WIWI-110143 | Emerging Trends in Internet Technologies | 4,5 CR | Sunyaev |
| T-WIWI-109249 | Sociotechnical Information Systems Development | 4,5 CR | Sunyaev |
| T-WIWI-111126 | Advanced Lab Blockchain Hackathon (Master) | 4,5 CR | Sunyaev |
| T-WIWI-111125 | Advanced Lab Sociotechnical Information Systems Development (Master) | 4,5 CR | Sunyaev |
| T-WIWI-110548 | Advanced Lab Informatics (Master) | 4,5 CR | Professorenschaft des Instituts AIFB |
| T-WIWI-112914 | Advanced Lab Realization of Innovative Services (Master) | 4,5 CR | Oberweis |
| T-WIWI-108439 | Advanced Lab Security, Usability and Society | 4,5 CR | Volkamer |
| T-WIWI-109786 | Advanced Lab Security | 4,5 CR | Volkamer |
| T-WIWI-109985 | Project Lab Cognitive Automobiles and Robots | 5 CR | Zöllner |
| T-WIWI-109983 | Project Lab Machine Learning | 5 CR | Zöllner |
| T-WIWI-113026 | Trustworthy Emerging Technologies | 4,5 CR | Sunyaev |

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

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

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

**Prerequisites**
None.

**Competence Goal**
The student

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

**Content**
The thematic focus will be based on the choice of courses in the areas of Applied Technical Cognitive Systems, Business Information Systems, Critical Information Infrastructures, Information Service Engineering, Security - Usability - Society or Web Science.

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

# M 6.27 Module: Electronic Markets (WW4BWLISM2) [M-WIWI-101409]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 2 terms | German | 4 | 8 |

| Compulsory Elective Courses (Election: at least 9 credits) | | | |
|---|---|---|---|
| T-WIWI-108880 | Blockchains & Cryptofinance | 4,5 CR | Schuster, Uhrig-Homburg |
| T-WIWI-102762 | Business Dynamics | 4,5 CR | Geyer-Schulz, Glenn |
| T-WIWI-112823 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | 4,5 CR | Weinhardt |
| T-WIWI-105946 | Price Management | 4,5 CR | Geyer-Schulz, Glenn |
| T-WIWI-113147 | Telecommunications and Internet – Economics and Policy | 4,5 CR | Mitusch |

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

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

**Prerequisites**
None

**Competence Goal**
The student

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

**Content**
What are the conditions that make electronic markets develop, and how can one analyze and optimize such markets?

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

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

Topics include

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

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

**Recommendation**
None

# M 6.28 Module: Emphasis in Informatics (WW4INFO1) [M-WIWI-101628]

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

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

**Part of:** Electives (Informatics)

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 18 |

| | | | |
|---|---|---|---|
| **Compulsory Elective Area (Election: between 1 and 3 items)** | | | |
| T-WIWI-110339 | Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services | 4,5 CR | Sunyaev |
| T-WIWI-102680 | Computational Economics | 4,5 CR | Shukla |
| T-WIWI-112690 | Cooperative Autonomous Vehicles | 4,5 CR | Vinel |
| T-WIWI-109248 | Critical Information Infrastructures | 4,5 CR | Sunyaev |
| T-WIWI-109246 | Digital Health | 4,5 CR | Sunyaev |
| T-WIWI-109270 | Human Factors in Security and Privacy | 4,5 CR | Volkamer |
| T-WIWI-102661 | Database Systems and XML | 4,5 CR | Oberweis |
| T-WIWI-110346 | Supplement Enterprise Information Systems | 4,5 CR | Oberweis |
| T-WIWI-110372 | Supplement Software- and Systemsengineering | 4,5 CR | Oberweis |
| T-WIWI-106423 | Information Service Engineering | 4,5 CR | Sack |
| T-WIWI-102666 | Knowledge Discovery | 4,5 CR | Färber |
| T-WIWI-106340 | Machine Learning 1 - Basic Methods | 4,5 CR | Zöllner |
| T-WIWI-106341 | Machine Learning 2 – Advanced Methods | 4,5 CR | Zöllner |
| T-WIWI-112685 | Modeling and Simulation | 4,5 CR | Lazarova-Molnar |
| T-WIWI-102697 | Business Process Modelling | 4,5 CR | Oberweis |
| T-WIWI-102679 | Nature-Inspired Optimization Methods | 4,5 CR | Shukla |
| T-WIWI-109799 | Process Mining | 4,5 CR | Oberweis |
| T-WIWI-110848 | Semantic Web Technologies | 4,5 CR | Käfer |
| T-WIWI-102895 | Software Quality Management | 4,5 CR | Oberweis |
| T-WIWI-112599 | Management of IT-Projects | 4,5 CR | Schätzle |
| **Seminars and Advanced Labs (Election: )** | | | |
| T-WIWI-110144 | Emerging Trends in Digital Health | 4,5 CR | Sunyaev |
| T-WIWI-110143 | Emerging Trends in Internet Technologies | 4,5 CR | Sunyaev |
| T-WIWI-109249 | Sociotechnical Information Systems Development | 4,5 CR | Sunyaev |
| T-WIWI-111126 | Advanced Lab Blockchain Hackathon (Master) | 4,5 CR | Sunyaev |
| T-WIWI-111125 | Advanced Lab Sociotechnical Information Systems Development (Master) | 4,5 CR | Sunyaev |
| T-WIWI-110548 | Advanced Lab Informatics (Master) | 4,5 CR | Professorenschaft des Instituts AIFB |
| T-WIWI-112914 | Advanced Lab Realization of Innovative Services (Master) | 4,5 CR | Oberweis |
| T-WIWI-108439 | Advanced Lab Security, Usability and Society | 4,5 CR | Volkamer |
| T-WIWI-109786 | Advanced Lab Security | 4,5 CR | Volkamer |
| T-WIWI-109985 | Project Lab Cognitive Automobiles and Robots | 5 CR | Zöllner |
| T-WIWI-109983 | Project Lab Machine Learning | 5 CR | Zöllner |
| T-WIWI-113026 | Trustworthy Emerging Technologies | 4,5 CR | Sunyaev |

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

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

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

**Prerequisites**
None.

**Competence Goal**
The student

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

**Content**
The thematic focus will be based on the choice of courses in the areas of Applied Technical Cognitive Systems, Business Information Systems, Critical Information Infrastructures, Information Service Engineering, Security - Usability - Society or Web Science.

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

# M 6.29 Module: Energy Economics and Energy Markets (WW4BWLIIP4) [M-WIWI-101451]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 8 |

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-107043 | Liberalised Power Markets | 5,5 CR | Fichtner |
| **Supplementary Courses (Election: at least 6 credits)** | | | |
| T-WIWI-107501 | Energy Market Engineering | 4,5 CR | Weinhardt |
| T-WIWI-112151 | Energy Trading and Risk Management | 3,5 CR | N.N. |
| T-WIWI-108016 | Simulation Game in Energy Economics | 3,5 CR | Genoese |
| T-WIWI-107446 | Quantitative Methods in Energy Economics | 3,5 CR | Plötz |
| T-WIWI-102712 | Regulation Theory and Practice | 4,5 CR | Mitusch |

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

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

**Prerequisites**
The lecture Liberalised Power Markets has to be examined.

**Competence Goal**
The student

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

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

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

**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.

# M 6.30 Module: Energy Economics and Technology (WW4BWLIIP5) [M-WIWI-101452]

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

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

| Compulsory Elective Courses (Election: at least 9 credits) | | | |
|---|---|---|---|
| T-WIWI-102793 | Efficient Energy Systems and Electric Mobility | 3,5 CR | Jochem |
| T-WIWI-102650 | Energy and Environment | 4,5 CR | Karl |
| T-WIWI-113073 | Machine Learning and Optimization in Energy Systems | 3,5 CR | Fichtner |
| T-WIWI-107464 | Smart Energy Infrastructure | 5,5 CR | Ardone, Pustisek |
| T-WIWI-102695 | Heat Economy | 3,5 CR | Fichtner |

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

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

**Prerequisites**
None

**Competence Goal**
The student

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

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

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

# M 6.31 Module: Entrepreneurship (EnTechnon) (WW4BWLENT1) [M-WIWI-101488]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 2 terms | German/English | 4 | 12 |

| | | | |
|---|---|---|---|
| **Mandatory part (Election: 1 item)** | | | |
| T-WIWI-102864 | Entrepreneurship | 3 CR | Terzidis |
| **Compulsory Elective Courses (Election: between 1 and 2 items)** | | | |
| T-WIWI-102866 | Design Thinking | 3 CR | Terzidis |
| T-WIWI-102833 | Entrepreneurial Leadership & Innovation Management | 3 CR | Terzidis |
| T-WIWI-113151 | Entrepreneurship Seasonal School | 3 CR | Terzidis |
| T-WIWI-102865 | Business Planning | 3 CR | Terzidis |
| T-WIWI-110374 | Firm creation in IT security | 3 CR | Terzidis |
| T-WIWI-110985 | International Business Development and Sales | 6 CR | Casenave , Klarmann, Terzidis |
| T-WIWI-109064 | Joint Entrepreneurship Summer School | 6 CR | Terzidis |
| T-WIWI-111561 | Startup Experience | 6 CR | Terzidis |
| **Supplementary Courses (Election: between 0 and 1 items)** | | | |
| T-WIWI-102894 | Entrepreneurship Research | 3 CR | Terzidis |
| T-WIWI-102852 | Case Studies Seminar: Innovation Management | 3 CR | Weissenberger-Eibl |
| T-WIWI-102893 | Innovation Management: Concepts, Strategies and Methods | 3 CR | Weissenberger-Eibl |
| T-WIWI-102612 | Managing New Technologies | 3 CR | Reiß |
| T-WIWI-102853 | Roadmapping | 3 CR | Koch |

**Competence Certificate**
See German version.

**Prerequisites**
None

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

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

**Annotation**
Please note: Seminars offered by Prof. Terzidis (or the members of his research group) are not eligible for crediting in a seminar module of the WiWi degree programs. Exception: Seminar "Entrepreneurship Research".

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

**Recommendation**
None

# M 6.32 Module: Environmental Economics (WW4VWL5) [M-WIWI-101468]

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

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

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

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

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

**Prerequisites**
None

**Competence Goal**
The students

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

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

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

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

# M 6.33 Module: Experimental Economics (WW4VWL17) [M-WIWI-101505]

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

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

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

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

**Prerequisites**
None.

**Competence Goal**
Students

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

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

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

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

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

# M 6.34 Module: Finance 1 (WW4BWLFBV1) [M-WIWI-101482]

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

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

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

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

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

**Prerequisites**
None

**Competence Goal**
The student

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

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

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

# M 6.35 Module: Finance 2 (WW4BWLFBV2) [M-WIWI-101483]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 8 |

**Election notes**
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**This module will not count towards the degree until the module *Finance 1* has also been successfully completed.** If the module Finance 1 is booked out to the additional examinations, the *Finance 2* module loses its curricular validity/valuation for the degree.

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

**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module 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**
It is only possible to choose this module in combination with the module *Finance 1*. The module is passed only after the final partial exam of *Finance 1* is additionally passed.

**Modeled Conditions**
The following conditions have to be fulfilled:

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

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

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

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

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

# M 6.36 Module: Finance 3 (WW4BWLFBV11) [M-WIWI-101480]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 8 |

**Election notes**
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

**This module will not count towards the degree until the modules *Finance 1* and *Finance 2* have also been successfully completed.** If the modules *Finance 1* and/or *Finance 2* are booked out to the additional examinations, the *Finance 3* module loses its curricular validity/valuation for the degree.

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

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

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

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

**Modeled Conditions**
The following conditions have to be fulfilled:

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

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

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

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

# M 6.37 Module: Foundations for Advanced Financial -Quant and -Machine Learning Research [M-WIWI-105894]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | see Annotations | 1 term | English | 4 | 1 |

| Mandatory | | | |
|---|---|---|---|
| T-WIWI-111846 | Fundamentals for Financial -Quant and -Machine Learning Research | 9 CR | Ulrich |

**Competence Certificate**
**Due to the professor's research sabbatical, the BSc module "Financial Data Science" and MSc module "Foundations for Advanced Financial -Quant and -Machine Learning Research" and the MSc module "Advanced Machine Learning and Data Science" along with the respective examinations will not be offered in SS2023. Bachelor and Master thesis projects are not affected and will be supervised.**

The module examination is an alternative exam assessment with a maximum score of 100 points to be achieved. These points are distributed over 4 worksheets to be submitted during the semester. The worksheets cover the respective material of the module and are handed out, worked on and assessed in lecture weeks 3 (10 points), 6 (20 points), 9 (30 points) and 12 (40 points).

The module-wide exam (all 4 worksheets) must be taken in the same semester.

The worksheets are a mixture of analytical tasks and programming tasks with financial data.

**Competence Goal**
This MSc module teaches students fundamental stats and analytics concepts, as well necessary financial economic intuition, necessary to identify, design and execute interesting research questions in quant finance and financial machine learning.
Topics include: Maximum Likelihood learning of arma-garch models, expectation maximization learning applied to stochastic volatility and valuation models, Kalman filter techniques to learn latent states, estimation of affine jump diffusion models with options and higher-order moments, stochastic calculus, dynamic modeling of asset markets (bond, equity, options), equilibrium determination of risk premiums, risk premiums for higher moment risk, risk decomposition (fundamental vs idiosyncratic), option-implied return distributions, mixture-density-networks and neural nets.

**Content**
Learning Objectives: Skills and understanding of how to successfully set-up, execute and interpret financial data driven research with the following methods: MLE, Kalman Filter, Expectation Maximization, Option Pricing, dynamic asset pricing theory, backward-looking historical return densities, forward-looking options-implied return densities, mixture-density-network, neural networks. Programming is not taught in this course, yet, some graded and non-graded exercises might make heavy use of software based data analysis. See the course's pre-requisites and comments in the modul handbook.

**Annotation**

- Strongly recommended to have good knowledge in financial econometrics (MLE, OLS, GLS, ARMA-GARCH), mathematics (differential equations, difference equations and optimization), investments (CAPM, factor models), asset pricing (SDF, SDF pricing), derivatives (Black-Scholes, risk-neutral pricing), and programming of statistical concepts (Java or R or Python or Matlab or C or ...)
- Strongly recommended to have a strong interest for interdisciplinary research work in statistics, programming, applied math and financial economics.
- Students lacking the prior knowledge might find the resources of the Chair helpful: www.youtube.com/c/cram-kit.

**Workload**
The total workload for this course is approximately 270 hours. This is for a student with the appropriate prior knowledge in financial econometrics, finance, mathematics and programming. Students without programming experience of statistical concepts will need to invest extra time. Students who have struggled in math- or programming- or finance- oriented classes, will find this course very challenging. Please check the pre-requisites and comments in the module handbook.

# M 6.38 Module: Growth and Agglomeration (WW4VWL12) [M-WIWI-101496]

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

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

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-109194 | Dynamic Macroeconomics | 4,5 CR | Brumm |
| T-WIWI-112816 | Growth and Development | 4,5 CR | Ott |
| T-WIWI-103107 | Spatial Economics | 4,5 CR | Ott |

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

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

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-102708 - Economics I: Microeconomics must have been started.
2. The course T-WIWI-102709 - Economics II: Macroeconomics must have been started.

**Competence Goal**
The student

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

**Content**
The module includes the contents of the lectures *Endogenous Growth Theory, Spatial Economics* and *Dynamic Macroeconomics*. While the first lecture focuses on dynamic programming in modern macroeconomics, the other two lectures are more formal and analytical.

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

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

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

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

# M 6.39 Module: Incentives, Interactivity & Decisions in Organizations [M-WIWI-105923]

**Responsible:** Prof. Dr. Petra Nieken
**Organisation:** KIT Department of Economics and Management
**Part of:** Electives (Business Administration)

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

| Elective Offer (Election: ) | | | |
|---|---|---|---|
| T-WIWI-105781 | Incentives in Organizations | 4,5 CR | Nieken |
| T-WIWI-111912 | Advanced Topics in Digital Management | 3 CR | Nieken |
| T-WIWI-111913 | Advanced Topics in Human Resource Management | 3 CR | Nieken |
| T-WIWI-111806 | Behavioral Lab Exercise | 4,5 CR | Nieken, Scheibehenne |
| T-WIWI-110851 | Designing Interactive Systems | 4,5 CR | Mädche |
| T-WIWI-111099 | Judgement and Decision Making | 4,5 CR | Scheibehenne |
| T-WIWI-111385 | Responsible Artificial Intelligence | 4,5 CR | Weinhardt |
| T-WIWI-102614 | Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-111109 | KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics | 4,5 CR | Weinhardt |

**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 workplace and future of work
- understands the impact of digitalization and new information and communication technology on the work life and management decisions
- knows how to apply scientific research methods and understands the underlying problems

**Content**
The module „Incentives, Interactivity & Decisions in Organizations" offers an interdisciplinary approach to study incentive structures, the role of interactivity in information systems, and decision making in organizations. The module specifically focuses on topics related to the workplace and the future of work in organizations. The topics range from designing incentive systems and interactive systems to leadership, decision making, as well as understanding human behavior. All courses in the module foster active participation and allow students to learn state-of-the-art research methods and apply them to real-world challenges.

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

**Recommendation**
Knowledge of Human Resource Management, microeconomics, game theory, and statistics is recommended.

# M 6.40 Module: Industrial Production II (WW4BWLIIP2) [M-WIWI-101471]

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

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

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-102631 | Planning and Management of Industrial Plants | 5,5 CR | Schultmann |
| **Supplementary Courses (Election: at most 1 item)** | | | |
| T-WIWI-102763 | Supply Chain Management with Advanced Planning Systems | 3,5 CR | Bosch, Göbelt |
| T-WIWI-102826 | Risk Management in Industrial Supply Networks | 3,5 CR | Schultmann |
| T-WIWI-102828 | Supply Chain Management in the Automotive Industry | 3,5 CR | Heupel, Lang |
| T-WIWI-103134 | Project Management | 3,5 CR | Schultmann |
| **Supplementary Courses (Election: at most 1 item)** | | | |
| T-WIWI-102634 | Emissions into the Environment | 3,5 CR | Karl |
| T-WIWI-112103 | Global Manufacturing | 3,5 CR | Sasse |
| T-WIWI-113107 | Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context | 3,5 CR | Schultmann |

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

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

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

**Competence Goal**

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

**Content**

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

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

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

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

# M 6.41 Module: Industrial Production III (WW4BWLIIP6) [M-WIWI-101412]

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

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

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-102632 | Production and Logistics Management | 5,5 CR | Schultmann |
| **Supplementary Courses from Module Industrial Production II (Election: at most 1 item)** | | | |
| T-WIWI-102634 | Emissions into the Environment | 3,5 CR | Karl |
| T-WIWI-112103 | Global Manufacturing | 3,5 CR | Sasse |
| T-WIWI-113107 | Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context | 3,5 CR | Schultmann |
| **Supplementary Courses (Election: at most 1 item)** | | | |
| T-WIWI-102763 | Supply Chain Management with Advanced Planning Systems | 3,5 CR | Bosch, Göbelt |
| T-WIWI-102826 | Risk Management in Industrial Supply Networks | 3,5 CR | Schultmann |
| T-WIWI-102828 | Supply Chain Management in the Automotive Industry | 3,5 CR | Heupel, Lang |
| T-WIWI-103134 | Project Management | 3,5 CR | Schultmann |

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

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

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

**Competence Goal**

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

**Content**

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

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

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

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

# M 6.42 Module: Informatics & Machine Learning [M-WIWI-105880]

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

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

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

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

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

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

**Competence Goal**
The student

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

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

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

# M 6.43 Module: Information Engineering (WW4BWLISM7) [M-WIWI-101411]

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

| Credits | Grading scale | Recurrence | Duration | Level | Version |
|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | 4 | 8 |

| Supplementary Courses (Election: ) | | | |
|---|---|---|---|
| T-WIWI-107501 | Energy Market Engineering | 4,5 CR | Weinhardt |
| T-WIWI-109940 | Special Topics in Information Systems | 4,5 CR | Weinhardt |
| T-WIWI-112823 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | 4,5 CR | Weinhardt |

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

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

**Competence Goal**
The student

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

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

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

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

# M 6.44 Module: Information Systems in Organizations [M-WIWI-104068]

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

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

| Compulsory Elective Courses (Election: at least 9 credits) | | | |
|---|---|---|---|
| T-WIWI-105777 | Business Intelligence Systems | 4,5 CR | Mädche, Nadj, Toreini |
| T-WIWI-110851 | Designing Interactive Systems | 4,5 CR | Mädche |
| T-WIWI-108437 | Practical Seminar: Information Systems and Service Design | 4,5 CR | Mädche |

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

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

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

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

**Annotation**
New module starting summer term 2018.

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

# M 6.45 Module: Innovation and Growth (WW4VWLIWW1) [M-WIWI-101478]

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

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

| Compulsory Elective Courses (Election: between 9 and 10 credits) | | | |
|---|---|---|---|
| T-WIWI-109194 | Dynamic Macroeconomics | 4,5 CR | Brumm |
| T-WIWI-112822 | Economics of Innovation | 4,5 CR | Ott |
| T-WIWI-112816 | Growth and Development | 4,5 CR | Ott |

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

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

**Prerequisites**
None

**Competence Goal**
Students shall be given the ability to

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

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

**Workload**
Total expenditure of time for 9 credits: 270 hours

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

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

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

# M 6.46 Module: Innovation Economics (WW4VWL19) [M-WIWI-101514]

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

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

| Compulsory Elective Courses (Election: between 9 and 10 credits) | | | |
|---|---|---|---|
| T-WIWI-112822 | Economics of Innovation | 4,5 CR | Ott |
| T-WIWI-102906 | Methods in Economic Dynamics | 1,5 CR | Ott |
| T-WIWI-109864 | Product and Innovation Management | 3 CR | Klarmann |
| T-WIWI-102789 | Seminar in Economic Policy | 3 CR | Ott |

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

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

**Prerequisites**
None

**Competence Goal**
Students shall be given the ability to

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

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

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

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

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

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

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

# M 6.47 Module: Innovation Management (WW4BWLENT2) [M-WIWI-101507]

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

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

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-102893 | Innovation Management: Concepts, Strategies and Methods | 3 CR | Weissenberger-Eibl |
| **Compulsory Elective Courses (Election: 1 item)** | | | |
| T-WIWI-108875 | Digital Transformation and Business Models | 3 CR | Koch |
| T-WIWI-112143 | Development of Sustainable Business Models | 3 CR | Weissenberger-Eibl |
| T-WIWI-111823 | Successful Transformation Through Innovation | 3 CR | Busch |
| T-WIWI-102852 | Case Studies Seminar: Innovation Management | 3 CR | Weissenberger-Eibl |
| T-WIWI-110263 | Methods in Innovation Management | 3 CR | Koch |
| T-WIWI-102853 | Roadmapping | 3 CR | Koch |
| T-WIWI-102858 | Technology Assessment | 3 CR | Koch |
| T-WIWI-102854 | Technologies for Innovation Management | 3 CR | Koch |
| **Supplementary Courses (Election: 1 item)** | | | |
| T-WIWI-102866 | Design Thinking | 3 CR | Terzidis |
| T-WIWI-108875 | Digital Transformation and Business Models | 3 CR | Koch |
| T-WIWI-102833 | Entrepreneurial Leadership & Innovation Management | 3 CR | Terzidis |
| T-WIWI-102864 | Entrepreneurship | 3 CR | Terzidis |
| T-WIWI-111823 | Successful Transformation Through Innovation | 3 CR | Busch |
| T-WIWI-102852 | Case Studies Seminar: Innovation Management | 3 CR | Weissenberger-Eibl |
| T-WIWI-110263 | Methods in Innovation Management | 3 CR | Koch |
| T-WIWI-102853 | Roadmapping | 3 CR | Koch |
| T-WIWI-102854 | Technologies for Innovation Management | 3 CR | Koch |
| T-WIWI-102858 | Technology Assessment | 3 CR | Koch |

**Competence Certificate**
See German version.

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

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

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

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

**Annotation**
Seminars offered by Prof. Terzidis (or the members of his research group) are not eligible for crediting in a seminar module of the WiWi degree programs. Exception: Seminar "Entrepreneurship Research".

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

**Recommendation**
None

# M 6.48 Module: Intellectual Property Law (WW4JURA4) [M-INFO-101215]

**Responsible:** N.N.
**Organisation:** KIT Department of Informatics
**Part of:** Electives (Law and Sociology)

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

| **Intellectual Property Law (Election: at least 1 item as well as at least 9 credits)** | | | |
|---|---|---|---|
| T-INFO-101308 | Copyright | 3 CR | N.N. |
| T-INFO-101313 | Trademark and Unfair Competition Law | 3 CR | Matz |
| T-INFO-101307 | Internet Law | 3 CR | N.N. |
| T-INFO-108462 | Selected Legal Issues of Internet Law | 3 CR | N.N. |
| T-INFO-101310 | Patent Law | 3 CR | Werner |

**Prerequisites**
None

# M 6.49 Module: Management Accounting (WW3BWLIBU1) [M-WIWI-101498]

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

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

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

**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4 (2), 13 SPO) of the courses of this module. The assessment procedures are described for each course of the module separately.

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

**Competence Goal**
Students

• are familiar with various management accounting methods,

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

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

• have the capacity to devise instruments for organizational control.

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

**Annotation**
The following courses are part of this module:

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

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

# M 6.50 Module: Market Engineering (WW4BWLISM3) [M-WIWI-101446]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 8 |

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-112823 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | 4,5 CR | Weinhardt |
| **Supplementary Courses (Election: 4,5 credits)** | | | |
| T-WIWI-102613 | Auction Theory | 4,5 CR | Ehrhart |
| T-WIWI-108880 | Blockchains & Cryptofinance | 4,5 CR | Schuster, Uhrig-Homburg |
| T-WIWI-113160 | Digital Democracy | 4,5 CR | Fegert |
| T-WIWI-110797 | eFinance: Information Systems for Securities Trading | 4,5 CR | Weinhardt |
| T-WIWI-107501 | Energy Market Engineering | 4,5 CR | Weinhardt |
| T-WIWI-107503 | Energy Networks and Regulation | 4,5 CR | Weinhardt |
| T-WIWI-102614 | Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-111109 | KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics | 4,5 CR | Weinhardt |
| T-WIWI-107504 | Smart Grid Applications | 4,5 CR | Weinhardt |

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

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

**Competence Goal**
The students

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

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

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

**Recommendation**
None

# M 6.51 Module: Marketing and Sales Management [M-WIWI-105312]

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

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

| Compulsory Elective Courses (Election: ) | | | |
|---|---|---|---|
| T-WIWI-112693 | Digital Marketing | 4,5 CR | Kupfer |
| T-WIWI-106981 | Digital Marketing and Sales in B2B | 1,5 CR | Klarmann, Konhäuser |
| T-WIWI-110985 | International Business Development and Sales | 6 CR | Casenave , Klarmann, Terzidis |
| T-WIWI-111099 | Judgement and Decision Making | 4,5 CR | Scheibehenne |
| T-WIWI-107720 | Market Research | 4,5 CR | Klarmann |
| T-WIWI-111848 | Online Concepts for Karlsruhe City Retailers | 3 CR | Klarmann |
| T-WIWI-102883 | Pricing | 4,5 CR | Klarmann |
| T-WIWI-109864 | Product and Innovation Management | 3 CR | Klarmann |

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

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

**Prerequisites**
None

**Competence Goal**
Students

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

**Content**
The aim of this module is to deepen central marketing contents in different areas.

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

# M 6.52 Module: Mathematical Programming (WW4OR9) [M-WIWI-101473]

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

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

| | | | |
|---|---|---|---|
| **Compulsory Elective Courses (Election: at most 2 items)** | | | |
| T-WIWI-102719 | Mixed Integer Programming I | 4,5 CR | Stein |
| T-WIWI-102726 | Global Optimization I | 4,5 CR | Stein |
| T-WIWI-103638 | Global Optimization I and II | 9 CR | Stein |
| T-WIWI-102856 | Convex Analysis | 4,5 CR | Stein |
| T-WIWI-111587 | Multicriteria Optimization | 4,5 CR | Stein |
| T-WIWI-102724 | Nonlinear Optimization I | 4,5 CR | Stein |
| T-WIWI-103637 | Nonlinear Optimization I and II | 9 CR | Stein |
| T-WIWI-102855 | Parametric Optimization | 4,5 CR | Stein |
| **Supplementary Courses (Election: at most 2 items)** | | | |
| T-WIWI-106548 | Advanced Stochastic Optimization | 4,5 CR | Rebennack |
| T-WIWI-102720 | Mixed Integer Programming II | 4,5 CR | Stein |
| T-WIWI-102727 | Global Optimization II | 4,5 CR | Stein |
| T-WIWI-102723 | Graph Theory and Advanced Location Models | 4,5 CR | Nickel |
| T-WIWI-106549 | Large-scale Optimization | 4,5 CR | Rebennack |
| T-WIWI-111247 | Mathematics for High Dimensional Statistics | 4,5 CR | Grothe |
| T-WIWI-103124 | Multivariate Statistical Methods | 4,5 CR | Grothe |
| T-WIWI-102725 | Nonlinear Optimization II | 4,5 CR | Stein |
| T-WIWI-102715 | Operations Research in Supply Chain Management | 4,5 CR | Nickel |
| T-WIWI-110162 | Optimization Models and Applications | 4,5 CR | Sudermann-Merx |
| T-WIWI-112109 | Topics in Stochastic Optimization | 4,5 CR | Rebennack |

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

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

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

**Competence Goal**
The student

- names and describes basic notions for advanced optimization methods, in particular from continuous and mixed integer programming,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve also challenging optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions,
- identifies drawbacks of the solution methods and, if necessary, is able to makes suggestions to adapt them to practical problems.

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

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

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

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

# M 6.53 Module: Microeconomic Theory (WW4VWL15) [M-WIWI-101500]

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

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

| Compulsory Elective Courses (Election: at least 9 credits) | | | |
|---|---|---|---|
| T-WIWI-102609 | Advanced Topics in Economic Theory | 4,5 CR | Mitusch |
| T-WIWI-102861 | Advanced Game Theory | 4,5 CR | Ehrhart, Puppe, Reiß |
| T-WIWI-102613 | Auction Theory | 4,5 CR | Ehrhart |
| T-WIWI-105781 | Incentives in Organizations | 4,5 CR | Nieken |
| T-WIWI-113264 | Matching Theory | 4,5 CR | Puppe |
| T-WIWI-102859 | Social Choice Theory | 4,5 CR | Puppe |

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

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

**Prerequisites**
None

**Competence Goal**
Students

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

Here is an example of a positive question: what firm decisions does a specific regulatory policy result in under imperfect competition? An example of a normative question would be: which voting rule has appealing properties?

**Content**
The module teaches advanced concepts and content in microeconomic theory. Thematically, it offers a formally rigorous treatment of game theory and exemplary applications, such as strategic interaction on markets and non-/cooperative bargaining ("Advanced Game Theory"), as well as specialized courses dedicated to auctions ("Auktionstheorie") and incentive systems in organizations ("Incentives in Organizations"). Moreover, it offers the opportunity to delve deeper into the mathematical theory of voting and collective decision making, i.e. the systematic aggregation of preferences and judgments ("Social Choice Theory").

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

# M 6.54 Module: Module Master's Thesis [M-WIWI-106420]

**Responsible:** Studiendekan des KIT-Studienganges
**Organisation:** KIT Department of Economics and Management
**Part of:** Master's Thesis

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

| Mandatory | | | |
|---|---|---|---|
| T-WIWI-113003 | Master's Thesis | 30 CR | Studiendekan des KIT-Studienganges |

**Competence Certificate**
The Master Thesis is a written exam which shows that the student can autonomously investigate a scientific problem in Industrial Engineering and Management. The Master Thesis is described in detail in the examination regulation.

The review is carried out by at least one examiner of the Department of Economics and Management, or, after approval, by at least one examiner of another department. The examiner has to be involved in the degree program. Involved in the degree program are the persons that coordinate a module or a lecture of the degree program.

The regular processing time takes six months. On a reasoned request of the student, the examination board can extend the processing time of a maximum of three months. If the Master Thesis is not completed in time, this exam is "failed", unless the student is not being responsible (e.g. maternity leave).
With consent of the examiner the thesis can be written in English as well. Other languages require besides the consent of the examiner the approval of the examination board. The issue of the Master Thesis may only returned once and only within the first month of processing time. A new topic has to be released within four weeks.

The module grade is the grade for the Master Thesis.

**Prerequisites**
Prerequisite for admission to the Master thesis is that at least 60 credit points has to be completed.

A written confirmation of the examiner about supervising the Master Thesis is required.

Please pay regard to the institute specific rules for supervising a Master Thesis.

The Master Thesis has to contain the following declaration: *„Ich versichere wahrheitsgemäß, die Arbeit selbstständig angefertigt, alle benutzten Hilfsmittel vollständig und genau angegeben und alles kenntlich gemacht zu haben, was aus Arbeiten anderer unverändert oder mit Abänderungen entnommen wurde.“*

If this declaration is not given, the Master Thesis will not be accepted.

**Modeled Conditions**
The following conditions have to be fulfilled:

1. You need to have earned at least 60 credits in the following fields:
   - Economics
   - Electives
   - Methods
   - Society

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

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

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

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

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

**Content**
The Master Thesis is a major scientific work. The topic of the Master Thesis will be chosen by the student themselves and adjusted with the examinor. The topic has to be related to Industrial Engineering and Management and has to refer to subject-specific or interdisciplinary problems.

**Workload**
For the preparation and presentation of the master thesis a total effort of approx. 900 hours is expected. In addition to writing the thesis, this includes all necessary activities such as literature research, familiarization with the topic, familiarization with required tools if necessary, conducting studies/experiments, supervisory meetings, etc.

# M 6.55 Module: Network Economics (WW4VWL4) [M-WIWI-101406]

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

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

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-100005 | Competition in Networks | 4,5 CR | Mitusch |
| T-WIWI-100007 | Transport Economics | 4,5 CR | Mitusch, Szimba |
| T-WIWI-102609 | Advanced Topics in Economic Theory | 4,5 CR | Mitusch |
| T-WIWI-102712 | Regulation Theory and Practice | 4,5 CR | Mitusch |
| T-WIWI-113147 | Telecommunications and Internet – Economics and Policy | 4,5 CR | Mitusch |

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

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

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

**Prerequisites**
None

**Competence Goal**
The students

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

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

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

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

# M 6.56 Module: Operations Research in Supply Chain Management (WW4OR11) [M-WIWI-102832]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 2 terms | German | 4 | 8 |

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

| | | | |
|---|---|---|---|
| **Compulsory Elective Courses (Election: between 1 and 2 items)** | | | |
| T-WIWI-102723 | Graph Theory and Advanced Location Models | 4,5 CR | Nickel |
| T-WIWI-106200 | Modeling and OR-Software: Advanced Topics | 4,5 CR | Nickel |
| T-WIWI-102715 | Operations Research in Supply Chain Management | 4,5 CR | Nickel |
| **Supplementary Courses (Election: at most 1 item)** | | | |
| T-MACH-112213 | Applied material flow simulation | 4,5 CR | Baumann |
| T-WIWI-106546 | Introduction to Stochastic Optimization | 4,5 CR | Rebennack |
| T-WIWI-102718 | Discrete-Event Simulation in Production and Logistics | 4,5 CR | Spieckermann |
| T-WIWI-102719 | Mixed Integer Programming I | 4,5 CR | Stein |
| T-WIWI-102720 | Mixed Integer Programming II | 4,5 CR | Stein |
| T-WIWI-110162 | Optimization Models and Applications | 4,5 CR | Sudermann-Merx |
| T-WIWI-106549 | Large-scale Optimization | 4,5 CR | Rebennack |
| T-WIWI-111587 | Multicriteria Optimization | 4,5 CR | Stein |
| T-WIWI-112109 | Topics in Stochastic Optimization | 4,5 CR | Rebennack |

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

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

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

**Prerequisites**
At least one of the courses "Operations Research in Supply Chain Management", "Graph Theory and Advanced Location Models", "Modeling and OR-Software: Advanced Topics" and "Special Topics of Stochastic Optimization (elective)" has to be taken.

**Competence Goal**
The student

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

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

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

**Annotation**
Some lectures and courses are offered irregularly.

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

**Workload**
Total effort for 9 credits: ca. 270 hours

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

**Recommendation**
Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

# M 6.57 Module: Private Business Law (WW4JURA5) [M-INFO-101216]

**Responsible:** N.N.
**Organisation:** KIT Department of Informatics
**Part of:** Electives (Law and Sociology)

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

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

**Prerequisites**
None

**Competence Goal**
The student

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

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

# M 6.58 Module: Public Business Law (WW4JURA6) [M-INFO-101217]

**Responsible:** N.N.
**Organisation:** KIT Department of Informatics
**Part of:** Electives (Law and Sociology)

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

| Public Business Law (Election: at least 1 item as well as at least 9 credits) | | | |
|---|---|---|---|
| T-INFO-101309 | Telecommunications Law | 3 CR | |
| T-INFO-101312 | European and International Law | 3 CR | Brühann |
| T-INFO-111404 | Seminar: IT- Security Law | 3 CR | Schallbruch |

**Competence Certificate**
see course description.

# M 6.59 Module: Seminar Module [M-WIWI-106425]

**Responsible:** Studiendekan des KIT-Studienganges
**Organisation:** KIT Department of Economics and Management
**Part of:** Electives (mandatory)

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

| | | | |
|---|---|---|---|
| **Compulsory Seminars (Election: 2 items)** | | | |
| T-WIWI-103474 | Seminar in Business Administration A (Master) | 3 CR | Professorenschaft des Fachbereichs Betriebswirtschaftslehre |
| T-WIWI-103476 | Seminar in Business Administration B (Master) | 3 CR | Professorenschaft des Fachbereichs Betriebswirtschaftslehre |
| T-WIWI-103477 | Seminar in Economics B (Master) | 3 CR | Professorenschaft des Fachbereichs Volkswirtschaftslehre |
| T-WIWI-103478 | Seminar in Economics A (Master) | 3 CR | Professorenschaft des Fachbereichs Volkswirtschaftslehre |
| T-WIWI-103479 | Seminar in Informatics A (Master) | 3 CR | Professorenschaft des Instituts AIFB |
| T-WIWI-103480 | Seminar in Informatics B (Master) | 3 CR | Professorenschaft des Instituts AIFB |
| T-WIWI-103481 | Seminar in Operations Research A (Master) | 3 CR | Nickel, Rebennack, Stein |
| T-WIWI-103482 | Seminar in Operations Research B (Master) | 3 CR | Nickel, Rebennack, Stein |
| T-WIWI-103483 | Seminar in Statistics A (Master) | 3 CR | Grothe, Schienle |
| T-WIWI-103484 | Seminar in Statistics B (Master) | 3 CR | Grothe, Schienle |
| T-INFO-101997 | Seminar: Legal Studies I | 3 CR | N.N. |
| T-INFO-105945 | Seminar: Legal Studies II | 3 CR | N.N. |
| T-MACH-102135 | Conveying Technology and Logistics | 3 CR | Furmans, Pagani |
| T-MACH-109062 | Seminar Production Technology | 3 CR | Fleischer, Lanza, Schulze |
| T-MACH-108737 | Seminar Data-Mining in Production | 3 CR | Lanza |
| T-ETIT-100754 | Seminar Creating a Patent Specification | 3 CR | Stork |
| T-WIWI-108763 | Seminar in Engineering Science Master (approval) | 3 CR | Fachvertreter ingenieurwissenschaftlicher Fakultäten |
| **Interdisciplinary Qualifications (Election: at least 3 credits)** | | | |
| T-WIWI-112967 | Tutoring: Training and Practice<br>*This item will not influence the grade calculation of this parent.* | 2 CR | |
| T-WIWI-111438 | Self-Booking-HOC-SPZ-ZAK-STK-Graded<br>*This item will not influence the grade calculation of this parent.* | 1 CR | |
| T-WIWI-111439 | Self-Booking-HOC-SPZ-ZAK-STK-Graded<br>*This item will not influence the grade calculation of this parent.* | 2 CR | |
| T-WIWI-111440 | Self-Booking-HOC-SPZ-ZAK-STK-Graded<br>*This item will not influence the grade calculation of this parent.* | 3 CR | |
| T-WIWI-111441 | Self-Booking-HOC-SPZ-ZAK-STK-Ungraded<br>*This item will not influence the grade calculation of this parent.* | 1 CR | |
| T-WIWI-111442 | Self-Booking-HOC-SPZ-ZAK-STK-Ungraded<br>*This item will not influence the grade calculation of this parent.* | 2 CR | |
| T-WIWI-111443 | Self-Booking-HOC-SPZ-ZAK-STK-Ungraded<br>*This item will not influence the grade calculation of this parent.* | 3 CR | |

**Competence Certificate**
The module examination consists of three seminars. A detailed description of every singled assessment is given in the specific course characterization.
The final mark for the module is the average of the marks for each of the three seminars, weighted by the credits and truncated after the first decimal.

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

**Competence Goal**

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

**Content**
Competences which are gained in the seminar module especially prepare the student for composing the final thesis. Within the term paper and the presentation, the student exercises himself in scientific working techniques supported by the supervisor. Beside advancing skills in techniques of scientific working, there are gained integrative key qualifications as well.

**Annotation**
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalog of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore, for some seminars there is an application required.
The available places are listed on the internet: https://portal.wiwi.kit.edu.

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

# M 6.60 Module: Service Analytics (WW4BWLKSR1) [M-WIWI-101506]

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

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

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-108715 | Artificial Intelligence in Service Systems | 4,5 CR | Satzger |
| T-WIWI-111219 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 4,5 CR | Satzger |
| T-WIWI-105777 | Business Intelligence Systems | 4,5 CR | Mädche, Nadj, Toreini |
| T-WIWI-112152 | Practical Seminar: Artificial Intelligence in Service Systems | 4,5 CR | Satzger |
| T-WIWI-109940 | Special Topics in Information Systems | 4,5 CR | Weinhardt |

**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the 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**
None

**Competence Goal**
Students

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

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

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

**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**
The course Service Analytics A [2595501] should be taken.

# M 6.61 Module: Service Design Thinking (WW4BWLKSR2) [M-WIWI-101503]

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

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

| Mandatory | | | |
|---|---|---|---|
| T-WIWI-102849 | Service Design Thinking | 12 CR | Satzger, Terzidis |

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

**Prerequisites**
None

**Competence Goal**

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

**Content**

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

**Annotation**
Due to practical project work as a component of the program, access is limited.
The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.
For more information on the application process and the program itself are provided in the module component description and the program's website (http://sdt-karlsruhe.de).
Furthermore, the KSRI conducts an information event for applicants every year in May.
This module is part of the KSRI Teaching Program „Digital Service Systems“. For more information see the KSRI Teaching website: www.ksri.kit.edu/teaching.

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

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

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

# M 6.62 Module: Service Economics and Management (WW4BWLKSR3) [M-WIWI-102754]

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

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

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-112757 | Digital Services: Innovation & Business Models | 4,5 CR | Satzger |
| T-WIWI-112823 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | 4,5 CR | Weinhardt |

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

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

**Prerequisites**
None

**Competence Goal**
Students

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

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

**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.

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

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

**Recommendation**
None

# M 6.63 Module: Service Innovation, Design & Engineering (WW4BWLKSR5) [M-WIWI-102806]

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

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

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-112757 | Digital Services: Innovation & Business Models | 4,5 CR | Satzger |
| T-WIWI-110877 | Engineering Interactive Systems | 4,5 CR | Mädche |
| T-WIWI-102639 | Business Models in the Internet: Planning and Implementation | 4,5 CR | Weinhardt |
| T-WIWI-110887 | Practical Seminar: Service Innovation | 4,5 CR | Satzger |
| T-WIWI-108437 | Practical Seminar: Information Systems and Service Design | 4,5 CR | Mädche |

**Competence Certificate**
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO), 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**
**Dependencies between courses:**

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

**Competence Goal**
Students

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

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

**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.

From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

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

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

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

# M 6.64 Module: Service Management (WW4BWLISM6) [M-WIWI-101448]

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

| Credits | Grading scale | Recurrence | Duration | Language | Level | Version |
|---|---|---|---|---|---|---|
| 9 | Grade to a tenth | Each term | 1 term | German/English | 4 | 11 |

| Compulsory Elective Courses (Election: 9 credits) | | | |
|---|---|---|---|
| T-WIWI-108715 | Artificial Intelligence in Service Systems | 4,5 CR | Satzger |
| T-WIWI-111219 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 4,5 CR | Satzger |
| T-WIWI-112757 | Digital Services: Innovation & Business Models | 4,5 CR | Satzger |

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

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

**Competence Goal**
The students

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

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

**Annotation**
From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

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

**Recommendation**
None

# M 6.65 Module: Service Operations (WW4BWLKSR4) [M-WIWI-102805]

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

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

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

| **Compulsory Elective Courses (Election: at most 2 items)** | | | |
|---|---|---|---|
| T-WIWI-102718 | Discrete-Event Simulation in Production and Logistics | 4,5 CR | Spieckermann |
| T-WIWI-102884 | Operations Research in Health Care Management | 4,5 CR | Nickel |
| T-WIWI-102715 | Operations Research in Supply Chain Management | 4,5 CR | Nickel |
| T-WIWI-102716 | Practical Seminar: Health Care Management (with Case Studies) | 4,5 CR | Nickel |
| **Supplementary Courses (Election: at most 1 item)** | | | |
| T-MACH-112213 | Applied material flow simulation | 4,5 CR | Baumann |
| T-WIWI-102872 | Challenges in Supply Chain Management | 4,5 CR | Mohr |
| T-WIWI-110971 | Demand-Driven Supply Chain Planning | 4,5 CR | Packowski |

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

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

**Competence Goal**
Students

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

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

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

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

# M 6.66 Module: Sociology (WW4SOZ1) [M-GEISTSOZ-101169]

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

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

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

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

**Competence Goal**
The student

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

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

**Annotation**
Basic knowledge in multivariate regression and inference statistics is required.

# M 6.67 Module: Statistics & Econometrics [M-WIWI-106411]

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

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

| | | | |
|---|---|---|---|
| **Mandatory** | | | |
| T-WIWI-111388 | Applied Econometrics | 4,5 CR | Schienle |
| **Compulsory Elective Courses (Election: 1 item)** | | | |
| T-WIWI-103064 | Financial Econometrics | 4,5 CR | Schienle |
| T-WIWI-110939 | Financial Econometrics II | 4,5 CR | Schienle |
| T-WIWI-111247 | Mathematics for High Dimensional Statistics | 4,5 CR | Grothe |
| T-WIWI-103124 | Multivariate Statistical Methods | 4,5 CR | Grothe |
| T-WIWI-103126 | Non- and Semiparametrics | 4,5 CR | Schienle |
| T-WIWI-103127 | Panel Data | 4,5 CR | Heller |
| T-WIWI-110868 | Predictive Modeling | 4,5 CR | Krüger |
| T-WIWI-111387 | Probabilistic Time Series Forecasting Challenge | 4,5 CR | Krüger |
| T-WIWI-103065 | Statistical Modeling of Generalized Regression Models | 4,5 CR | Heller |

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

**Competence Goal**
The student

- knows advanced econometric and statistical methods for various types of data and research questions
- is able to apply these methods, to implement them via statistical software and to interpret the results competently

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

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

# M 6.68 Module: Stochastic Optimization [M-WIWI-103289]

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

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

| **Compulsory Elective Courses (Election: between 1 and 2 items)** | | | |
|---|---|---|---|
| T-WIWI-106546 | Introduction to Stochastic Optimization | 4,5 CR | Rebennack |
| T-WIWI-106548 | Advanced Stochastic Optimization | 4,5 CR | Rebennack |
| T-WIWI-106549 | Large-scale Optimization | 4,5 CR | Rebennack |
| **Supplementary Courses (Election: at most 1 item)** | | | |
| T-WIWI-102723 | Graph Theory and Advanced Location Models | 4,5 CR | Nickel |
| T-WIWI-102719 | Mixed Integer Programming I | 4,5 CR | Stein |
| T-WIWI-102720 | Mixed Integer Programming II | 4,5 CR | Stein |
| T-WIWI-111247 | Mathematics for High Dimensional Statistics | 4,5 CR | Grothe |
| T-WIWI-111587 | Multicriteria Optimization | 4,5 CR | Stein |
| T-WIWI-103124 | Multivariate Statistical Methods | 4,5 CR | Grothe |
| T-WIWI-102715 | Operations Research in Supply Chain Management | 4,5 CR | Nickel |
| T-WIWI-106545 | Optimization under Uncertainty | 4,5 CR | Rebennack |
| T-WIWI-110162 | Optimization Models and Applications | 4,5 CR | Sudermann-Merx |
| T-WIWI-112109 | Topics in Stochastic Optimization | 4,5 CR | Rebennack |

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

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

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

**Prerequisites**
At least one of the courses "Advanced Stochastic Optimization", "Large-scale Optimization" or "Introduction to Stochastic Optimization" has to be taken.

**Competence Goal**
The student

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

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

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

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

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

# M 6.69 Module: Student Innovation Lab (SIL) 1 [M-WIWI-105010]

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

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

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

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

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

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

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

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

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

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**Competence Goal**
**Personal competence**

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

**Social competence**

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

**Innovation and Entrepreneurship Competence**

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

**Systemic technical competence**

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

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

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

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

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

- As an innovation platform, the Automation Innovation Lab offers flying robots for cooperative swarm solutions.
- The Industry 4.0 Innovation Lab enables innovations in the area of the next industrial revolution with mobile robot platforms.
- In the Internet of Things Innovation Lab, innovations in Assisted Living and Smart Housing are made possible by a comprehensive kit of mobile robots and sensors.
- The Computer Vision for Health Lab offers a selection of state-of-the-art imaging devices and powerful computing hardware for innovative image-based applications for medicine and healthcare.

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

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

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

# M 6.70 Module: Student Innovation Lab (SIL) 2 [M-WIWI-105011]

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

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

**Part of:** Electives (Business Administration)

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

| Mandatory | | | |
|---|---|---|---|
| T-ETIT-110291 | Innovation Lab | 9 CR | Hohmann, Nahm, Sax, Stork, Zwick |

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

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

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

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

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

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The module M-WIWI-105010 - Student Innovation Lab (SIL) 1 must have been started.

**Competence Goal**
**Personal competence**

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

**Social competence**

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

**Innovation and Entrepreneurship Competence**

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

**Systemic technical competence**

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

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

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

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

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

- As an innovation platform, the Automation Innovation Lab offers flying robots for cooperative swarm solutions.
- The Industry 4.0 Innovation Lab enables innovations in the area of the next industrial revolution with mobile robot platforms.
- In the Internet of Things Innovation Lab, innovations in Assisted Living and Smart Housing are made possible by a comprehensive kit of mobile robots and sensors.
- The Computer Vision for Health Lab offers a selection of state-of-the-art imaging devices and powerful computing hardware for innovative image-based applications for medicine and healthcare.

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

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

**Annotation**
New module starting winter term 2019/2020.

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

# M 6.71 Module: Transport Infrastructure Policy and Regional Development (WW4VWL11) [M-WIWI-101485]

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

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

| Compulsory Elective Courses (Election: 2 items) | | | |
|---|---|---|---|
| T-WIWI-103107 | Spatial Economics | 4,5 CR | Ott |
| T-WIWI-100007 | Transport Economics | 4,5 CR | Mitusch, Szimba |

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

**Prerequisites**
None

**Competence Goal**
The students

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

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

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

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

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

# 7 Courses

## T 7.1 Course: Advanced Digital Economics [T-WIWI-112990]

**Responsible:** Dr. Frank Rosar
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106408 - Digital Economics

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500033 | Advanced Digital Economics | 2 SWS | Lecture / 🗣 | Rosar |
| WT 23/24 | 2500039 | Advanced in Digital Economics | 1 SWS | Practice / 🗣 | Rosar |
| **Exams** | | | | | |
| WT 23/24 | 7900185 | Advanced Digital Economics | | | Puppe |

Legend: 🖥 Online, 💐 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

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

**Prerequisites**
None

# T 7.2 Course: Advanced Empirical Asset Pricing [T-WIWI-110513]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2530569 | Advanced Empirical Asset Pricing | 2 SWS | Lecture / | Thimme |
| WT 23/24 | 2530570 | Übung zu Advanced Empirical Asset Pricing | 1 SWS | Practice / | Thimme |
| **Exams** | | | | | |
| ST 2023 | 7900321 | Advanced Empirical Asset Pricing | | | Thimme |
| WT 23/24 | 7900319 | Advanced Empirical Asset Pricing | | | Thimme |

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

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

A bonus can be acquired by submitting exercise solutions to 80% of the assigned exercise tasks. 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.

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

**Annotation**
New course from winter semester 2019/2020.

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

## V Advanced Empirical Asset Pricing

2530569, WS 23/24, 2 SWS, Language: English, Open in study portal

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

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

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

**Organizational issues**
Die Veranstaltung findet montags um 9:45-11:15 im Raum 209 am Campus B (Geb. 09.21) statt und endet nach ersten Semesterhälfte.

**Literature**
**Basisliteratur**

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

**zur Vertiefung/ Wiederholung**

Investments and Portfolio Management / Bodie, Z., Kane, A., Marcus, A.J. - 9. ed., McGraw-Hill, 2011.

The econometrics of financial markets / Campbell, J.Y., Lo, A.W., MacKinlay, A.C. - 2. printing, with corrections, Princeton Univ. Press, 1997.

# T 7.3 Course: Advanced Game Theory [T-WIWI-102861]

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

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

**Part of:** M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-101500 - Microeconomic Theory
M-WIWI-101502 - Economic Theory and its Application in Finance
M-WIWI-106408 - Digital Economics

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2521533 | Advanced Game Theory | 2 SWS | Lecture / 🗣 | Reiß |
| WT 23/24 | 2521534 | Übung zu Advanced Game Theory | 1 SWS | Practice / 🗣 | Reiß, Peters |
| **Exams** | | | | | |
| ST 2023 | 7900126 | Advanced Game Theory | | | Puppe |

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**
None

**Recommendation**
Basic knowledge of mathematics and statistics is assumed.

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

## V Advanced Game Theory

2521533, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

# T 7.4 Course: Advanced Lab Blockchain Hackathon (Master) [T-WIWI-111126]

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

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

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2512403 | Advanced Lab Blockchain Hackathon (Bachelor) | | Practical course / | Sunyaev, Kannengießer, Sturm, Beyene |
| **Exams** | | | | | |
| ST 2023 | 7900172 | Lab Blockchain Hackathon (Master) | | | Sunyaev |

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

**Competence Certificate**
The alternative exam assessment consists of:

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

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

**Prerequisites**
None

# T 7.5 Course: Advanced Lab Informatics (Master) [T-WIWI-110548]

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

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

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2512205 | Lab Realisation of innovative services (Master) | 3 SWS | Practical course / | Schiefer, Schüler, Toussaint |
| ST 2023 | 2512207 | Lab Automation in Everyday Life (Master) | 3 SWS | Practical course / | Oberweis, Forell, Frister, Schiefer |
| ST 2023 | 2512401 | Advanced Lab Development of Sociotechnical Information Systems (Master) | 3 SWS | Practical course / | Sunyaev, Pandl, Goram, Leiser |
| ST 2023 | 2512403 | Advanced Lab Blockchain Hackathon (Master) | | Practical course / | Sunyaev, Sturm, Kannengießer, Beyene |
| ST 2023 | 2512500 | Project Lab Machine Learning | 3 SWS | Practical course / | Zöllner |
| WT 23/24 | 2512205 | Lab Realisation of innovative services (Master) | 3 SWS | Practical course / | Oberweis, Toussaint, Schiefer, Schüler |
| WT 23/24 | 2512401 | Practical Course Sociotechnical Information Systems Development (Master) | 3 SWS | Practical course / | Sunyaev, Goram, Leiser |
| WT 23/24 | 2512403 | Advanced Lab Blockchain Hackathon (Bachelor) | | Practical course / | Sunyaev, Kannengießer, Sturm, Beyene |
| WT 23/24 | 2512501 | Practical Course Cognitive automobiles and robots (Master) | 3 SWS | Practical course / | Zöllner, Daaboul |
| WT 23/24 | 2512600 | Project lab Information Service Engineering (Master) | 3 SWS | Practical course / | Sack |
| **Exams** | | | | | |
| ST 2023 | 7900020 | Lab Automation in Everyday Life (Master) | | | Oberweis |
| ST 2023 | 7900086 | Project Lab Machine Learning | | | Zöllner |
| ST 2023 | 7900148 | Advanced Lab Realization of innovative services (Master) | | | Oberweis |
| ST 2023 | 7900172 | Lab Blockchain Hackathon (Master) | | | Sunyaev |
| ST 2023 | 7900173 | Advanced Lab Development of Sociotechnical Information Systems (Master) | | | Sunyaev |

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

**Competence Certificate**
The alternative exam assessment consists of:

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

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

**Prerequisites**
None

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

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

### V Lab Realisation of innovative services (Master)

2512205, SS 2023, 3 SWS, Language: German, Open in study portal

**Practical course (P)**
**Blended (On-Site/Online)**

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

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

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

### V Lab Automation in Everyday Life (Master)

2512207, SS 2023, 3 SWS, Language: German, Open in study portal

**Practical course (P)**
**Blended (On-Site/Online)**

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

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

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

### V Advanced Lab Development of Sociotechnical Information Systems (Master)

2512401, SS 2023, 3 SWS, Language: German/English, Open in study portal

**Practical course (P)**
**Online**

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

Registration information will be announced on the course page.

### V Project Lab Machine Learning

2512500, SS 2023, 3 SWS, Language: German/English, Open in study portal

**Practical course (P)**
**Blended (On-Site/Online)**

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

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

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

**Learning objectives:**

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

**Recommendations:**

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

**Workload:**

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

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

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

### V Lab Realisation of innovative services (Master)

2512205, 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.

### V Practical Course Cognitive automobiles and robots (Master)

2512501, WS 23/24, 3 SWS, Language: German/English, Open in study portal

**Practical course (P)**
**Blended (On-Site/Online)**

**Content**
The lab is intended as a practical supplement to courses such as "Machine Learning 1/2".
Scientific topics, mostly in the area of autonomous driving and robotics, will be addressed in joint work with ML/KI methods. The goal of the internship is for participants to design, develop, and evaluate ML Software system.

In addition to the scientific goals, such as the study and application of methods, the aspects of project-specific teamwork in research (from specification to presentation of results) are also worked on in this internship.

The individual projects require the analysis of the set task, selection of appropriate methods, specification and implementation and evaluation of the solution approach. Finally, the selected solution is to be documented and presented in a short lecture.

**Learning Objectives**:

- Students will be able to practically apply theoretical knowledge from lectures on machine learning to a selected area of current research.
- Students will be proficient in analyzing and solving thematic problems.
- Students will be able to evaluate, document, and present their concepts and results.

**Recommendations:**

- Theoretical knowledge of machine learning and/or AI.
- Python knowledge
- Initial experience with deep learning frameworks such as PyTorch/Jax/Tensorflow may be beneficial.

**Workload**:

The workload of 5 credit points consists of practical implementation of the selected solution, as well as time for literature research and planning/specification of the selected solution. In addition, a short report and presentation of the work performed will be prepared.

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

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

### V Project lab Information Service Engineering (Master)

2512600, WS 23/24, 3 SWS, Language: English, Open in study portal

**Practical course (P)**
**On-Site**

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

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

Required coursework includes:

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

**Notes**:

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

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

Participation will be restricted to 16 students.

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

**ISE Tutor Team:**

- Dr. Genet Asefa Gesese
- M. Sc. Mirza Mohtasim Alam
- M. Sc. Oleksandra Bruns
- M. Sc. Ebrahim Norouzi
- M. Sc. Mary Ann Tan
- B. Sc. Tabea Tietz
- M. Sc. Mahsa Vafaie

**WS 2023/24 Tasks List:**

- **Task 1: Zero-shot Ultrafine Typing of Named Entities.** Use Pre-trained Language Models to assign predefined labels to entity mentions in a given context. Evaluate approaches which require no training data on a standard benchmark, i.e. UFET
- **Task 2**: **Object Detection on Historical Theatre Photographs**. Use Pre-trained DL models to detect and identify objects in historical theatre photographs and integrate the results into an existing Knowledge Graph.
- **Task 3: Automatically Generate Ontologies from Competency Questions using Language Models**. Competency questions (CQs) define the scope of knowledge represented in an ontology and are used to evaluate an ontology based on its ability to answer each question. In this task, we are investigating the benefit of Large Language Models to generate and evaluate ontologies from a set of competency questions.
- **Task 4: Boosting the Performance of Large Language Models for Question Answering with Knowledge Graph Integration**. Often, large language models hallucinate users with wrong or confusing answers. In order to generate relevant answers, knowledge graphs can help in many ways. The goal of this task is to utilize a knowledge graph to provide context and factual information to a language model, thereby improving the relevance and accuracy of its responses.
- **Task 5:Information Extraction and Knowledge Graph Engineering on the Use Case of Historical Political Flyers** Information extraction and Knowledge Graph construction from digitized political leaflets of the Weimar Republic.
- **Task 6: Sentiment Analysis on Multilingual Wikipedia.** Analyse how different language Versions of Wikipedia differ in terms of Sentiment Bias.
- of a Knowledge Graph from 1.3 Mio Archival Objects from the German Digital Library

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

# T 7.6 Course: Advanced Lab Realization of Innovative Services (Master) [T-WIWI-112914]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2512205 | Lab Realisation of innovative services (Master) | 3 SWS | Practical course / | Schiefer, Schüler, Toussaint |
| **Exams** | | | | | |
| ST 2023 | 7900148 | Advanced Lab Realization of innovative services (Master) | | | Oberweis |

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

**Competence Certificate**
The alternative exam assessment consists of:

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

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

**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:*

## V Lab Realisation of innovative services (Master)

2512205, SS 2023, 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.

# T 7.7 Course: Advanced Lab Security [T-WIWI-109786]

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

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

**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.

# T 7.8 Course: Advanced Lab Security, Usability and Society [T-WIWI-108439]

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

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | see Annotations | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2512554 | Praktikum Security, Usability and Society (Bachelor) | 3 SWS | Practical course / | Volkamer, Mayer, Berens, Mossano, Ballreich |
| WT 23/24 | 2512555 | Praktikum Security, Usability and Society (Master) | 3 SWS | Practical course / | Volkamer, Mayer, Berens, Mossano, Ballreich |

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:*

## V 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. The deadline for the first round is 18.07.2022. Topics in italics have been already assigned.

**Important dates:**

Kick-off: 13.10.2022, 10:00 AM CET in Big Blue Button - Link
Report + code submission : 30.01.2023 23:59 CET
Presentation deadline : 30.01.2023, 23:59 CET

Presentation day: 01.02.2023

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: Portfolio Graphical Recognition-Based PWDs with Gamepads
Number of students: 2 Bachelor or Master level
Description: Graphical passwords use graphical elements as passwords and they are usually easier to remember than textual passwords. Moreover, they can be combined with "portfolio authentication" techniques to make them shoulder surfing resistant. The goal of this topic is to implement a graphical portfolio authentication shceme for gamepads, based on previous textual schemes implementations.

Title: Development of a secure web interface with a ticket system for the Hashcat Password Cracker
Number of students: 2 Bachelor or Master level
Description: Hashcat is a console application which allows to crack passwords using a given wordlist or password pattern. In order to allow multiple not necessarily trustworthy users to register a password cracking job with the specified parameters in parallel, a web platform with a ticket system should be developed within the framework of this laboratory topic.Therefore a frontend and backend should be implemented separately and a clear description of the interface between is essential part of this work. Python with Flask Web Framework can be used to implement the backend. Good knowledge in programming, APIs and web security are required.

**Designing Security User studies**

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

Title: NoPhish Cardgame
Number of students: 1/2 Bachelor level
Description: Das NoPhish Konzept findet bereits in vielen Formen Anwendung. Es hilft dabei betrügerische Nachrichten von legitimen zu Unterscheiden. Die neueste Form ist ein Cardgame bei dem man spielerisch lernen kann Phishing zu erkennen. Hierbei wird sowohl grundlegendes Wissen, als auch konkretes Wissen vermittelt. Aufgabe: Erheben von Daten (Studiendesign ist bereits vorhanden) und Auswertung bestehender Daten mit neu erhobenen Daten

Title: Analysing the percetions on email subject extensions like 'Caution - This e-mail is sent from someone outside the company'
Number of students: 1/2 Bachelor or Master level
Description: Email subject extensions are used in myn organistions to reduce the risk to become a victim of a phishing email - why should your boss e.g. send you an external email? Likely to be a phish! The idea is to develope the study protocol and to collect first data which should be analysed.

Title: Benutzerstudie zur Erkennung von Angriffen auf die E-Mail Absicherung mit S/MIME-Zertifikaten
Number of students: 2 Bachelor or Master level
Description: Das KIT bietet den Beschäftigten und Studierenden die Möglichkeit, ihre E-Mail-Kommunikation mittels S/MIME-Zertifikaten abzusichern. Für die Nutzenden entsteht hierbei die Herausforderung, eingehende Nachrichten hinsichtlich gültiger Signatur und Verschlüsselung zu prüfen und mögliche Angriffe zu erkennen. Zielsetzung dieser Arbeit ist die Konzeption und Erstellung einer Nutzerstudie zur Evaluation von Schulungsmaterialien. Die Studie soll verschiedene Nutzungsszenarien bei der Erkennung von Angriffen (z.B. durch ungültige Zertifikate) und das Verhalten der Nutzenden innerhalb dieser Szenarien umfassen.

Title: Evaluation of the Sudoku Privacy Friendly App usability for users with rheumatoid arthritis (English only)
Number of students: 1 Bachelor or Master level
Description: The Privacy Friendly Apps are a set of applications developed by the SECUSO group that do not contain any advertisement or tracking mechanism, hence preserving the privacy of their users (https://secuso.aifb.kit.edu/english/105.php). One of these apps is "Sudoku", available for Android on both the Google Store and F-Droid. Although the app is friendlier to privacy that other alternatives, it requires multiple tactile interactions with the mobile device. This can be an issue for users with reduced hand mobility, such as those suffering from rheumatoid arthritis. To approximate the reduced mobility caused by reumatoid arthritis in healthy users, it is common to use arthritis simulation gloves (e.g., https://idarinstitute.com/products/arthritis-simulation-gloves). The task of the student is to design a lab study involving arthritis simulation gloves that evaluates the Sudoku app usability for users suffering from rheumatoid arthritis,.

Title: Replication and extension of “What is this URL’s destination?” (English only)
Number of students: 1 Bachelor level
Description: Replication of studies is a fundamental part of the scientific process: it allows to confirm or deny experimental results and can open new lines of research. This topic is a replication of the study presented in Albakry, S., Vaniea, K. & Wolters, M.K. (2020) What is this URL's destination? Empirical Evaluation of Users' URL Reading" (https://doi.org/10.1145/3313831.3376168). The student will re-implement the study following the precise description from the original authors, run it and then compare the results with the previous iteration.

Title: Password Generator Defaults
Number of students: 2 Bachelor or Master level
Description: Password Managers are useful tools that help the use of complex passwords and avoid the password recycle practice. Moreover, they support users by providing password generator tools, that create random password of specific length. However, the defaults settings might be at odds with the password policies of popular website, e.g., they can contain forbidden characters or be too long/short. Moreover, we need to understand if Password Managers users change the default settings to generate passwords, in how many cases and for what reasons. The students task is therefore two-folds: (1) compare the default settings of several Password Managers to the privacy policies of popular websites; (2) design and implement a survey to collect the behavior of Password Managers users with regard to the password generator tools.

Title: Benutzerstudie zur Auswertung der PassSec+ Browser Extension mittels Eye-Tracking
Number of students: 1/2 Bachelor or Master level
Description: PassSec+ ist eine von SECUSO entwickelte Browser-Erweiterung für Firefox und Google Chrome, die hilft, Passwörter, Zahlungsdaten und andere sensible Daten besser zu schützen, indem es bereits vor der Eingabe dieser Daten prüft, ob eine sichere Dateneingabe gewährleistet ist und im Zweifel ein Dialog anzeigt, welcher den Nutzer bei der Entscheidung unterstützt. In der Nutzerstudie soll untersucht werden, wo der Fokus des Nutzers mit und ohne Benutzung von PassSec+ liegt und dabei die Effektivität zur Prävention vor Phishing untersucht werden. Es wird das Setup sowie der Aufbau der Studie bereits vorgegeben. Ziel ist es, die Nutzerstudie mit Probanden durchzuführen und die Daten entsprechend z.B. mit Heatmaps auszuwerten.

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

V **Praktikum Security, Usability and Society (Master)** **Practical course (P)**
2512555, WS 23/24, 3 SWS, Language: German/English, Open in study portal **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. The deadline for the first round is 18.07.2022. Topics in italics have been already assigned.

WiWi portal: https://portal.wiwi.kit.edu/ys/6273

**Important dates:**

Kick-off: 13.10.2022, 10:00 AM CET in Big Blue Button - Link
Report + code submission : 30.01.2023 23:59 CET
Presentation deadline : 30.01.2023, 23:59 CET

Presentation day: 01.02.2023

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: Portfolio Graphical Recognition-Based PWDs with Gamepads
Number of students: 2 Bachelor or Master level
Description: Graphical passwords use graphical elements as passwords and they are usually easier to remember than textual passwords. Moreover, they can be combined with "portfolio authentication" techniques to make them shoulder surfing resistant. The goal of this topic is to implement a graphical portfolio authentication shceme for gamepads, based on previous textual schemes implementations.

Title: Development of a secure web interface with a ticket system for the Hashcat Password Cracker
Number of students: 2 Bachelor or Master level
Description: Hashcat is a console application which allows to crack passwords using a given wordlist or password pattern. In order to allow multiple not necessarily trustworthy users to register a password cracking job with the specified parameters in parallel, a web platform with a ticket system should be developed within the framework of this laboratory topic.Therefore a frontend and backend should be implemented separately and a clear description of the interface between is essential part of this work. Python with Flask Web Framework can be used to implement the backend. Good knowledge in programming, APIs and web security are required.

**Designing Security User studies**

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

Title: Analysing the percetions on email subject extensions like 'Caution - This e-mail is sent from someone outside the company'
Number of students: 1/2 Bachelor or Master level
Description: Email subject extensions are used in myn organistions to reduce the risk to become a victim of a phishing email - why should your boss e.g. send you an external email? Likely to be a phish! The idea is to develope the study protocol and to collect first data which should be analysed.

Title: Benutzerstudie zur Erkennung von Angriffen auf die E-Mail Absicherung mit S/MIME-Zertifikaten
Number of students: 2 Bachelor or Master level
Description: Das KIT bietet den Beschäftigten und Studierenden die Möglichkeit, ihre E-Mail-Kommunikation mittels S/MIME-Zertifikaten abzusichern. Für die Nutzenden entsteht hierbei die Herausforderung, eingehende Nachrichten hinsichtlich gültiger Signatur und Verschlüsselung zu prüfen und mögliche Angriffe zu erkennen. Zielsetzung dieser Arbeit ist die Konzeption und Erstellung einer Nutzerstudie zur Evaluation von Schulungsmaterialien. Die Studie soll verschiedene Nutzungsszenarien bei der Erkennung von Angriffen (z.B. durch ungültige Zertifikate) und das Verhalten der Nutzenden innerhalb dieser Szenarien umfassen.

Title: Evaluation of the Sudoku Privacy Friendly App usability for users with rheumatoid arthritis (English only)
Number of students: 1 Bachelor or Master level
Description: The Privacy Friendly Apps are a set of applications developed by the SECUSO group that do not contain any advertisement or tracking mechanism, hence preserving the privacy of their users (https://secuso.aifb.kit.edu/english/105.php). One of these apps is "Sudoku", available for Android on both the Google Store and F-Droid. Although the app is friendlier to privacy that other alternatives, it requires multiple tactile interactions with the mobile device. This can be an issue for users with reduced hand mobility, such as those suffering from rheumatoid arthritis. To approximate the reduced mobility caused by reumatoid arthritis in healthy users, it is common to use arthritis simulation gloves (e.g., https://idarinstitute.com/products/arthritis-simulation-gloves). The task of the student is to design a lab study involving arthritis simulation gloves that evaluates the Sudoku app usability for users suffering from rheumatoid arthritis.

Title: Password Generator Defaults
Number of students: 2 Bachelor or Master level
Description: Password Managers are useful tools that help the use of complex passwords and avoid the password recycle practice. Moreover, they support users by providing password generator tools, that create random password of specific length. However, the defaults settings might be at odds with the password policies of popular website, e.g., they can contain forbidden characters or be too long/short. Moreover, we need to understand if Password Managers users change the default settings to generate passwords, in how many cases and for what reasons. The students task is therefore two-folds: (1) compare the default settings of several Password Managers to the privacy policies of popular websites; (2) design and implement a survey to collect the behavior of Password Managers users with regard to the password generator tools.

Title: Benutzerstudie zur Auswertung der PassSec+ Browser Extension mittels Eye-Tracking
Number of students: 1/2 Bachelor or Master level
Description: PassSec+ ist eine von SECUSO entwickelte Browser-Erweiterung für Firefox und Google Chrome, die hilft, Passwörter, Zahlungsdaten und andere sensible Daten besser zu schützen, indem es bereits vor der Eingabe dieser Daten prüft, ob eine sichere Dateneingabe gewährleistet ist und im Zweifel ein Dialog anzeigt, welcher den Nutzer bei der Entscheidung unterstützt. In der Nutzerstudie soll untersucht werden, wo der Fokus des Nutzers mit und ohne Benutzung von PassSec+ liegt und dabei die Effektivität zur Prävention vor Phishing untersucht werden. Es wird das Setup sowie der Aufbau der Studie bereits vorgegeben. Ziel ist es, die Nutzerstudie mit Probanden durchzuführen und die Daten entsprechend z.B. mit Heatmaps auszuwerten.

Title: User study on user's knowledge about brainwaves verification
Number of students: 1 Master level
Description: Brainwaves can be used to authenticate users. Hoerver, several questions are left unanswered regarding the users' stance on this: What is the prior knowledge of users about verification and brainwaves? Are they comfortable wearing a device to record their brainwaves? How are they feeling regarding storing their brainwaves samples? Which kind of information can be extracted from the smaples? How secure would such an authentication scheme be? The task of the student is to design, implement an pre-test a user study investigating these questions.

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

# T 7.9 Course: Advanced Lab Sociotechnical Information Systems Development (Master) [T-WIWI-111125]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2512401 | Practical Course Sociotechnical Information Systems Development (Master) | 3 SWS | Practical course / | Sunyaev, Goram, Leiser |
| **Exams** | | | | | |
| ST 2023 | 7900173 | Advanced Lab Development of Sociotechnical Information Systems (Master) | | | Sunyaev |

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

**Competence Certificate**
The alternative exam assessment consists of:

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

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

**Prerequisites**
None

# T 7.10 Course: Advanced Machine Learning [T-WIWI-109921]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz
Dr. Abdolreza Nazemi

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

**Part of:** M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

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

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540535 | Advanced Machine Learning | 2 SWS | Lecture | Nazemi |
| ST 2023 | 2540536 | Exercise Advanced Machine Learning | 1 SWS | Practice | Nazemi |
| **Exams** | | | | | |
| ST 2023 | 7900227 | Advanced Machine Learning | | | Geyer-Schulz |
| WT 23/24 | 7900253 | Advanced Machine Learning (Nachklausur SoSe 2023) | | | Geyer-Schulz |

**Competence Certificate**
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

**Prerequisites**
None

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

## V Advanced Machine Learning

2540535, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**

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

**Tentative Course Outline:**

- Introduction
- Statistical Inference
- Shrinkage Methods
- Model Assessment and Selection
- Tree-based Machine Learning Algorithms
- Dimensionality Reduction
- Neural Networks and Deep Learning
- Natural Language Processing with Deep Learning
- Support Vector Machine

**Time of attendance**

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

**The student will learn**

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

**Literature**


- Alpaydin, E. (2014). Introduction to Machine Learning. Third Edition, MIT Press.
- De Prado, M. L. (2018). Advances in Financial Machine Learning. John Wiley & Sons.
- Goodfellow, I., Bengio, Y., and A. Courville (2017). Deep Learning. MIT Press. (online available)
- Hastie, T., Tibshirani, R., and J. Friedman (2009). Elements of Statistical Learning. Second Edition. Springer. (online available)
- Leskovec, J., Rajaraman, A., Ullman, J. D., (2014). Mining of Massive Datasets. Cambridge University Press. (online available)
- Witten, I. H., Eibe, F., Hall, M. A., Pal, C. J. (2016). Data Mining: Practical Machine Learning Tools and Techniques. Morgan Kaufmann.

# T 7.11 Course: Advanced Machine Learning and Data Science [T-WIWI-111305]

**Responsible:** Prof. Dr. Maxim Ulrich
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105659 - Advanced Machine Learning and Data Science
M-WIWI-106409 - Digital Financial Economics

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

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900378 | Advanced Machine Learning and Data Science | Ulrich |

**Competence Certificate**
**Due to the professor's research sabbatical, the BSc module "Financial Data Science" and MSc module "Foundations for Advanced Financial -Quant and -Machine Learning Research" and the MSc module "Advanced Machine Learning and Data Science" along with the respective examinations will not be offered in SS2023. Bachelor and Master thesis projects are not affected and will be supervised.**

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

**Annotation**
The course is targeted to students with a major in Data Science and/or Machine Learning. It offers students the opportunity to develop hands-on knowledge on new developments in data science and machine learning. Please apply via the link: https://portal.wiwi.kit.edu/forms/form/fbv-ulrich-msc-project.

An online meetup will be offered at 14:00 on Tuesday of the first week of summer semester 2022 (i.e., 19.04.2022).

# T 7.12 Course: Advanced Management Accounting [T-WIWI-102885]

**Responsible:** Prof. Dr. Marcus Wouters
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101510 - Cross-Functional Management Accounting
M-WIWI-106410 - Economics & Management

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2579907 | Advanced Management Accounting | 4 SWS | Lecture / 🗣 | Wouters, Dickemann, Letmathe |
| **Exams** | | | | | |
| WT 23/24 | 79-2579907-M | Advanced Management Accounting | | | Wouters |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of an oral exam (30 min) (according to §4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**
None.

**Recommendation**
The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

**Annotation**
This course is held in English. Lectures and tutorials are integrated.

The course is compulsory and must be examined.

Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters∂kit.edu).

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

## V Advanced Management Accounting

2579907, WS 23/24, 4 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
This course is held in English. Students who are interested in attending this course should send an e-mail to Professor Wouters (marc.wouters@kit.edu).

**Inhalt:**

- The course addresses several topics where management accounting is strongly related to marketing, finance, or organization and strategy, such as customer value propositions, financial performance measures, managing new product development, and technology investment decisions.

**Learning objectives:**

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

**Examination:**

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

**Required prior Courses:**

- The course is compulsory and must be examined.

**Recommendations:**

- The course requires significant prior knowledge of Management Accounting, similar to the content of the courses MA 1 and 2, although completion of these particular courses is not a formal requirement.

**Workload:**

- The total workload for this course is approximately 135 hours. For further information see German version.

**Literature**
Literature is mostly made available via ILIAS.

# T 7.13 Course: Advanced Statistics [T-WIWI-103123]

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

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

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900037 | Advanced Statistics | Grothe |

**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

# T 7.14 Course: Advanced Stochastic Optimization [T-WIWI-106548]

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

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Oral examination | 4,5 | Grade to a third | Irregular | 2 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900034 | Advanced Stochastic Optimization | Rebennack |

**Competence Certificate**
The assessment consists of an oral exam (20 minutes). The exam is offered every semester.

**Prerequisites**
None.

# T 7.15 Course: Advanced Topics in Digital Management [T-WIWI-111912]

**Responsible:** Prof. Dr. Petra Nieken
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2573016 | Advanced Topics in Digital Management | 2 SWS | Colloquium / 🗣 | Nieken, Mitarbeiter |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment. The following aspects are included:

- Regular and active participation in the course dates
- Presentation of a given research topic.

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.

**Recommendation**
We recommend visiting the course Incentives in Organization before taking this course.
The course is strongly recommended for students interested in empirical research in the areas digital HRM, personnel economics, and leadership and those who are interest in an academic career path.

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

V **Advanced Topics in Digital Management**
2573016, SS 2023, 2 SWS, Language: English, Open in study portal
**Colloquium (KOL)**
**On-Site**

**Content**
The students will discuss and analyze selected research papers in the areas digital HRM, personnel economics, and leadership with a focus on digital management. The students will present research papers and discuss research methods and designs as well as content. They will develop an own research design on a predefined topic.

**Aim**

The student

- Looks into current research topics in the areas HRM, personnel economics, and leadership with a focus on digital management and AI.
- Analyzes research papers in detail and evaluates the research outcomes.
- Trains their presentation skills and discussion skills.
- Practices scientific debating.
- Learns to critically evaluate research methods and trains the scientific discussion culture.
- Gains deeper knowledge in the area of digital HRM and management.
- Learns to evaluate research designs and takes into account the ethical dimension of research.
- Learns how to develop an own research design and idea.

**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-25, Termine werden bekannt gegeben

# T 7.16 Course: Advanced Topics in Economic Theory [T-WIWI-102609]

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

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

**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.

# T 7.17 Course: Advanced Topics in Human Resource Management [T-WIWI-111913]

**Responsible:** Prof. Dr. Petra Nieken
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2573014 | Advanced Topics in Human Resource Management | 2 SWS | Colloquium / 🗣 | Nieken, Mitarbeiter |

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

**Competence Certificate**
Alternative exam assessment.The following aspects are included:

- Regular and active participation in the course dates
- Presentation of a given research topic.

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.

**Recommendation**
We recommend visiting the course Incentives in Organization before taking this course.
The course is strongly recommended for students interested in empirical research in the areas HRM, personnel economics, and leadership and those who are interest in an academic career path.

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

## V Advanced Topics in Human Resource Management

2573014, SS 2023, 2 SWS, Language: English, 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. They will develop an own research design on a predefined topic.

**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 and discussion skills.
- Practices scientific debating.
- 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.
- Learns how to develop an own research design and idea.

**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-25, Termine werden bekannt gegeben

# T 7.18 Course: Application of Social Science Methods (WiWi) [T-GEISTSOZ-109052]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 5011002 | Political Dedates and Polarization in the German Parliament Part 2 | 2 SWS | Seminar / | Banisch |
| ST 2023 | 5011006 | Gender Pay Gap | 2 SWS | Seminar / | Nollmann |
| ST 2023 | 5011008 | Decomposition and Regression Analysis | 2 SWS | Seminar / | Nollmann |
| **Exams** | | | | | |
| ST 2023 | 7400368 | Application of Social Science Methods | | | Nollmann |
| ST 2023 | 7400453 | Application of Social Science Methods (WiWi) | | | Nollmann |
| WT 23/24 | 7400048 | Application of Social Science Methods (WiWi) | | | Nollmann |

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

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-GEISTSOZ-104565 - Computer Aided Data Analysis must have been passed.

# T 7.19 Course: Applied Econometrics [T-WIWI-111388]

**Responsible:** Prof. Dr. Melanie Schienle
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-106411 - Statistics & Econometrics

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2520020 | Applied Econometrics | 2 SWS | Lecture / 🗣 | Krüger, Eberl |
| WT 23/24 | 2520021 | Tutorial in Applied Econometrics | 2 SWS | Practice / 🗣 | Eberl, Koster |

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

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

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

## V Applied Econometrics

2520020, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Content:**

The course covers two econometric topics: (1) Conditional expectation and regression, and (2) Causal inference. Part (1) reviews foundations like the best linear predictor, least squares estimation, and robust covariance estimation. Part (2) introduces the potential outcomes framework for studying causal, what-if type questions such as `How does an internship affect a person's future wage?'. It then presents research strategies like randomized trials, instrumental variables, and regression discontinuity.

For each part, we discuss econometric methods and theory, empirical examples (including recent research papers), and R implementation.

**Learning goal:**

Students are able to assess the properties of various econometric estimators and research designs, and to implement econometric estimators using R software.

**Workload:**

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Independent Study: 105 hours

**Literature**
Angrist, J.D., and J.-S. Pischke (2009): Mostly Harmless Econometrics. Princeton University Press.

Cattaneo, M.D., N. Idrobo and R. Titiunik (2020): A Practical Introduction to Regression Discontinuity Designs: Foundations. Cambridge University Press.

Hansen, B. (2022): Econometrics. Princeton University Press.

DiTraglia, F.J. (2021): Lecture Notes on Treatment Effects. Course notes, available at https://www.treatment-effects.com/.

# T 7.20 Course: Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-110339]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511032 | Applied Informatics - Internet Computing | 2 SWS | Lecture / 🗣 | Sunyaev |
| ST 2023 | 2511033 | Übungen zu Angewandte Informatik - Internet Computing | 1 SWS | Practice / 🛠 | Sunyaev, Rank, Guse |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_AI2_A2 | Applied Informatics - Internet Computing (Registration until 17 July 2023) | | | Sunyaev |
| WT 23/24 | 79AIFB_AI-IC_B4 | Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services | | | Sunyaev |

Legend: 💻 Online, 🛠 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

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

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

**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 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**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

# T 7.21 Course: Applied material flow simulation [T-MACH-112213]

**Responsible:** Dr.-Ing. Marion Baumann
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** M-WIWI-102805 - Service Operations
M-WIWI-102832 - Operations Research in Supply Chain Management

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2117054 | Applied material flow simulation | 3 SWS | Lecture / Practice / | Baumann |
| **Exams** | | | | | |
| ST 2023 | 76-T-MACH-112213 | Applied material flow simulation | | | Baumann |

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

**Competence Certificate**
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

**Prerequisites**
None

**Recommendation**

- Basic statistical knowledge and understanding
- Knowledge of a common programming language (Java, Python, ...)
- Recommended course: T-WIWI-102718 - Discrete Event Simulation in Production and Logistics

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

## V Applied material flow simulation

2117054, WS 23/24, 3 SWS, Language: German, Open in study portal

**Lecture / Practice (VÜ)**
**On-Site**

**Content**
**Learning Content:**

- Methods of modeling a simulation such as:
  - Discrete-event simulation
  - Agent based simulation
- Design of a simulation model of a material flow system
- Data exchange in simulation models
- Verification and validation of simulation models
- Execution of simulation studies
- Statistical evaluation and parameter study

This is an application-oriented course in which the course contents are applied and deepened using the Anylogic software.

**Learning Goals:**
Students are able to:

- select the appropriate simulation modeling method depending on a modeling objective and build a suitable simulation model for material flow systems,
- extend a simulation model in a meaningful way with data import and export,
- verify and validate a simulation model,
- conduct a simulation study efficiently and with meaningful results, and
- design and conduct a parameter study and statistically analyze and evaluate the results.

**Recommendations:**

- Basic statistical skills
- Prior knowledge of a common programming language (Java, Python, ...).
- Recommended course: T-WIWI-102718 - Discrete Event Simulation in Production and Logistics

**Workload for 4,5 ECTS (135 h):**

- regular attendance: 21 hours
  self-study: 114 hours

**Organizational issues**

- **Im Wintersemester 2023/2024 ist die Veranstaltung auf maximal 30 Teilnehmer beschränkt.**
- **Die Anmeldung ist durch Beitritt zum ILIAS-Kurs und Ausfüllen des Anmeldungsformulars (erforderliche Felder beim Beitritt zum ILIAS-Kurs) möglich.**
- **Die Anmeldung ist vom 01.09.2023 bis zum 30.09.2023 möglich.**

**Literature**
Borshev, A. (2022): The Big Book of Simulation Modeling - Multimethod Modeling with AnyLogic 8, https://www.anylogic.de/resources/books/big-book-of-simulation-modeling/.

Grigoryev, I. (2021): AnyLogic8 in Three Days, 5. Aufl., https://www.anylogic.de/resources/books/free-simulation-book-and-modeling-tutorials/.

Gutenschwager, K. et. al. (2017): Simulation in Produktion und Logistik, Springer Vieweg, Berlin.

VDI (2014): Simulation von Logistik-, Materialfluss- und Produktionssystemen - Grundlagen. VDI Richtlinie 3633, Blatt 1, VDI-Verlag, Düsseldorf.

VDI (2016): Simulation von Logistik-, Materialfluss- und Produktionssystemen - Simulation und Optimierung. VDI Richtlinie 3633, Blatt 12, VDI-Verlag, Düsseldorf

# T 7.22 Course: Artificial Intelligence in Service Systems [T-WIWI-108715]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2595650 | Artificial Intelligence in Service Systems | 1,5 SWS | Lecture / | Kühl, Spitzer, Vössing |
| WT 23/24 | 2595651 | Übung zu Artificial Intelligence in Service Systems | 1,5 SWS | Practice / | Kühl, Spitzer, Schemmer |
| **Exams** | | | | | |
| ST 2023 | 7900104 | Artificial Intelligence in Service Systems | | | Satzger |
| WT 23/24 | 7900118 | Artificial Intelligence in Service Systems | | | Satzger |

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

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

**Prerequisites**
None

**Annotation**
The course will be offered in the form of a flipped classroom concept starting in winter semester 2022/2023. The lecture will be recorded in advance and made available online. During the exercise classes, the contents of the lecture will be discussed and applied as part of programming exercises.

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

## V Artificial Intelligence in Service Systems

2595650, WS 23/24, 1,5 SWS, Language: English, Open in study portal

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

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

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

**Organizational issues**
The course will be offered in the form of a flipped classroom concept starting in winter semester 2022/2023. The lecture will be recorded in advance and made available online. During the exercise classes, the contents of the lecture will be discussed and applied as part of programming exercises.

**Literature**


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

# T 7.23 Course: Artificial Intelligence in Service Systems - Applications in Computer Vision [T-WIWI-111219]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2595501 | Artificial Intelligence in Service Systems - Applications in Computer Vision | 3 SWS | Lecture / 🗣 | Satzger, Schmitz |
| **Exams** | | | | | |
| ST 2023 | 7900271 | Artificial Intelligence in Service Systems - Applications in Computer Vision | | | Satzger |

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment.

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

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

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

**V Artificial Intelligence in Service Systems - Applications in Computer Vision** — **Lecture (V) On-Site**
2595501, SS 2023, 3 SWS, Language: English, Open in study portal

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

**Learning objectives**

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

**Description**

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

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

**Recommendations**

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

**Additional information**

The lecture will be held as part of 7 blocks within the summer semester. Due to the practical group sessions in the course, the number of participants is limited. The official application period in the WiWi portal will open mid of February. Please apply here until April, 3rd: https://go.wiwi.kit.edu/aiss-cv. The course will be held mainly online via Zoom. For interim and final presentation, we will meet in person in building 05.20, room 1C-03. Further information on the dates of interim and final presentation will be announced via Ilias and mail.

**Literature**


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

# T 7.24 Course: Asset Pricing [T-WIWI-102647]

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

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

**Part of:** M-WIWI-101480 - Finance 3
M-WIWI-101482 - Finance 1
M-WIWI-101483 - Finance 2
M-WIWI-101502 - Economic Theory and its Application in Finance
M-WIWI-106409 - Digital Financial Economics

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2530555 | Asset Pricing | 2 SWS | Lecture / 🗣 | Uhrig-Homburg, Böll, Müller |
| ST 2023 | 2530556 | Asset Pricing | 1 SWS | Practice / 🗣 | Uhrig-Homburg, Müller |
| **Exams** | | | | | |
| ST 2023 | 7900110 | Asset Pricing | | | Uhrig-Homburg, Thimme |
| WT 23/24 | 7900056 | Asset Pricing | | | Uhrig-Homburg |

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

**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination 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**
We strongly recommend knowledge of the basic topics in investments (bachelor course), which will be necessary to be able to follow the course.

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

## V Asset Pricing

2530556, SS 2023, 1 SWS, Language: German, Open in study portal

**Practice (Ü)**
**On-Site**

**Literature**

- Cochrane, J. H.: Asset Pricing, revised edition, Princeton University Press, 2005.
- Campbell, J.Y., Lo, A.W., MacKinlay, A.C.: The Econometrics of Financial Markets,2. printing, with corrections,Princeton Univ. Press, 1997.

# T 7.25 Course: Auction Theory [T-WIWI-102613]

**Responsible:** Prof. Dr. Karl-Martin Ehrhart
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101446 - Market Engineering
M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-101500 - Microeconomic Theory
M-WIWI-106408 - Digital Economics

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

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2520408 | Auktionstheorie | 2 SWS | Lecture | Ehrhart |
| WT 23/24 | 2520409 | Übungen zu Auktionstheorie | 1 SWS | Practice | Ehrhart |
| **Exams** | | | | | |
| ST 2023 | 7900255 | Auction Theory | | | Ehrhart |
| WT 23/24 | 7900039 | Auction Theory | | | Ehrhart |

**Competence Certificate**
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

**Prerequisites**
None

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

## V Auktionstheorie
2520408, WS 23/24, 2 SWS, Open in study portal — **Lecture (V)**

**Literature**


- Ehrhart , K.-M. und S. Seifert: Auktionstheorie, Skript zur Vorlesung, KIT, 2011
- Krishna, V.: Auction Theory, Academic Press, Second Edition, 2010
- Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2004
- Ausubel, L.M. und P. Cramton: Demand Reduction and Inefficiency in Multi-Unit Auctions, University of Maryland, 1999

# T 7.26 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-101511 - Advanced Topics in Public Finance

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2560134 | Basics of German Company Tax Law and Tax Planning | 3 SWS | Lecture / 🗣 | Wigger, Gutekunst |
| **Exams** | | | | | |
| ST 2023 | 790unbe | Basics of German Company Tax Law and Tax Planning | | | Wigger |
| WT 23/24 | 790unbe | Basics of German Company Tax Law and Tax Planning | | | Wigger |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

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

**Prerequisites**
None

**Recommendation**
Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course “Öffentliche Einnahmen” beforehand.

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

## V Basics of German Company Tax Law and Tax Planning

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

**Lecture (V)**
**On-Site**

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

# T 7.27 Course: Behavioral Experiments in Action [T-WIWI-111393]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540600 | Behavioral Experiments in Action | 3 SWS | Lecture / 🗣 | Scheibehenne, Liu |
| **Exams** | | | | | |
| ST 2023 | 7900313 | Behavioral Experiments in Action | | | Scheibehenne |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

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

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

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

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

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

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

## V Behavioral Experiments in Action

2540600, SS 2023, 3 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Registration on wiwi portal required. Class size is limited to 8.**

**Content:**

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

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

**Evaluation:**

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

**Prerequisite:** Experimental Design (either take the course of that title in the same module, or gain basic knowledge of experimental design by self-education)

**ETCS:** 4.5

**Organizational issues**
registration on WIWI portal required

# T 7.28 Course: Behavioral Lab Exercise [T-WIWI-113095]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500040 | Behavioral Lab Exercise | 4.5 SWS | Seminar / 🗣 | Scheibehenne, Nieken |

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment (presentation during the semester). Details will be communicated at the first day of class.

**Annotation**
In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback, enabling them to improve their drafts for future research.

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

## V Behavioral Lab Exercise

2500040, WS 23/24, 4.5 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback enabling them to improve their drafts for future research.

# T 7.29 Course: Behavioral Lab Exercise [T-WIWI-111806]

**Responsible:** Prof. Dr. Petra Nieken
Prof. Dr. Benjamin Scheibehenne
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500040 | Behavioral Lab Exercise | 4.5 SWS | Seminar / | Scheibehenne, Nieken |

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

**Competence Certificate**
Alternative exam assessment.

**Recommendation**
This class caters towards Master students who are interested in empirical research and in running lab experiments.

**Annotation**
The course will be offered for the first time in the winter semester 21/22.

Due to the interactive nature of the class, the number of participants is limited. If you are interested, please contact the teachers directly via email.

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

## V Behavioral Lab Exercise

2500040, WS 23/24, 4.5 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
In this class, students learn the core principles of psychological and economic experiments. The course covers topics ranging from design principles, to best-practices, preregistration, and analysis of the experimental data. Students will actively participate in the course by covering one selected topic in a talk. All students will discuss the topics together with the professors to develop solid knowledge about experimental design and analysis plans. In a second step, all students will develop a draft of an experimental design and analysis plan for their own topic and present it to the class. The students will get detailed feedback enabling them to improve their drafts for future research.

# T 7.30 Course: Blockchains & Cryptofinance [T-WIWI-108880]

**Responsible:** Dr. Philipp Schuster
Prof. Dr. Marliese Uhrig-Homburg

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

**Part of:** M-WIWI-101409 - Electronic Markets
M-WIWI-101446 - Market Engineering
M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2
M-WIWI-106409 - Digital Financial Economics

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

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

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.

Depending on further pandemic developments, the examination will be offered as an open-book examination (alternative exam assessment).

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The lecture is currently not offered.

# T 7.31 Course: Bond Markets [T-WIWI-110995]

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2
M-WIWI-106409 - Digital Financial Economics

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2530560 | Bond Markets | 3 SWS | Lecture / Practice / 🗣 | Uhrig-Homburg, Müller, Molnar |
| **Exams** | | | | | |
| ST 2023 | 7900280 | Bond Markets | | | Uhrig-Homburg |
| WT 23/24 | 7900311 | Bond Markets | | | Uhrig-Homburg |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (75min.)

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 level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

Depending on further pandemic developments, the examination will be offered as an open-book examination (alternative exam assessment).

**Annotation**
This course will be held in English.

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

## V Bond Markets

2530560, WS 23/24, 3 SWS, Language: English, Open in study portal

**Lecture / Practice (VÜ)**
**On-Site**

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

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

The assessment consists of a written exam (75min.) (according to §4(2), 1 SPO). A bonus can be earned by correctly solving at least 50% of the posed bonus exercices. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one level (0.3 or 0.4). The examination is offered in each semester and can be repeated at any regular examination date.

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

**Organizational issues**
Die Veranstaltung wird in der ersten Semesterhälfte an sechs Freitagen am Campus B (Geb. 09.21) im Raum 124 angeboten. Die Klausur findet dann direkt im Anschluss statt.

# T 7.32 Course: Bond Markets - Models & Derivatives [T-WIWI-110997]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2530565 | Bond Markets - Models & Derivatives | 2 SWS | Block / 🗣 | Grauer, Uhrig-Homburg |

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

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

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

**Annotation**
This course will be held in English.

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

## V Bond Markets - Models & Derivatives

2530565, WS 23/24, 2 SWS, Language: English, Open in study portal

**Block (B)**
**On-Site**

**Content**

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

**Organizational issues**
Die Veranstaltung startet in der zweiten Semesterhälfte (Kickoff am 08.12.23) und hat Seminarcharakter - mit dem Ziel, ein selbstgewähltes Themenfeld in Form einer schriftlichen Ausarbeitung eigenständig zu erarbeiten.

# T 7.33 Course: Bond Markets - Tools & Applications [T-WIWI-110996]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2530562 | Bond Markets - Tools & Applications | 1 SWS | Block / 🗣 | Uhrig-Homburg, Grauer |

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

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

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

**Annotation**
This course will be held in English.

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

## V Bond Markets - Tools & Applications

2530562, WS 23/24, 1 SWS, Language: English, Open in study portal

**Block (B)**
**On-Site**

**Content**

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

**Organizational issues**
Die Veranstaltung findet in der ersten Semesterhälfte statt (Kickoff am 10.11.23) und beinhaltet eine eigenständige Projektarbeit im Umgang mit realen Bond Daten. Die Erfolgskontrolle erfolgt anhand einer schriftlichen Ausarbeitung und einer kurzen Präsentation.

# T 7.34 Course: Business Data Analytics: Application and Tools [T-WIWI-109863]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540466 | Business Data Analytics: Application and Tools | 2 SWS | Lecture / 🗣 | Knierim, Badewitz |
| ST 2023 | 2540467 | Excercise Business Data Analytics: Application and Tools | 1 SWS | Practice / 🗣 | Badewitz, Grote, Sterk, Bezzaoui, Nikolajevic |
| **Exams** | | | | | |
| ST 2023 | 7900183 | Business Data Analytics: Application and Tools | | | Weinhardt |
| ST 2023 | 7900189 | Business Data Analytics: Application and Tools | | | Weinhardt |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Success is monitored through ongoing elaborations and presentations of tasks and a written exam (60 minutes) at the end of the lecture period. Successful participation in the exercises is a prerequisite for admission to the written examination. The scoring scheme for the overall evaluation will be announced at the beginning of the course.
The number of participants is limited to 50, as this is the only way to ensure conscientious support for the case study. The selection of participants is based on a short letter of motivation (max. 2000 characters including spaces) in the faculty's portal.

**Prerequisites**
None

**Recommendation**
Knowledge of (object-oriented) programming and statistics is helpful.

**Annotation**
The lecture is read in block sessions at the beginning of the semester. The dates will be communicated in the Wiwi-Portal.

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

## V Business Data Analytics: Application and Tools

2540466, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Organizational issues**
als Blockveranstaltung an 3 Terminen:

- Montag, 17.04.23 - 09:00 - 17:30 Uhr, 01.85 Teamraum A&B
- Dienstag, 18.04.23 - 09:00 - 17:30 Uhr, 10.50 Raum 604
- Mittwoch, 19.04.23 - 09:00 - 17:30 Uhr, 01.85 Teamraum A&B

# T 7.35 Course: Business Data Strategy [T-WIWI-106187]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540484 | Business Data Strategy | 2 SWS | Lecture / 🗣 | Weinhardt, van Dinther, Badewitz |
| WT 23/24 | 2540485 | Übung zu Business Data Strategy | 1 SWS | Practice / 🗣 | Weinhardt, Badewitz, Schulz |

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 regulationand an alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation. The grade isdetermined by 2/3 through the written exam and by 1/3 through the alternative exam assessment (e.g., presentation).

**Prerequisites**
None

**Recommendation**
Students should be familiar with basic concepts of business organisations, information systems, and programming. However, all material will be introduced, so no formal pre-conditions are applied.

**Annotation**
Limited number of participants.

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

## V Business Data Strategy

2540484, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
With new methods for capturing and using different types of data and industry's recognition that society's use of data is less than optimal, the need for comprehensive strategies is more important than ever before. Advances in cybersecurity and information sharing and the use of data in its raw form for decision making all add to the complexity of integrated processes, ownership, stewardship, and sharing. The life cycle of data in its entirety spans the infrastructure, system design, development, integration, and implementation of information-enabling solutions. This lecture focuses on teaching about these dynamics and tools to comprehend and manage them in organisation contexts. Given the increasing size and complexity of data, methods for the transformation and structured preparation are an important tool in the process of sense–making. Modern software solutions and programming languages provide frameworks for such tasks that form another part of this course ranging from conceptual systems modelling to data manipulation to automated generation of HTML reports and web-applications.

**Organizational issues**
**Application/Registration**

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

**Anmeldung**

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

# T 7.36 Course: Business Dynamics [T-WIWI-102762]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz
Dr Paul Glenn

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

**Part of:** M-WIWI-101409 - Electronic Markets
M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540531 | Business Dynamics | 2 SWS | Lecture / 🗣 | Geyer-Schulz, Glenn |
| WT 23/24 | 2540532 | Exercise Business Dynamics | 1 SWS | Practice / 🗣 | Geyer-Schulz, Glenn |
| **Exams** | | | | | |
| ST 2023 | 7900065 | Business Dynamics (Nachklausur WS 2022/2023) | | | Geyer-Schulz |
| WT 23/24 | 7979777 | Business Dynamics (WS 2023/2024) | | | Geyer-Schulz |

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

**Prerequisites**
None

**Recommendation**
None

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

## V Business Dynamics

2540531, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

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

# T 7.37 Course: Business Intelligence Systems [T-WIWI-105777]

**Responsible:** Prof. Dr. Alexander Mädche
Mario Nadj
Dr. Peyman Toreini

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

**Part of:** M-WIWI-101506 - Service Analytics
M-WIWI-101510 - Cross-Functional Management Accounting
M-WIWI-103117 - Data Science: Data-Driven Information Systems
M-WIWI-104068 - Information Systems in Organizations

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540422 | Business Intelligence Systems | 3 SWS | Lecture / 🔗 | Mädche, Gnewuch |
| **Exams** | | | | | |
| ST 2023 | 7900149 | Business Intelligence Systems | | | Mädche |

Legend: 🖥 Online, 🔗 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

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

**Prerequisites**
None

**Recommendation**
Basic knowledge on database systems is helpful.

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

## V Business Intelligence Systems

2540422, WS 23/24, 3 SWS, Language: English, Open in study portal

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

**Content**
In most modern enterprises, Business Intelligence & Analytics (BI&A) Systems represent a core enabler of decision-making in that they are supplying up-to-date and accurate information about all relevant aspects of a company's planning and operations: from stock levels to sales volumes, from process cycle times to key indicators of corporate performance. Modern BI&A systems leverage beyond reporting and dashboards also advanced analytical functions. Thus, today they also play a major role in enabling data-driven products and services. The aim of this course is to introduce theoretical foundations, concepts, tools, and current practice of BI&A Systems from a managerial and technical perspective.

The course is complemented with an engineering capstone project, where students work in a team with real-world use cases and data in order to create running Business intelligence & Analytics system prototypes.

**Learning objectives**

- Understand the theoretical foundations of key Business Intelligence & Analytics concepts supporting decision-making
- Explore key capabilities of state-of-the-art Business Intelligence & Analytics Systems
- Learn how to successfully implement and run Business Intelligence & Analytics Systems from multiple perspectives, e.g. architecture, data management, consumption, analytics
- Get hands-on experience by working with Business Intelligence & Analytics Systems with real-world use cases and data

**Prerequisites**
This course is limited to a capacity of 50 places. The capacity limitation is due to the attractive format of the accompanying engineering capstone project. Strong analytical abilities and profound skills in SQL as wells as Python and/or R are required. Students have to apply with their CV and transcript of records. All organizational details and the underlying registration process of the lecture and the capstone project will be presented in the first lecture. The teaching language is English.

**Literature**


- Turban, E., Aronson, J., Liang T.-P., Sharda, R. 2008. “Decision Support and Business Intelligence Systems”.
- Watson, H. J. 2014. “Tutorial: Big Data Analytics: Concepts, Technologies, and Applications,” Communications of the Association for Information Systems (34), p. 24.
- Arnott, D., and Pervan, G. 2014. “A critical analysis of decision support systems research revisited: The rise of design science,” Journal of Information Technology (29:4), Nature Publishing Group, pp. 269–293 (doi: 10.1057/jit.2014.16 ) .
- Carlo, V. (2009). “Business intelligence: data mining and optimization for decision making”. Editorial John Wiley and Sons, 308-317.
- Chen, H., Chiang, R. H. L, and Storey, V. C. 2012. „Business Intelligence and Analytics: From Big Data to Big Impact,“ MIS Quarterly (36:4), pp. 1165-1188.
- Davenport, T. 2014. Big Data @ Work, Boston, MA: Harvard Business Review.
- Economist Intelligence Unit. 2015 “Big data evolution: Forging new corporate capabilities for the long term”
- Power, D. J. 2008. “Decision Support Systems: A Historical Overview,” Handbook on Decision Support Systems, pp. 121–140 (doi: 10.1007/978-3-540-48713-5_7 ) .
- Sharma, R., Mithras, S., and Kankanhalli, A. 2014. „Transforming decision-making processes: a research agenda for understanding the impact of business analytics on organisations,“ European Journal of Information Systems (23:4), pp. 433-441.
- Silver, M. S. 1991. “Decisional Guidance for Computer-Based Decision Support,” MIS Quarterly (15:1), pp. 105-122.


Further literature will be made available in the lecture.

# T 7.38 Course: Business Models in the Internet: Planning and Implementation [T-WIWI-102639]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102806 - Service Innovation, Design & Engineering

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

**Competence Certificate**
As of summer semester 2022, the course "Business Models in the Internet: Planning and Implementation" can no longer be taken. The exam will be offered in summer semester 2022 and winter semester 2022/23 for repeaters.

**Prerequisites**
None

**Recommendation**
None

# T 7.39 Course: Business Planning [T-WIWI-102865]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545109 | Business Planning for Founders | 2 SWS | Seminar / | Terzidis, Martjan |
| WT 23/24 | 2545109 | Business Planning for Founders | 2 SWS | Seminar / | Martjan, Terzidis |
| **Exams** | | | | | |
| ST 2023 | 7900234 | Business Planning for Founders | | | Terzidis |
| WT 23/24 | 7900023 | Business Planning for Founders | | | Terzidis |

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

**Competence Certificate**
Alternative exam assessment.

**Prerequisites**
None

**Recommendation**
None

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

## V Business Planning for Founders

**Seminar (S)**
**On-Site**

2545109, SS 2023, 2 SWS, Language: English, Open in study portal

**Content**
**Content**

In the course Business Planning for Founders, you will be working in interdisciplinary teams on a real-world challenge presented by an industry partner (former partners have been e.g., EnBW and WIBU-Systems). To solve the case, you will learn about human-centered design using design thinking methods. These methods will help you develop your own business idea. Building on your idea, you will deploy a business plan and finally present, as a team, the results on the pitch day in front of the seminar participants and the industry partner.

**Learning Objectives**

After completing this course, the course participants will be able to:

- Follow a Design Thinking Process
- Understand how Prototypes are being developed
- Develop a sound Value Proposition for a target customer
- Create Business Ideas based on real life Use Cases in the field of IT-Security
- Develop a Business Model using the Tool Business Model Canvas
- Pitch your Business Ideas

**Credentials**:

ONLY ONE of the two options - Business Planning for founders OR Business Planning for founders in the field of IT-Security - can be taken and credited under the in CAS mentioned partial credit, as they cover similar content. Registration must take place in the CAS for the respective examination.

**Organizational issues**
Tuesday, 18.04.2023

Tuesday, 02.05.2023

Tuesday, 16.05.2023

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. The seminars will be held in English.

V **Business Planning for Founders** **Seminar (S)**
2545109, WS 23/24, 2 SWS, Language: English, Open in study portal **On-Site**

**Content**
**Course Content:**

In the course Business Planning for Founders, you will be working in interdisciplinary teams on a real-world challenge. The challenge for this semester will be about Chatbots and in the context of privacy risks. To solve the case, you will learn about human-centered design using design thinking methods. These methods will help you develop your own business idea. Building on your idea, you will deploy a business plan and finally present, as a team, the results on the pitch day in front of the seminar participants and a jury.

**Information about the seminar:**

ONLY ONE of the two options - Business Planning for founders OR Business Planning for founders in the field of IT-Security - can be taken and credited under the in CAS mentioned partial credit, as they cover similar content. Registration must take place in the CAS for the respective examination.

**Target group:** Master Student

**Organizational issues**
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. The seminars will be held in English.

# T 7.40 Course: Business Process Modelling [T-WIWI-102697]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2511210 | Business Process Modelling | 2 SWS | Lecture / 🗣 | Oberweis |
| WT 23/24 | 2511211 | Exercise Business Process Modelling | 1 SWS | Practice / 🗣 | Oberweis, Schüler |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_MvG_B4 | Business Process Modelling (Registration until 17 July 2023) | | | Oberweis |
| WT 23/24 | 79AIFB_MvG_C2 | Business Process Modelling | | | Oberweis |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

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

**Prerequisites**
None

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

## V Business Process Modelling

2511210, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The proper modeling of relevant aspects of business processes is essential for an efficient and effective design and implementation of processes. This lecture presents different classes of modeling languages and discusses the respective advantages and disadvantages of using actual application scenarios. For that simulative and analytical methods for process analysis are introduced. In the accompanying exercise the use of process modeling tools is practiced.

**Learning objectives:**

Students

- describe goals of business process modeling and aplly different modeling languages,
- choose the appropriate modeling language according to a given context,
- use suitable tools for modeling business processes,
- apply methods for analysing and assessing process modells to evaluate specific quality characteristics of the process model.

**Recommendations**:

Knowledge of course Applied Informatics I - Modelling is expected.

**Workload**:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

**Literature**

- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer 2012.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karl: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

# T 7.41 Course: Business Strategies of Banks [T-WIWI-102626]

**Responsible:** Prof. Dr. Wolfgang Müller
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | see Annotations | 1 |

**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.

# T 7.42 Course: Case Studies Seminar: Innovation Management [T-WIWI-102852]

**Responsible:** Prof. Dr. Marion Weissenberger-Eibl
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-101507 - Innovation Management
M-WIWI-101507 - Innovation Management

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2545105 | Case studies seminar: Innovation management | 2 SWS | Seminar / 🗣 | Weissenberger-Eibl |
| **Exams** | | | | | |
| WT 23/24 | 7900237 | Case Studies Seminar: Innovation Management | | | Weissenberger-Eibl |

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

**Competence Certificate**
Alternative exam assessments (§4(2), 3 SPO).

**Prerequisites**
None

**Recommendation**
Prior attendance of the course Innovation Management is recommended.

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

## V Case studies seminar: Innovation management

2545105, WS 23/24, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
The objective of the seminar is to master selected concepts and methods of innovation management and then to apply these practically. Working in groups, the students apply the described concepts and methods of innovation management to a case study from the industry to answer specific questions. Accordingly, the block seminar involves a switch from input to the application of this input. At the end, the results of the group work are presented in the form of a seminar paper and discussed by the whole course. A short introduction to presentation techniques is planned to help students prepare the seminar papers.

**Literature**
Werden in der ersten Veranstaltung bekannt gegeben.

# T 7.43 Course: Challenges in Supply Chain Management [T-WIWI-102872]

**Responsible:** Esther Mohr
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102805 - Service Operations
M-WIWI-102808 - Digital Service Systems in Industry

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550494 | Challenges in Supply Chain Management | 3 SWS | Lecture / | Mohr |
| **Exams** | | | | | |
| ST 2023 | 00030 | Challenges in Supply Chain Management | | | Nickel |

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

**Competence Certificate**
The assessment consists of a written paper and an oral exam of ca. 30-40 min.

**Prerequisites**
None

**Recommendation**
Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

**Annotation**
The number of course participants is limited to 12 participants due to joint work in BASF project teams. Due to these capacity restrictions, registration before course start is required. For further information see the webpage of the course.

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

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

## V Challenges in Supply Chain Management

2550494, SS 2023, 3 SWS, Language: German, Open in study portal

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

**Content**
The course consists of case studies of BASF which cover future challenges of supply chain management. Thus, the course aims at a case-study based presentation, critical evaluation and exemplary discussion of recent questions in supply chain management. The focus lies on future challenges and trends, also with regard to their applicability in practical cases (especially in the chemical industry).

The main part of the course is working on a project together with BASF in Ludwigshafen. The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the project topic.

This course will include working on cutting edge supply chain topics like Industry 4.0 / “Internet of Everything in production”, supply chain analytics, risk management, procurement and production in SCM. The team essays / project reports will be linked to industry-related challenges as well as to upcoming theoretical concepts. The topics of the seminar will be announced at the beginning of the term in a preliminary meeting.

**Organizational issues**
Bewerbung über das Wiwi-Portal möglich:

http://go.wiwi.kit.edu/ChallengesSCM

**Literature**
Wird in Abhängigkeit vom Thema in den Projektteams bekanntgegeben.

# T 7.44 Course: Cognitive Modeling [T-WIWI-111392]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540601 | Cognitive Modeling | 3 SWS | Lecture | Scheibehenne, Liu |

**Competence Certificate**
There will be 4 assignments during the course of the semester. Each will count 25% towards the final grade.

**Prerequisites**
Calculus, probability theory

**Annotation**
The goal of this course is to help students develop a basic understanding of computational models in the study of human cognition and behavior.

In the first half of the semester, we will go over the following contents to prepare for the learning of cognitive modeling: basics of the R software, foundations of probability, and parameter estimation. In the second half, we will discuss the general ideas of modeling in behavioral science as well as some specific cognitive models. The class will take a biweekly lecture form. All lectures, materials, and assignments are in English.

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

# T 7.45 Course: Competition in Networks [T-WIWI-100005]

**Responsible:** Prof. Dr. Kay Mitusch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101406 - Network Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2561204 | Competition in Networks | 2 SWS | Lecture / | Mitusch |
| WT 23/24 | 2561205 | Übung zu Wettbewerb in Netzen | 1 SWS | Practice / | Wisotzky, Mitusch, Corbo |
| **Exams** | | | | | |
| ST 2023 | 7900274 | Competition in Networks | | | Mitusch |

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.

# T 7.46 Course: Computational Economics [T-WIWI-102680]

**Responsible:** apl. Prof. Dr. Pradyumn Kumar Shukla
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | see Annotations | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2590458 | Computational Economics (canceled) | 2 SWS | Lecture / | Shukla |
| WT 23/24 | 2590459 | Excercises to Computational Economics (canceled) | 1 SWS | Practice / | Shukla |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_CE_C5 | Computational Economics (Registration until 17 July 2023) | | | Shukla |

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

**Competence Certificate**
**Please note: the lecture will not take place in the winter semester 2023/2024. Also an exam cannot be offered.**

**Prerequisites**
None

**Annotation**
The lecture is currently suspended. An exam cannot be offered.

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

## V Computational Economics (canceled)

2590458, WS 23/24, 2 SWS, Language: English, Open in study portal

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

**Content**
Examining complex economic problems with classic analytical methods usually requires making numerous simplifying assumptions, for example that agents behave rationally or homogeneously. Recently, widespread availability of computing power gave rise to a new field in economic research that allows the modeling of heterogeneity and forms of bounded rationality: Computational Economics. Within this new discipline, computer based simulation models are used for analyzing complex economic systems. In short, an artificial world is created which captures all relevant aspects of the problem under consideration. Given all exogenous and endogenous factors, the modelled economy evolves over time and different scenarios can be analyzed. Thus, the model can serve as a virtual testbed for hypothesis verification and falsification.

**Learning objectives**:

The student

- understands the methods of Computational Economics and applies them on practical issues,
- evaluates agent models considering bounded rational behaviour and learning algorithms,
- analyses agent models based on mathematical basics,
- knows the benefits and disadvantages of the different models and how to use them,
- examines and argues the results of a simulation with adequate statistical methods,
- is able to support the chosen solutions with arguments and can explain them.

**Literature**


- R. Axelrod: "Advancing the art of simulation in social sciences". R. Conte u.a., Simulating Social Phenomena, Springer, S. 21-40, 1997.
- R. Axtel: "Why agents? On the varied motivations for agent computing in the social sciences". CSED Working Paper No. 17, The Brookings Institution, 2000.
- K. Judd: "Numerical Methods in Economics". MIT Press, 1998, Kapitel 6-7.
- A. M. Law and W. D. Kelton: "Simulation Modeling and Analysis", McGraw-Hill, 2000.
- R. Sargent: "Simulation model verification and validation". Winter Simulation Conference, 1991.
- L. Tesfation: "Notes on Learning", Technical Report, 2004.
- L. Tesfatsion: "Agent-based computational economics". ISU Technical Report, 2003.


**Weiterführende Literatur:**


- Amman, H., Kendrick, D., Rust, J.: "Handbook of Computational Economics". Volume 1, Elsevier North-Holland, 1996.
- Tesfatsion, L., Judd, K.L.: "Handbook of Computational Economics". Volume 2: Agent-Based Computational Economics, Elsevier North-Holland, 2006.
- Marimon, R., Scott, A.: "Computational Methods for the Study of Dynamic Economies". Oxford University Press, 1999.
- Gilbert, N., Troitzsch, K.: "Simulation for the Social Scientist". Open University Press, 1999.

# T 7.47 Course: Computer Aided Data Analysis [T-GEISTSOZ-104565]

**Responsible:** Prof. Dr. Gerd Nollmann
**Organisation:** KIT Department of Humanities and Social Sciences
**Part of:** M-GEISTSOZ-101169 - Sociology
**Prerequisite for:** T-GEISTSOZ-109052 - Application of Social Science Methods (WiWi)

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Completed coursework | 0 | pass/fail | 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Events** | | | | | |
| ST 2023 | 5011018 | Political Dedates and Polarization in the German Parliament, Part 1 | 2 SWS | Seminar / | Banisch |
| WT 23/24 | 5000058 | Decompositions and regression methods | 2 SWS | Course / | Nollmann |
| WT 23/24 | 5000059 | The gender wage gap | 2 SWS | Course / | Nollmann |
| WT 23/24 | 5011009 | Computational data analysis: Data visualization and statistics using R | 2 SWS | Course / | Teutsch |
| **Exams** | | | | | |
| ST 2023 | 7400369 | Computer Aided Data Analysis | | | Nollmann |
| WT 23/24 | 7400278 | Computer Aided Data Analysis | | | Nollmann, Teutsch |
| WT 23/24 | 7400353 | Computer Aided Data Analysis | | | Nollmann |

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

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

## V Political Dedates and Polarization in the German Parliament, Part 1

5011018, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
The course consists of two parts (5011018 and 5011002) that are ideally taken in parallel.

**Organizational issues**
The course consists of two parts (5011018 and 5011002) that are ideally taken in parallel.

## V Computational data analysis: Data visualization and statistics using R

5011009, WS 23/24, 2 SWS, Language: German, Open in study portal

**Course (Ku)**
**On-Site**

**Content**
This seminar is held in German. For additional information please visit the website in German.

# T 7.48 Course: Computer Contract Law [T-INFO-102036]

**Responsible:** Michael Menk
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101216 - Private Business Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2411604 | Computer Contract Law | 2 SWS | Lecture / 🗣 | Menk |
| **Exams** | | | | | |
| ST 2023 | 7500066 | Computer Contract Law | | | Dreier, Matz |
| WT 23/24 | 7500065 | Computer Contract Law | | | Matz |

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

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-INFO-101316 - Law of Contracts must not have been started.

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

## V Computer Contract Law

2411604, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The course deals with contracts from the following areas:

- Contracts of programming, licencing and maintaining software
- Contracts in the field of IT employment law
- IT projects and IT Outsourcing
- Internet Contracts

From these areas single contracts will be chosen and discussed (e.g. software maintenance, employment contract with a software engineer). Concerning the respective contract the technical features, the economic background and the subsumption in the national law of obligation (BGB-Schuldrecht) will be discussed. As a result different contractual clauses will be developed by the students. Afterwards typical contracts and conditions will be analysed with regard to their legitimacy as standard business terms (AGB). It is the aim to show the effects of the german law of standard business terms (AGB-Recht) and to point out that contracts are a means of drafting business concepts and market appearance.

It is the aim of this course to provide students with knowledge in the area of contract formation and formulation in practice that builds upon the knowledge the students have already acquired concerning the legal protection of computer programs. Students shall understand how the legal rules depend upon, and interact with, the economic background and the technical features of the subject. The contract drafts shall be prepared by the students and will be corporately completed during the lecture. It is the aim of the course that students will be able to formulate contracts by themselves.

**Literature**

- Langenfeld, Gerrit Vertragsgestaltung Verlag C.H.Beck, III. Aufl. 2004
- Heussen, Benno Handbuch Vertragsverhandlung und Vertragsmanagement Verlag C.H.Beck, II. Aufl. 2002
- Schneider, Jochen Handbuch des EDV-Rechts Verlag Dr. Otto Schmidt KG, III. Aufl. 2002

**Weiterführende Literatur**

Ergänzende Literatur wird in den Vorlesungsfolien angegeben.

# T 7.49 Course: Convex Analysis [T-WIWI-102856]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550120 | Convex Analysis | 2 SWS | Lecture / 🗣 | Stein |
| ST 2023 | 2550121 | Exercises Convex Analysis | 2 SWS | Practice / 🗣 | Stein, Schwarze |
| **Exams** | | | | | |
| ST 2023 | 7900208_SS2023_HK | Convex Analysis | | | Stein |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

**Prerequisites**
None

**Recommendation**
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**
The lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

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

## V Convex Analysis

2550120, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Convex Analysis deals with properties of convex functions and convex sets, amongst others with respect to the minimization of convex functions over convex sets. That the involved functions are not necessarily assumed to be differentiable allows a number a applications which are not covered by techniques from smooth optimization, e.g. approximation problems with respect to the Manhattan or maximum norms, classification problems or the theory of statistical estimates. The lecture develops along another, geometrically intuitive example, where a nonsmooth obstacle set is to be described by a single smooth convex constraint such that minimal and maximal distances to the obstacle can be computed. The lecture is structured as follows:

- Introduction to entropic smoothing and convexity
- Global error bounds
- Smoothness properties of convex functions
- The convex subdifferential
- Global Lipschitz continuity
- Descent directions and stationarity conditions

**Remark:**

Prior to the attendance of this lecture, it is strongly recommend to acquire basic knowledge on optimization problems in one of the lectures "Global Optimization I and II" and "Nonlinear Optimization I and II".

**Learning objectives:**

The student

- knows and understands the fundamentals of convex analysis,
- is able to choose, design and apply modern techniques of convex analysis in practice.

**Literature**


- J. Borwein, A. Lewis, Convex Analysis and Nonlinear Optimization: Theory and Examples (2 ed.), Springer, 2006
- S. Boyd, L. Vandenberghe, Convex Optimization, Cambridge University Press, 2004
- O. Güler, Foundations of Optimization, Springer, 2010
- J.-B. Hiriart-Urruty, C. Lemarechal, Fundamentals of Convex Analysis, Springer, 2001
- B. Mordukhovich, N.M. Nam, An Easy Path to Convex Analysis and Applications, Morgan & Claypool Publishers, 2014
- R.T. Rockafellar, Convex Analysis, Princeton University Press, 1970
- R.T. Rockafellar, R.J.B. Wets, Variational Analysis, Springer, Berlin, 1998

# T 7.50 Course: Conveying Technology and Logistics [T-MACH-102135]

**Responsible:** Prof. Dr.-Ing. Kai Furmans
Paolo Pagani

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2119100 | Fördertechnik und Logistiksysteme | | Seminar / | Furmans, Padhy |
| WT 23/24 | 2119100 | Fördertechnik und Logistiksysteme | | Seminar / | Furmans |
| **Exams** | | | | | |
| ST 2023 | 76-T-MACH-102135 | Conveying Technology and Logistics | | | Furmans |
| WT 23/24 | 76-T-MACH-102135 | Conveying Technology and Logistics | | | Furmans |

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

**Competence Certificate**
alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

**Prerequisites**
none

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

## V Fördertechnik und Logistiksysteme

2119100, SS 2023, SWS, Language: German/English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
The goal of the seminar is to deal with different topics related to the materials handling and logistics. Depending on the topic, the students can work on the either alone or in a group. At the end the results are presented and discussed with a final presentation. To prepare the work for the seminar an introductory event is scheduled at the beginning.

**Organizational issues**
Ort: Gebäude 50.38, Raum 0.22, Termine siehe homepage

## V Fördertechnik und Logistiksysteme

2119100, WS 23/24, SWS, Language: German/English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
The goal of the seminar is to deal with different topics related to the materials handling and logistics. Depending on the topic, the students can work on the either alone or in a group. At the end the results are presented and discussed with a final presentation. To prepare the work for the seminar an introductory event is scheduled at the beginning.

**Organizational issues**
Weiteres siehe Homepage

# T 7.51 Course: Cooperative Autonomous Vehicles [T-WIWI-112690]

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

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

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511450 | Cooperative Autonomous Vehicles | 2 SWS | Lecture / 🗣 | Vinel |
| ST 2023 | 2511451 | Exercise Cooperative Autonomous Vehicles | 1 SWS | Practice / 🗣 | Vinel |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_CAV_B5 | Cooperative Autonomous Vehicles (Registration until 17 July 2023) | | | Vinel |
| WT 23/24 | 79AIFB_CAV_A3 | Cooperative Autonomous Vehicles | | | Vinel |

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of this course is a written examination (60 min) or an oral exam (20 min).

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

**Prerequisites**
None

# T 7.52 Course: Copyright [T-INFO-101308]

**Responsible:** N.N.
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101215 - Intellectual Property Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 24121 | Copyright | 2 SWS | Lecture / 🗣 | Sattler |
| **Exams** | | | | | |
| ST 2023 | 7500064 | Copyright | | | Dreier, Matz |
| WT 23/24 | 7500064 | Copyright | | | Matz |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

# T 7.53 Course: Corporate Compliance [T-INFO-101288]

**Responsible:** Andreas Herzig
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101216 - Private Business Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each winter term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2400087 | Corporate Compliance | 2 SWS | Lecture / 🗣 | Herzig, Siddiq |
| **Exams** | | | | | |
| ST 2023 | 7500063 | Corporate Compliance | | | Dreier, Matz |
| WT 23/24 | 7500063 | Corporate Compliance | | | Matz |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

# T 7.54 Course: Corporate Financial Policy [T-WIWI-102622]

**Responsible:** Prof. Dr. Martin Ruckes
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2
M-WIWI-101502 - Economic Theory and its Application in Finance

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2530214 | Corporate Financial Policy | 2 SWS | Lecture / 🗣 | Ruckes |
| ST 2023 | 2530215 | Übungen zu Corporate Financial Policy | 1 SWS | Practice / 🗣 | Ruckes, Hoang |
| **Exams** | | | | | |
| ST 2023 | 7900073 | Corporate Financial Policy | | | Ruckes |
| WT 23/24 | 7900058 | Corporate Financial Policy | | | Ruckes |

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

**Competence Certificate**
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

**Prerequisites**
None

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

## V Corporate Financial Policy

2530214, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The course develops the foundations for the management and financing of firms in imperfect markets.

The course covers the following topics:

- Measures of good corporate governance
- Corporate finance
- Liquidity management
- Executive compensation and incentives
- Corporate takeovers

**Learning outcomes:** The students

- are able to explain the importance of information asymmetry for the contract design of firms,
- are capable to evaluate measures for the reduction of information asymmetry,
- are in the position to analyze contracts with regard to their incentive and communication effects.

# T 7.55 Course: Corporate Risk Management [T-WIWI-109050]

**Responsible:** Prof. Dr. Martin Ruckes
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2
M-WIWI-101502 - Economic Theory and its Application in Finance

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2530218 | Corporate Risk Management | 2 SWS | Lecture / | Ruckes, Hoang |
| ST 2023 | 2530219 | Exercise Corporate Risk Management | | Practice / | Ruckes, Hoang, Silbereis |
| **Exams** | | | | | |
| ST 2023 | 7900259 | Corporate Risk Management | | | Ruckes |
| WT 23/24 | 7900136 | Corporate Risk Management | | | Ruckes |

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. 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.
Please note that the exam is only offered in the semester of the lecture as well as in the following semester.

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The course will be held again in the summer term 2023 at the earliest. Please pay attention to the announcements on our website.

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

## V Corporate Risk Management

2530218, SS 2023, 2 SWS, Language: English, Open in study portal

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

**Organizational issues**
The course will be offered as a block course in the summer term 2023. Further information will be published during the term. Please pay attention to our announcements.

In case of questions, please contact the tutor of the discussion sessions.

**Literature**


- Friberg, Richard. *Managing Risk and Uncertainty: A Strategic Approach*. Cambridge, MA: Managing Risk and Uncertainty, 2015.
- Stulz, René M. *Risk Management & Derivatives.* Mason, Ohio: Cengage Learning, Inc, 2002.
- Jorion, Philippe. *Value at Risk, 3rd Ed: The New Benchmark for Managing Financial Risk*. 3 ed. New York: General Finance & Investing, 2006

# T 7.56 Course: Critical Information Infrastructures [T-WIWI-109248]

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

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2511400 | Critical Information Infrastructures | 2 SWS | Lecture / | Sunyaev, Dehling, Jin |
| WT 23/24 | 2511401 | Exercises to Critical Information Infrastructures | 1 SWS | Practice / | Sunyaev, Dehling, Jin |

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

**Competence Certificate**
The alternative exam assessment consists of

- the preparation of a written elaboration as well as
- an oral examination as part of a presentation of the work.

Details of the grades will be announced at the beginning of the course.

The examination is only offered to first-time students in the winter semester, but can be repeated in the following summer semester.

**Prerequisites**
None.

**Annotation**
New lecture from winter semester 2018/2019.

# T 7.57 Course: Current Directions in Consumer Psychology [T-WIWI-111100]

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

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|---|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each term | 1 terms | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540441 | Current Directions in Consumer Psychology | 2 SWS | Others / | Scheibehenne, Liu |
| WT 23/24 | 2540441 | Current Directions in Consumer Psychology | 2 SWS | Others / | Scheibehenne, Seidler, Liu |
| **Exams** | | | | | |
| ST 2023 | 7900305 | Current Directions in Consumer Psychology | | | Scheibehenne |

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

**Competence Certificate**
Alternative exam assessment. Grading will be based on a continuous basis throughout the semester.

**Prerequisites**
Strong interest in research. Students who wish to write a master's thesis at our department will be given priority in the allocation of places.

**Annotation**
This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class and will be updated throughout the semester. Grades will be based on weekly participation throughout the semester including short oral presentation of papers in class, active engagement in discussions, and homework assignments. Due to the highly interactive format of this class the number of participants is limited.

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

## V Current Directions in Consumer Psychology

2540441, SS 2023, 2 SWS, Language: English, Open in study portal

**Others (sonst.)**
**Blended (On-Site/Online)**

**Content**
NOTE: Wiwi-portal sign-up required

This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class. Grades will be based on continuous participation throughout the semester including short oral presentation of papers in class, active engagement in discussions and homework assignments. This class will be taught in English.

**Organizational issues**
Wiwi-portal sign-up required

## V Current Directions in Consumer Psychology

2540441, WS 23/24, 2 SWS, Language: English, Open in study portal

**Others (sonst.)**
**Blended (On-Site/Online)**

**Content**
This class covers current research topics at the intersection between Psychology, Consumer Behavior, and Behavioral Economics. Based on weekly reading assignments of current scientific journal publications, students will get a first-hand experience of the ongoing topics and discussions at this exciting and dynamic area of research. The reading list will be announced at the first day of class. Grades will be based on continuous participation throughout the semester including short oral presentation of papers in class, active engagement in discussions and homework assignments. This class will be taught in English.

# T 7.58 Course: Database Systems and XML [T-WIWI-102661]

**Responsible:** Prof. Dr. Andreas Oberweis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-105880 - Informatics & Machine Learning

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2511202 | Database Systems and XML | 2 SWS | Lecture / | Oberweis |
| WT 23/24 | 2511203 | Exercises Database Systems and XML | 1 SWS | Practice / | Oberweis, Fritsch |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_DBX_A3 | Database Systems and XML (Registration until 17 July 2023) | | | Oberweis |
| WT 23/24 | 79AIFB_DBX_A4 | Database Systems and XML | | | Oberweis |

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

**Competence Certificate**
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

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

## V Database Systems and XML

2511202, WS 23/24, 2 SWS, Language: German, Open in study portal

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

**Content**
Databases are a proven technology for managing large amounts of data. The oldest database model, the hierarchical model, was replaced by different models such as the relational or the object-oriented data model. The hierarchical model became particularly more important with the emergence of the extensible Markup Language XML. XML is a data format for structured, semi-structured, and unstructured data. In order to store XML documents consistently and reliably, databases or extensions of existing data base systems are required. Among other things, this lecture covers the data model of XML, concepts of XML query languages, aspects of storage of XML documents, and XML-oriented database systems.

**Note on the event format:**

The course Database Systems and XML will be held in WS 23/24 in a "Flipped Classroom" format. Videos and supporting materials are provided for the lecture content, which students can work through independently and at their own pace. During the semester, interactive classroom sessions are held at regular intervals to practice and reinforce the lecture content.

**Learning objectives:**

Students

- know the basics of XML and generate XML documents,
- are able to use XML database systems and to formulate queries to XML documents,
- know to assess the use of XML in operational practice in different application contexts.

**Workload**:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

**Literature**


- M. Klettke, H. Meyer: XML & Datenbanken: Konzepte, Sprachen und Systeme. dpunkt.verlag 2003
- H. Schöning: XML und Datenbanken: Konzepte und Systeme. Carl Hanser Verlag 2003
- W. Kazakos, A. Schmidt, P. Tomchyk: Datenbanken und XML. Springer-Verlag 2002
- R. Elmasri, S. B. Navathe: Grundlagen der Datenbanksysteme. 2009
- G. Vossen: Datenbankmodelle, Datenbanksprachen und Datenbankmanagementsysteme. Oldenbourg 2008


Weitere Literatur wird in der Vorlesung bekannt gegeben.

# T 7.59 Course: Demand-Driven Supply Chain Planning [T-WIWI-110971]

**Responsible:** Dr. Josef Packowski
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102805 - Service Operations

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2550510 | Demand-Driven Supply Chain Planning | | Lecture / 🗣 | Packowski |
| **Exams** | | | | | |
| ST 2023 | 7900163 | Demand-Driven Supply Chain Planning | | | Packowski |

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam.

**Annotation**
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course. The course is planned to be held every winter term. The planned lectures and courses for the next three years are announced online.

# T 7.60 Course: Derivatives [T-WIWI-102643]

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101480 - Finance 3
M-WIWI-101482 - Finance 1
M-WIWI-101483 - Finance 2

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2530550 | Derivatives | 2 SWS | Lecture / | Uhrig-Homburg |
| ST 2023 | 2530551 | Übung zu Derivate | 1 SWS | Practice / | Eska, Uhrig-Homburg |
| **Exams** | | | | | |
| ST 2023 | 7900111 | Derivatives | | | Uhrig-Homburg |
| WT 23/24 | 7900051 | Derivatives | | | Uhrig-Homburg |

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

**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination 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:*

## V Derivatives

2530550, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Literature**

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

**Weiterführende Literatur:**
Cox/Rubinstein (1985): Option Markets, Prentice Hall

# T 7.61 Course: Design Thinking [T-WIWI-102866]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-101507 - Innovation Management

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545008 | Design Thinking (Track 1) | 2 SWS | Seminar / 🗣 | Jochem, Terzidis |
| WT 23/24 | 2545008 | Design Thinking (Track 1) | 2 SWS | Seminar / 🏘 | Jochem, Terzidis |
| **Exams** | | | | | |
| ST 2023 | 7900053 | Design Thinking (Track 1) | | | Terzidis |
| WT 23/24 | 7900084 | Design Thinking (Track 1) | | | Terzidis |

Legend: 💻 Online, 🏘 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessments (§4(2), 3 SPO).

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The seminar content will be published on the website of the institute.

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

## V Design Thinking (Track 1)

2545008, SS 2023, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
**Content**

Design Thinking is a user-centric innovation management method. The iterative process first analyzes the problem space and builds a sound understanding of the future users. Subsequently, ideas for the solution are generated, prototypes are created and tested by the user group. The result is a proven and validated product.

**Learning Objectives**

During the seminar, the students learn basic procedures for achieving user-centric innovations. These are concrete methods that start with the potential user of certain products and services. The method is problem-oriented and emphasizes the specific customer situation. After attending the seminar, the students have a clear understanding of the need to explore end-user needs and are able to independently apply the methods of Design Thinking for developing market-driven innovations at a basic level.

**Credentials**:

ATTENTION: Creditability in the seminar module: The seminar is NOT credited in the seminar module! Crediting is only possible in the EXPERT MODULE ENTREPRENEURSHIP.

**Organizational issues**
Registration is via the Wiwi-Portal.

## V Design Thinking (Track 1)

2545008, WS 23/24, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
**Course Content:**

Design Thinking is a user-centric innovation management method. The iterative process first analyzes the problem space and builds a sound understanding of the future users. Subsequently, ideas for the solution are generated, prototypes are created and tested by the user group. The result is a proven and validated product.

**Learning Objectives**
During the seminar, the students learn basic procedures for achieving user-centric innovations. These are concrete methods that start with the potential user of certain products and services. The method is problem-oriented and emphasizes the specific customer situation. After attending the seminar, the students have a clear understanding of the need to explore end-user needs and are able to independently apply the methods of Design Thinking for developing market-driven innovations at a basic level.

**Credentials:**

Registration is via the Wiwi portal.

ATTENTION: Creditability in the seminar module: The seminar is NOT credited in the seminar module! Crediting is only possible in the EXPERT MODULE ENTREPRENEURSHIP.

**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

# T 7.62 Course: Designing Interactive Systems [T-WIWI-110851]

**Responsible:** Prof. Dr. Alexander Mädche
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-104068 - Information Systems in Organizations
M-WIWI-104080 - Designing Interactive Information Systems
M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations
M-WIWI-106410 - Economics & Management
M-WIWI-106413 - Digitalization & Society

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540558 | Designing Interactive Systems | 3 SWS | Lecture / | Mädche, Gnewuch |
| **Exams** | | | | | |
| ST 2023 | 00009 | Designing Interactive Systems | | | Mädche |

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

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

**Annotation**
The course is held in english.

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

## V Designing Interactive Systems

2540558, SS 2023, 3 SWS, Language: English, Open in study portal

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

**Content**
**Description**

Computers have evolved from batch processors towards highly interactive systems. This offers new possibilities but also challenges for the successful design of the interaction between human and computer. Interactive system are socio-technical systems in which users perform tasks by interacting with technology in a specific context in order to achieve specified goals and outcomes.

The aim of this course is to introduce advanced concepts and theories, interaction technologies as well as current practice of contemporary interactive systems.

The course is complemented with a design capstone project, where students in a team select and apply design methods & techniques in order to create an interactive prototype

**Learning objectives**

- Get an advanced understanding of conceptual foundations of interactive systems from a human and computer perspective
- explore the theoretical grounding of Interactive Systems leveraging theories from reference disciplines such as psychology
- know specific design principles for the design of advanced interactive systems
- get hands-on experience in conceptualizing and designing advanced Interactive Systems to solve a real-world challenge from an industry partner by applying the lecture contents.

**Prerequisites**

No specific prerequisites are required for the lecture

**Literature**

Die Vorlesung basiert zu einem großen Teil auf

· Benyon, D. (2014). Designing interactive systems: A comprehensive guide to HCI, UX and interaction design (3. ed.). Harlow: Pearson.

Weiterführende Literatur wird in der Vorlesung bereitgestellt.

# T 7.63 Course: Development of Sustainable Business Models [T-WIWI-112143]

**Responsible:** Prof. Dr. Marion Weissenberger-Eibl
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101507 - Innovation Management

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500043 | Development of Sustainable Business Models | 3 SWS | Seminar / 🗣 | Duwe |

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

**Competence Certificate**
Non exam assessment. The final grade is composed 50% of the grade of the written paper (ca. 5 Pages /Person) and 50% of the presentation of the results.

**Prerequisites**
None

**Recommendation**
Prior attendance of the course Innovation Management is recommended.

# T 7.64 Course: Digital Democracy [T-WIWI-113160]

**Responsible:** Jonas Fegert
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101410 - Business & Service Engineering
M-WIWI-101446 - Market Engineering
M-WIWI-103117 - Data Science: Data-Driven Information Systems

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

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 00052 | Digital Democracy | 2 SWS | Lecture / | Fegert |
| WT 23/24 | 00053 | Übung zur Digital Democracy | 1 SWS | Practice / | Fegert |

Legend: Online, Blended (On-Site/Online), On-Site, × 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:*

## V 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 - off- 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 Motivationschreiben (ab Anfang/Mitte September über das Wiki-Portal)

# T 7.65 Course: Digital Health [T-WIWI-109246]

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

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2511402 | Digital Health | 2 SWS | Lecture / | Sunyaev, Thiebes, Schmidt-Kraepelin |

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

**Competence Certificate**
Alternative exam assessment (written elaboration, presentation, peer review, oral participation) according to §4(2),3 of the examination regulation. Details of the grading will be announced at the beginning of the course. The examination is only offered to first-time writers in the winter semester, but can be repeated in the following summer semester.

**Prerequisites**
None.

# T 7.66 Course: Digital Marketing [T-WIWI-112693]

**Responsible:** Prof. Dr. Ann-Kristin Kupfer
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105312 - Marketing and Sales Management
M-WIWI-106258 - Digital Marketing

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

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2571185 | Digital Marketing | 2 SWS | Lecture / 🗣 | Kupfer |
| ST 2023 | 2571186 | Digital Marketing Exercise | 1 SWS | Practice / 🗣 | Mitarbeiter |
| **Exams** | | | | | |
| ST 2023 | 7900064 | Digital Marketing | | | Kupfer |
| ST 2023 | 7900070 | Digital Marketing | | | Kupfer |

Legend: 📱 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The control of success is done by the elaboration and presentation of a group task as well as a written exam. Further details on the design of the performance review 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:*

## V Digital Marketing

2571185, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Students learn the theoretical foundations of digital marketing and its most important concepts. They develop an understanding both for the digital consumer and the digital environment. Special emphasis will be given to digital marketing strategies and practices, such as content marketing and influencer marketing. A tutorial offers the opportunity to apply the key learnings of the lecture as part of a group work.

The learning objectives are as follows:

- Getting to know the theoretical foundations of digital marketing
- Evaluating digital marketing strategies and practices (e.g., in the context of content marketing and influencer marketing)
- 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

**Organizational issues**
Termine werden bekannt gegeben.

# T 7.67 Course: Digital Marketing and Sales in B2B [T-WIWI-106981]

**Responsible:** Prof. Dr. Martin Klarmann
Anja Konhäuser

**Organisation:** KIT Department of Economics and Management

**Part of:** M-WIWI-105312 - Marketing and Sales Management
M-WIWI-106258 - Digital Marketing

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 1,5 | Grade to a third | Each summer term | 1 |

**Competence Certificate**
Alternative exam assessment according to § 4 paragraph 2 Nr. 3 of the examination regulation. (team presentation of a case study with subsequent discussion totalling 30 minutes).

**Prerequisites**
None.

**Annotation**
This course will not take place in the summer term 2023, but is expected to be offered again on a regular basis starting in the summer term 2024.
Participation requires an application. The application period starts at the beginning of the semester. More information can be obtained on the website of the research group Marketing and Sales (marketing.iism.kit.edu). Access to this course is restricted. Typically all students will be granted the attendance of one course with 1.5 ECTS. Nevertheless attendance can not be guaranteed.For further information please contact Marketing and Sales Research Group (marketing.iism.kit.edu).Please note that only one of the 1.5-ECTS courses can be attended in this module.

# T 7.68 Course: Digital Services: Innovation & Business Models [T-WIWI-112757]

**Responsible:** Prof. Dr. Gerhard Satzger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101410 - Business & Service Engineering
M-WIWI-101448 - Service Management
M-WIWI-102754 - Service Economics and Management
M-WIWI-102806 - Service Innovation, Design & Engineering

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2595468 | Digital Services: Innovation & Business Models | 1.5 SWS | Lecture / | Satzger, Benz, Schüritz |
| ST 2023 | 2595469 | Übung zu Digital Services: Innovation & Business Models | 1.5 SWS | Practice / | Satzger, Benz, Schüritz |
| **Exams** | | | | | |
| ST 2023 | 7900113 | Digital Services: Innovation & Business Models | | | Satzger |
| WT 23/24 | 7900215 | Digital Services: Innovation & Business Models - oral | | | Satzger |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 min.).

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-102641 - Service Innovation must not have been started.

**Recommendation**
None

**Annotation**
The course Digital Services: Innovation & Business Models replaces the course Service Innovation based on a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Previous foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

*Below you will find excerpts from events related to this course:*

**V Digital Services: Innovation & Business Models**
2595468, SS 2023, 1.5 SWS, Language: English, Open in study portal
**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
Leveraging data and digital technologies for business success is a key challenge for organizations as they need to

- get aware of the newly arising potential
- develop suitable digital services that are user-centric and individualized
- “servitize” their offering portfolio and business model
- transform their organizations

This course will equip students with concepts and methods to tackle this challenge along two dimensions: First, we will cover innovation as a concept as well as apply contemporary innovation methods (like Design Thinking, Open Innovation) to the services space. Second, we deal with leveraging innovation to develop new business models (including multi-partner concepts in platforms or ecosystems), to servitize existing business models (e.g., via product-service-systems), and to accordingly transform the organization.

The course links innovation and business model theories with practical examples and exercises. Students are asked to actively engage in the discussion.

**Organizational issues**
The course will be offered in the form of a flipped classroom concept starting in summer semester 2023. The lecture will be recorded in advance and made available online. During the “in presence” sessions, the contents of the lecture will be applied and expanded on.

**Literature**


- Böhmann, T./ Leimeister, J.M./ Möslein, K. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79.
- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.) (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Chesbrough, H. (2011). Open services innovation: Rethinking your business to grow and compete in a new era. John Wiley & Sons.
- Rogers, S. (2003). Diffusion of Innovations. 5. ed. New York: Free Press.
- Satzger, G., Benz, C., Böhmann, T., Roth, A. (2022). Servitization and Digitalization as Siamese Twins – Concepts and Research Agenda. Edvardsson/Tronvoll (eds.): The Palgrave Handbook of Service Management, 967-989.
- Uebernickel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). Design Thinking: Das Handbuch. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Vargo, S.L., Lusch, R.F. (2017). Service-dominant logic 2025. Int. J. Res. Mark. 34, 46–67.
- Weill, P.; Woerner, S.L. (2018): “What‘s your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise“. Boston, Massachusetts: Harvard Business Review Press.

# T 7.69 Course: Digital Transformation and Business Models [T-WIWI-108875]

**Responsible:** Dr. Daniel Jeffrey Koch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101507 - Innovation Management
M-WIWI-101507 - Innovation Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545103 | Digital Transformation and Business Models | 2 SWS | Seminar / 🗣 | Koch |
| **Exams** | | | | | |
| ST 2023 | 7900284 | Digital Transformation and Business Models | | | Weissenberger-Eibl |

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Non exam assessment (following §4(2) 3 of the examination regulation). The final grade is composed 75% of the grade of the written paper and 25% of the presentation.

**Prerequisites**
None

**Recommendation**
Prior attendance of the course Innovation Management is recommended.

*Below you will find excerpts from events related to this course:*

## V Digital Transformation and Business Models

2545103, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
The seminar "Digital Transformation and Business Models" aims at the development of thematic aspects of digital transformation with simultaneous application of different business model methodologies. Established companies face the challenge of digital transformation. The digital transformation is particularly relevant for the business models of industrial enterprises. As part of innovation management, the examination of business model changes against the background of digital transformation is one of the main challenges facing the German economy. At the beginning, seminar topics will be assigned. These will be presented and discussed at the end of the seminar. In the first seminar date impulses to business model methodologies and the digital transformation take place, which are to be discussed then, in order to provide an understanding for the topic complex and to ensure the purposeful development of the seminar topics.

# T 7.70 Course: Discrete-Event Simulation in Production and Logistics [T-WIWI-102718]

**Responsible:** Hon.-Prof. Dr. Sven Spieckermann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102805 - Service Operations
M-WIWI-102832 - Operations Research in Supply Chain Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550488 | Ereignisdiskrete Simulation in Produktion und Logistik | 3 SWS | Lecture / 🗣 | Spieckermann |
| **Exams** | | | | | |
| ST 2023 | 7900244 | Discrete-Event Simulation in Production and Logistics | | | Spieckermann |

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written paper and an oral exam of about 30-40 min (alternative exam assessment).

**Prerequisites**
None

**Recommendation**
Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

**Annotation**
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The course is planned to be held every summer term.

The planned lectures and courses for the next three years are announced online.

*Below you will find excerpts from events related to this course:*

## V Ereignisdiskrete Simulation in Produktion und Logistik

2550488, SS 2023, 3 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Simulation of production and logistics systems is an interdisciplinary subject connecting expert knowledge from production management and operations research with mathematics/statistics as well as computer science and software engineering. With completion of this course, students know statistical foundations of discrete simulation, are able to classify and apply related software applications, and know the relation between simulation and optimization as well as a number of application examples. Furthermore, students are enabled to structure simulation studies and are aware of specific project scheduling issues.

**Organizational issues**
Den Bewerbungszeitraum finden Sie auf der Veranstaltungswebseite im Lehre-Bereich unter dol.ior.kit.edu

**Literature**


- Gutenschwager K., Rabe M., Spieckermann S. und S. Wenzel (2017): Simulation in Produktion und Logistik, Springer, Berlin.
- Banks J., Carson II J. S., Nelson B. L., Nicol D. M. (2010) Discrete-event system simulation, 5.Aufl., Pearson, Upper Saddle River.
- Eley, M. (2012): Simulation in der Logistik - Einführung in die Erstellung ereignisdiskreter Modelle unter Verwendung des Werkzeuges "Plant Simulation“, Springer, Berlin und Heidelberg
- Kosturiak, J. und M. Gregor (1995): Simulation von Produktionssystemen. Springer, Wien und New York.
- Law, A. M. (2015): Simulation Modeling and Analysis. 5th Edition, McGraw-Hill, New York usw.
- Liebl, F. (1995): Simulation. 2. Auflage, Oldenbourg, München.
- Noche, B. und S. Wenzel (1991): Marktspiegel Simulationstechnik. In: Produktion und Logistik. TÜV Rheinland, Köln.
- Pidd, M. (2004): Computer Simulation in Management Science. 5th Edition, Wiley, Chichester.
- Robinson S (2004) Simulation: the practice of model development and use. John Wiley & Sons, Chichester
- VDI (2014): Simulation von Logistik-, Materialfluß- und Produktionssystemen. VDI Richtlinie 3633, Blatt 1, VDI-Verlag, Düsseldorf.

# T 7.71 Course: Dynamic Macroeconomics [T-WIWI-109194]

**Responsible:** Prof. Dr. Johannes Brumm
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101478 - Innovation and Growth
M-WIWI-101496 - Growth and Agglomeration
M-WIWI-101497 - Agglomeration and Innovation
M-WIWI-106412 - Computation & Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 4 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2560402 | Dynamic Macroeconomics | 2 SWS | Lecture / | Brumm |
| WT 23/24 | 2560403 | Übung zu Dynamic Macroeconomics | 1 SWS | Practice / | Hußmann |
| **Exams** | | | | | |
| ST 2023 | 7900188 | Dynamic Macroeconomics | | | Brumm |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment is a written exam (60 min.).

**Prerequisites**
None.

*Below you will find excerpts from events related to this course:*

## V Dynamic Macroeconomics

2560402, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
This course addresses macroeconomic questions on an advanced level. The main focus of this course is on dynamic programming and its fundamental role in modern macroeconomics. In the first part of the course, the necessary mathematical tools are introduced as well as basic applications in labor economics, economic growth and business cycle analysis. In the second part of the course, these basic models are expanded to incorporate household heterogeneity in various forms: Models of economic inequality to analyze the distributional impact of tax policies and models of overlapping generations to analyze the impact of social security reforms or changes in government debt. Finally, advanced methods based on sparse grids or neural nets are introduced to solve high-dimensional models. The course pursues a hands-on approach so that students not only gain theoretical insights but also learn numerical tools to solve dynamic economic models using the programming language Python.

**Literature**
Literatur und Skripte werden in der Veranstaltung angegeben.

# T 7.72 Course: Economics of Innovation [T-WIWI-112822]

**Responsible:** Prof. Dr. Ingrid Ott
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101478 - Innovation and Growth
M-WIWI-101497 - Agglomeration and Innovation
M-WIWI-101514 - Innovation Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2560236 | Economics of Innovation | 2 SWS | Lecture / 🗣 | Ott |
| ST 2023 | 2560237 | Exercises of Economics of Innovation | 1 SWS | Practice / 🗣 | Ott, Mirzoyan |
| **Exams** | | | | | |
| ST 2023 | 7900107 | Economics of Innovation | | | Ott |

Legend: 🖥 Online, 🎛 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-102840 - Innovation Theory and Policy must not have been started.

**Recommendation**
Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

*Below you will find excerpts from events related to this course:*

## V Economics of Innovation

2560236, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Learning objectives:**

Students shall be given the ability to

- identify the importance of alternative incentive mechanisms for the emergence and dissemination of innovations
- understand the relationships between market structure and the development of innovation
- explain, in which situations market interventions by the state, for example taxes and subsidies, can be legitimized, and evaluate them in the light of economic welfare

**Course content:**

**The course covers the following topics:**

- Incentives for the emergence of innovations
- Patents
- Diffusion
- Impact of technological progress
- Innovation Policy

**Recommendations:**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

**Workload:**

The total workload for this course is approximately 135.0 hours. For further information see German version.

**Exam description:**

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

**Literature**
Auszug:


- Aghion, P., Howitt, P. (2009), The Economics of Growth, MIT Press, Cambridge MA.
- de la Fuente, A. (2000), Mathematical Methods and Models for Economists. Cambridge University Press, Cambridge, UK.
- Klodt, H. (1995), Grundlagen der Forschungs- und Technologiepolitik. Vahlen, München.
- Linde, R. (2000), Allokation, Wettbewerb, Verteilung - Theorie, UNIBUCH Verlag, Lüneburg.
- Ruttan, V. W. (2001), Technology, Growth, and Development. Oxford University Press, Oxford.
- Scotchmer, S. (2004), Incentives and Innovation, MIT Press.
- Tirole, Jean (1988), The Theory of Industrial Organization, MIT Press, Cambridge MA.

# T 7.73 Course: Efficient Energy Systems and Electric Mobility [T-WIWI-102793]

**Responsible:** PD Dr. Patrick Jochem
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101452 - Energy Economics and Technology

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2581006 | Efficient Energy Systems and Electric Mobility | 2 SWS | Lecture / 🗣 | Jochem |
| **Exams** | | | | | |
| ST 2023 | 7981006 | Efficient Energy Systems and Electric Mobility | | | Fichtner |
| WT 23/24 | 7981006 | Efficient Energy Systems and Electric Mobility | | | Fichtner |

Legend: 🖥 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Efficient Energy Systems and Electric Mobility

2581006, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
This lecture series combines two of the most central topics in the field of energy economics at present, namely energy efficiency and electric mobility. The objective of the lecture is to provide an introduction and overview to these two subject areas, including theoretical as well as practical aspects, such as the technologies, political framework conditions and broader implications of these for national and international energy systems.

- Understand the concept of energy efficiency as applied to specific systems
- Obtain an overview of the current trends in energy efficiency
- Be able to determine and evaluate alternative methods of energy efficiency improvement
- Overview of technical and economical stylized facts on electric mobility
- Judging economical, ecological and social impacts through electric mobility

**Organizational issues**
s. Institutsaushang

**Literature**
Wird in der Vorlesung bekanntgegeben.

# T 7.74 Course: eFinance: Information Systems for Securities Trading [T-WIWI-110797]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101446 - Market Engineering
M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540454 | eFinance: Information Systems for Securities Trading | 2 SWS | Lecture / 🗣 | Weinhardt, Jaquart |
| WT 23/24 | 2540455 | Übungen zu eFinance: Information Systems for Securities Trading | 1 SWS | Practice / 🗣 | Motz |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Success is monitored by means of ongoing elaborations and presentations of tasks and an examination (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

**Annotation**
The course"eFinance: Information Systems for Securities Trading" covers different actors and their function in the securities industry in-depth, highlighting key trends in modern financial markets, such as Distributed Ledger Technology, Sustainable Finance, and Artificial Intelligence. Security prices evolve through a large number of bilateral trades, performed by market participants that have specific, well-regulated and institutionalized roles. Market microstructure is the subfield of financial economics that studies the price formation process. This process is significantly impacted by regulation and driven by technological innovation. Using the lens of theoretical economic models, this course reviews insights concerning the strategic trading behaviour of individual market participants, and models are brought market data. Analytical tools and empirical methods of market microstructure help to understand many puzzling phenomena in securities markets.

*Below you will find excerpts from events related to this course:*

## V eFinance: Information Systems for Securities Trading

**Lecture (V)**
**On-Site**

2540454, WS 23/24, 2 SWS, Language: English, Open in study portal

**Literature**

- Picot, Arnold, Christine Bortenlänger, Heiner Röhrl (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners"". Oxford University Press, New York

**Weiterführende Literatur:**

- Gomber, Peter (2000): "Elektronische Handelssysteme - Innovative Konzepte und Technologien". Physika Verlag, Heidelberg
- Schwartz, Robert A., Reto Francioni (2004): "Equity Markets in Action - The Fundamentals of Liquidity, Market Structure and Trading". Wiley, Hoboken, NJ

# T 7.75 Course: Emerging Trends in Digital Health [T-WIWI-110144]

**Responsible:** Prof. Dr. Ali Sunyaev
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2513404 | Seminar Emerging Trends in Digital Health (Bachelor) | 2 SWS | Seminar / | Sunyaev, Toussaint, Brecker, Danylak |
| ST 2023 | 2513405 | Seminar Emerging Trends in Digital Health (Master) | 2 SWS | Seminar / | Sunyaev, Toussaint, Brecker, Danylak |
| **Exams** | | | | | |
| ST 2023 | 7900146 | Seminar Emerging Trends in Digital Health (Master) | | | Sunyaev |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The alternative exam assessment consists of a final thesis.

**Prerequisites**
None.

**Annotation**
The course is usually held as a block course.

# T 7.76 Course: Emerging Trends in Internet Technologies [T-WIWI-110143]

**Responsible:** Prof. Dr. Ali Sunyaev
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| | | | | | |
|---|---|---|---|---|---|
| **Events** | | | | | |
| ST 2023 | 2513402 | Seminar Emerging Trends in Internet Technologies (Bachelor) | 2 SWS | Seminar / | Sunyaev, Toussaint, Brecker, Danylak |
| ST 2023 | 2513403 | Seminar Emerging Trends in Internet Technologies (Master) | 2 SWS | Seminar / | Sunyaev, Toussaint, Brecker, Danylak |
| **Exams** | | | | | |
| ST 2023 | 7900128 | Seminar Emerging Trends in Internet Technologies (Master) | | | Sunyaev |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The alternative exam assessment consists of a final thesis.

**Prerequisites**
None.

**Annotation**
The course is usually held as a block course.

# T 7.77 Course: Emissions into the Environment [T-WIWI-102634]

**Responsible:** Ute Karl
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101412 - Industrial Production III
M-WIWI-101471 - Industrial Production II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581962 | Emissions into the Environment | 2 SWS | Lecture / 🗣 | Karl |
| **Exams** | | | | | |
| ST 2023 | 7981962 | Emissions into the Environment | | | Schultmann |

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Emissions into the Environment

2581962, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Emission sources/emission monitoring/emission reduction: The lecture gives an overview of relevant emissions of air pollutants and greenhouse gases, emission monitoring and pollutant abatement options together with relevant legal regulations at national and international level. In addition, the fundamentals of circular economy, waste management and recycling are explained.

Structure:

Air pollution control

- Introduction, terms and definitions
- Sources of air pollutants
- Legal framework of air quality control
- Technical measures to reduce air pollutant emissions

Circular economy, recycling and waste management

- Waste collection and logistics
- Dual systems for packaging waste
- Recycling
- Thermal and biological waste treatment
- Final waste disposal

**Literature**
Wird in der Veranstaltung bekannt gegeben.

# T 7.78 Course: Employment Law [T-INFO-111436]

**Responsible:** Dr. Alexander Hoff
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101216 - Private Business Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each summer term | 2 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 24668 | Employment Law | 2 SWS | Lecture / 🗣 | Hoff |
| **Exams** | | | | | |
| ST 2023 | 7500082 | Employment Law | | | Dreier, Matz |
| WT 23/24 | 7500001 | Employment Law | | | Matz |

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

# T 7.79 Course: Energy and Environment [T-WIWI-102650]

**Responsible:** Ute Karl
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101452 - Energy Economics and Technology
M-WIWI-101468 - Environmental Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2581003 | Energy and Environment | 2 SWS | Lecture / 🗣 | Karl |
| ST 2023 | 2581004 | Übungen zu Energie und Umwelt | 1 SWS | Practice / 🗣 | Langenmayr, Fichtner, Kraft |
| **Exams** | | | | | |
| ST 2023 | 7981003 | Energy and Environment | | | Fichtner |
| WT 23/24 | 7981003 | Energy and Environment | | | Fichtner |

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None.

*Below you will find excerpts from events related to this course:*

## V Energy and Environment

2581003, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The lecture focuses on the environmental impacts arising from fossil fuels use and on the methods for the evaluation of such impacts. The first part of the lecture describes the environmental impacts of air pollutants and greenhouse gases as well as technical measures for emission control. The second part covers methods of impact assessment and their use in environmental communication as well as methods for the scientific support of emission control strategies.

The topics include:

- Fundamentals of energy conversion
- Formation of air pollutants during combustion
- Technical measures to control emissions from fossil-fuel combustion processes
- External effects of energy supply (life cycle analyses of selected energy systems)
- Environmental communication on energy services (e.g. electricity labelling, carbon footprint)
- Integrated Assessment Modelling to support the European Clean Air Strategy
- Cost-effectiveness analyses and cost-benefit analyses for emission control strategies
- Monetary valuation of external effects (external costs)

**Literature**
Die Literaturhinweise sind in den Vorlesungsunterlagen enthalten (vgl. ILIAS)

# T 7.80 Course: Energy Market Engineering [T-WIWI-107501]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101411 - Information Engineering
M-WIWI-101446 - Market Engineering
M-WIWI-101451 - Energy Economics and Energy Markets
M-WIWI-103720 - eEnergy: Markets, Services and Systems
M-WIWI-106410 - Economics & Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540464 | Energy Market Engineering | 2 SWS | Lecture / | Weinhardt |
| ST 2023 | 2540465 | Übung zu Energy Market Engineering | 1 SWS | Practice / | Semmelmann |
| **Exams** | | | | | |
| ST 2023 | 79852 | Energy Market Engineering | | | Weinhardt |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

**Prerequisites**
None

**Recommendation**
None

**Annotation**
Former course title until summer term 2017: T-WIWI-102794 "eEnergy: Markets, Services, Systems".

The lecture has also been added in the IIP Module *Basics of Liberalised Energy Markets*.

*Below you will find excerpts from events related to this course:*

## V Energy Market Engineering

2540464, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Literature**


- Erdmann G, Zweifel P. *Energieökonomik, Theorie und Anwendungen*. Berlin Heidelberg: Springer; 2007.
- Grimm V, Ockenfels A, Zoettl G. Strommarktdesign: Zur Ausgestaltung der Auktionsregeln an der EEX *. *Zeitschrift für Energiewirtschaft*. 2008:147-161.
- Stoft S. *Power System Economics: Designing Markets for Electricity*. IEEE; 2002.,
- Ströbele W, Pfaffenberger W, Heuterkes M. *Energiewirtschaft: Einführung in Theorie und Politik*. 2nd ed. München: Oldenbourg Verlag; 2010:349.

# T 7.81 Course: Energy Networks and Regulation [T-WIWI-107503]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101446 - Market Engineering
M-WIWI-103720 - eEnergy: Markets, Services and Systems

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540494 | Energy Networks and Regulation | 2 SWS | Lecture / | Rogat, Miskiw |
| WT 23/24 | 2540495 | Übung zu Energy Networks and Regulation | 1 SWS | Practice / | Rogat, Miskiw |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.
The exam is offered every semester. Re-examinations are offered on every ordinary examination date.

**Prerequisites**
None

**Recommendation**
None

**Annotation**
Former course title until summer term 2017: T-WIWI-103131 "Regulatory Management and Grid Management - Economic Efficiency of Network Operation"

*Below you will find excerpts from events related to this course:*

## V Energy Networks and Regulation

2540494, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Learning Goals**

The student,

- understands the business model of a network operator and knows its central tasks in the energy supply system,
- has a holistic overview of the interrelationships in the network economy,
- understands the regulatory and business interactions,
- is in particular familiar with the current model of incentive regulation with its essential components and understands its implications for the decisions of a network operator
- is able to analyse and assess controversial issues from the perspective of different stakeholders.

**Content of teaching**

The lecture “Energy Networks and Regulation” provides insights into the regulatory framework of electricity and gas. It touches upon the way the grids are operated and how regulation affects almost all grid activities. The lecture also addresses approaches of grid companies to cope with regulation on a managerial level. We analyze how the system influences managerial decisions and strategies such as investment or maintenance. Furthermore, we discuss how the system affects the operator’s abilities to deal with the massive challenges lying ahead (“Energiewende”, redispatch, European grid integration, electric vehicles etc.). Finally, we look at current developments and major upcoming challenges, e.g., the smart meter rollout. Covered topics include:

- Grid operation as a heterogeneous landscape: big vs. small, urban vs. rural, TSO vs. DSO
- Objectives of regulation: Fair price calculation and high standard access conditions
- The functioning of incentive regulation
- First major amendment to the incentive regulation: its merits, its flaws
- The revenue cap and how it is adjusted according to certain exogenous factors
- Grid tariffs: How are they calculated, what is the underlying rationale, do we need a reform (and which)?
- Exogenous costs shifted (arbitrarily?) into the grid, e.g. feed-in tariffs for renewable energy or decentralized supply.

**Literature**

Averch, H.; Johnson, L.L (1962). Behavior of the firm under regulatory constraint, in: American Economic Review, 52 (5), S. 1052 – 1069.

Bundesnetzagentur (2006): Bericht der Bundesnetzagentur nach § 112a EnWG zur Einführung der Anreizregulierung nach § 21a EnWG, http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen_Institutionen/Netzentgelte/Anreizregulierung/BerichtEinfuehrgAnreizregulierung.pdf?__blob=publicationFile&v=3.

Bundesnetzagentur (2015): Evaluierungsbericht nach § 33 Anreizregulierungsverordnung, https://www.bmwi.de/Redaktion/DE/Downloads/A/anreizregulierungsverordnung-evaluierungsbericht.pdf?__blob=publicationFile&v=1.

Filippini, M.; Wild, J.; Luchsinger, C. (2001) : Regulierung der Verteilnetzpreise zu Beginn der Marktöffnung. Erfahrungen in Norwegen und Schweden, Bundesamt für Energie, Bern, http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/34/066/34066585.pdf.

Gómez, T. (2013): Monopoly Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 151 – 198, Springer-Verlag, London.

Gómez, T. (2013): Electricity Distribution, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 199 – 250, Springer-Verlag, London.

Pérez-Arriaga, I.J. (2013): Challenges in Power Sector Regulation, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 647 – 678, Springer-Verlag, London.

Rivier, M.; Pérez-Arriaga, I.J.; Olmos, L. (2013): Electricity Transmission, in: Pérez-Arriaga, I.J. (Hg.): Regulation of the Power Sector, S. 251 – 340, Springer-Verlag, London.

# T 7.82 Course: Energy Trading and Risk Management [T-WIWI-112151]

**Responsible:** N.N.
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101451 - Energy Economics and Energy Markets

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2581020 | Energy Trading and Risk Management | 2 SWS | Lecture / 🗣 | Kraft, Fichtner |
| **Exams** | | | | | |
| ST 2023 | 7981020 | Energy Trade and Risk Management | | | Fichtner |
| WT 23/24 | 7981020 | Energy Trading and Risk Management | | | Fichtner |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The lecture "Energiehandel und Risikomanagement" will be held in English under the title "Energy Trading and Risk Management" from the summer semester 2022. The examination for the English-language lecture will be offered in English from the summer semester 2022.
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. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment).

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Energy Trading and Risk Management

2581020, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**

1. Introduction to Markets, Mechanisms and Interaction
2. Electricity Trading (platforms, products, mechanisms)
3. Balancing Energy Markets and Congestion Management
4. Coal Markets (reserves, supply, demand, and transport)
5. Investments and Capacity Markets
6. Oil and Gas Markets (supply, demand, trade, and players)
7. Trading Game
8. Risk Management in Energy Trading

**Literature**
**Weiterführende Literatur:**

Burger, M., Graeber, B., Schindlmayr, G. (2007): *Managing energy risk: An integrated view on power and other energy markets*, Wiley&Sons, Chichester, England

EEX (2010): *Einführung in den Börsenhandel an der EEX auf Xetra und Eurex*, www.eex.de

Erdmann, G., Zweifel, P. (2008), Energieökonomik, Theorie und Anwendungen, Springer, ISBN: 978-3-540-71698-3

Hull, J.C. (2006): *Options, Futures and other Derivatives*, 6. Edition, Pearson Prentice Hall, New Jersey, USA

Borchert, J., Schlemm, R., Korth, S. (2006): *Stromhandel: Institutionen, Marktmodelle, Pricing und Risikomanagement (Gebundene Ausgabe)*, Schäffer-Poeschel Verlag

www.riskglossary.com

# T 7.83 Course: Engineering Interactive Systems [T-WIWI-110877]

**Responsible:** Prof. Dr. Alexander Mädche
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102806 - Service Innovation, Design & Engineering
M-WIWI-104080 - Designing Interactive Information Systems

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 1 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 00006 | Engineering Interactive Systems | Mädche |
| WT 23/24 | 7900195 | Engineering Interactive Systems: AI & Wearables | Mädche |

**Competence Certificate**
Alternative exam assessment. The assessment consists of a one-hour exam and the implementation of a Capstone project. Details will be announced at the beginning of the course.

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The course is held in English.

# T 7.84 Course: Entrepreneurial Leadership & Innovation Management [T-WIWI-102833]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-101507 - Innovation Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Irregular | 3 |

**Competence Certificate**
Please note: The seminar cannot be offered in the winter semester 2019/2020 due to organizational reasons.
Alternative exam assessment.

**Prerequisites**
None

**Recommendation**
None

# T 7.85 Course: Entrepreneurship [T-WIWI-102864]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-101507 - Innovation Management
M-WIWI-105010 - Student Innovation Lab (SIL) 1

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545001 | Entrepreneurship | 2 SWS | Lecture / | Terzidis, Dang |
| WT 23/24 | 2545001 | Entrepreneurship | 2 SWS | Lecture / | Terzidis |
| WT 23/24 | 9005470 | Entrepreneurship | | Lecture / | Terzidis |
| **Exams** | | | | | |
| ST 2023 | 7900002 | Entrepreneurship | | | Terzidis |
| ST 2023 | 7900192 | Entrepreneurship | | | Terzidis |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Students are offered the opportunity to earn a grade bonus through separate assignments. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by a maximum of one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the lecture.

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

V **Entrepreneurship** — **Lecture (V)**
2545001, SS 2023, 2 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

**Content**
The lecture as a compulsory part of the module "Entrepreneurship" introduces the basic concepts of entrepreneurship. Important concepts and empirical facts are introduced, which relate to the conception and implementation of newly founded companies.

The focus here is on introducing methods for generating innovative business ideas, translating patents into business concepts, and general principles of business modeling and business planning. In particular, approaches such as Lean-Startup and Effectuation as well as concepts for financing young companies are covered.

A "KIT Entrepreneurship Talk" is part of each session, in which experienced founder and entrepreneur personalities report on their experiences in the practice of the establishment of an enterprise. Dates and speakers will be announced on the EnTechnon homepage.

**Learning objectives:**

The students will be introduced to the topic of entrepreneurship. After successful attendance of the course they should have an overview of the sub-areas of entrepreneurship and be able to understand basic concepts of entrepreneurship and apply key concepts.

**Workload**:

The total effort with 3 credit points: approx. 90 hours
Presence time: 30 hours
Pre- and postprocessing of the LV: 45.0 hours
Exam and exam preparation: 15.0 hours

**Examination**:

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation)

A grade bonus can be earned by successfully participating in a case study as part of the Entrepreneurship lecture. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by up to 0.3 or 0.4. The bonus only applies if you have passed the exam with at least a 4.0. More details will be provided in the lecture. Participation in the case study is voluntary.

Exam dates: tbd, probably 22.06.2023, 6pm - 7.10pm

**Organizational issues**
VL findet jeweils Di, 15:45 - 19:00 an folgenden Terminen statt:
18.04.2023
25.04.2023
02.05.2023
09.05.2023
16.05.2023
23.05.2023
06.06.2023

13.06.2023 (Prep Session)

22.06.2023 (Klausur, 18.00 - 19.10 Uhr)

**Literature**
Füglistaller, Urs, Müller, Christoph und Volery, Thierry (2008): Entrepreneurship

Ries, Eric (2011): The Lean Startup

Osterwalder, Alexander (2010): Business Model Generation

Aulet, Bill (2013): Disciplined Entrepreneurship. 24 Steps to a Successful Startup. Hoboken: Wiley.

R.C. Dorf, T.H. Byers: Technology Ventures – From Idea to Enterprise., (McGraw Hill 2008)

Hisrich, Robert D.; Ramadani, Veland (2017): Effective entrepreneurial management. Strategy, planning, risk management, and organization. Cham, Switzerland: Springer.

V **Entrepreneurship** — **Lecture (V)**
2545001, WS 23/24, 2 SWS, Language: English, Open in study portal — **Blended (On-Site/Online)**

**Content**
The lecture as an obligatory part of the module "Entrepreneurship" introduces the basic concepts of entrepreneurship. Important concepts and empirical facts are presented that relate to the conception and implementation of newly founded companies.

The focus here is on the introduction to methods for generating innovative business ideas, for transferring patents into business concepts and general principles of business modelling and business planning. In particular approaches such as Lean Startup and Effectuation as well as concepts for the financing of young enterprises are treated.

A "KIT Entrepreneurship Talk" is part of each session, in which experienced founder and entrepreneur personalities report on their experiences in practice of the establishment of an enterprise. Dates and speakers will be announced on the EnTechnon homepage.

**Learning objectives:**

The studentsare introduced to the topic Entrepreneurship. After successful attendance of the meeting they are to have an overview of the subranges of the Entrepreneurships and be able to understand basic concepts of the Entrepreneurships and apply key concepts.

**Workload**:

Total effort with 3 credit points: approx. 90 hours
Presence time: 30 hours
Pre- and postprocessing of the LV: 45.0 hours
Exam and exam preparation: 15.0 hours

**Examination**:

The assessment of success takes place in the form of a written examination (60 min.) (according to §4(2), 1 SPO). The grade is the grade of the written exam.

A grade bonus can be earned through successful participation in a case study in the Entrepreneurship lecture. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by up to 0.3 or 0.4.The bonus only applies if you have passed the exam with at least a 4.0. More details will be provided in the lecture. Participation in the case study is voluntary.

**Exam date**: tba

**Organizational issues**
VL findet jeweils Mo, 15:45 - 19:00 an folgenden Terminen statt:
23.10.2023
30.10.2023
06.11.2023
13.11.2023
20.11.2023
27.11.2023
04.12.2023
11.12.2023 (Prep Session)

**Literature**
Aulet, Bill (2013): Disciplined Entrepreneurship. 24 Steps to a Successful Startup. Hoboken: Wiley.

R.C. Dorf, T.H. Byers: Technology Ventures – From Idea to Enterprise., (McGraw Hill 2008)

Füglistaller, Urs, Müller, Christoph and Volery, Thierry (2008): Entrepreneurship

Hisrich, Robert D.; Ramadani, Veland (2017): Effective entrepreneurial management. Strategy, planning, risk management, and organization. Cham, Switzerland: Springer.

Ries, Eric (2011): The Lean Startup.

Osterwalder, Alexander (2010): Business Model Generation.

## V Entrepreneurship

9005470, WS 23/24, SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The lecture introduces the basic concepts of entrepreneurship. The individual stages of dynamic corporate development are covered. Emphasis is placed on the introduction to methods for generating innovative business ideas, the translation of patents into business concepts and general basics of business planning.
Further contents are the conception and use of service oriented information systems for founders, technology management and business model generation as well as lean startup methods for the implementation of business ideas by means of controlled experiments in the market.

**Organizational issues**
Anmeldung unter studium.hoc.kit.edu

**Literature**

Christine Volkmann, Kim Oliver Tokarski: Entrepreneurship: Gündung und Wachstum von jungen Unternehmen (2006)
Urs Fueglistaller, Christoph A. Müller, Thierry Volery: Entrepreneurship: Modelle - Umsetzung - Perspektiven (2008)
Eric Ries: The Lean Startup (2011)
Peter Drucker: Entrepreneurship & Innovation (1984)
Dorf, R.C. and Byers, T.H. (2008): Technology Ventures - From Idea to Enterprise
Runge, W. (2014): Technology Entrepreneurship - A Treatise on Entrepreneurs and Entrepreneurship for and n Technology Ventures

# T 7.86 Course: Entrepreneurship Research [T-WIWI-102894]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545002 | Entrepreneurship Research | 2 SWS | Seminar / 🗣 | Terzidis |
| **Exams** | | | | | |
| ST 2023 | 7900052 | Entrepreneurship Research | | | Terzidis |

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The performance review is done via a so called other methods of performance review (term paper) (alternative exam assessment). The final grade is a result from both, the grade of the term paper and its presentation, as well as active participation during the seminar.

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The topics will be prepared in groups. The presentation of the results is done during a a block period seminar at the end of the semester. Students have to be present all day long during the seminar.

*Below you will find excerpts from events related to this course:*

## V Entrepreneurship Research

2545002, SS 2023, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
**Content**

The students independently develop a topic from entrepreneurship research in an international setting as a tandem with a partner. At first, there will be an introduction to the methodologies used such as systematic literature review, design science, qualitative and quantitative data analysis and more. As part of a written elaboration, the seminar topic must be presented scientifically on 15-20 pages. The results of the seminar paper will be presented in a block event at the end of the semester (20 min + 10 min open discussion).

**Learning Objectives**

As part of the written elaboration, the basics of independent scientific work (literature research, argumentation + discussion, citing literature sources, application of qualitative, quantitative and simulative methods) are trained. The skills acquired in the seminar are used to prepare for a potential master thesis. The course is therefore particularly aimed at students who want to write their thesis at the Chair for Entrepreneurship and Technology Management.

**Organizational issues**
The dates will be announced.

Registration is via the Wiwi-Portal.

**Literature**
Will be announced in the seminar.

# T 7.87 Course: Entrepreneurship Seasonal School [T-WIWI-113151]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500215 | Entrepreneurship Seasonal School | 2 SWS | Block / 🗣 | Weimar, Terzidis |
| **Exams** | | | | | |
| WT 23/24 | 7900146 | Entrepreneurship Seasonal School | | | Terzidis |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment. The grade is composed of the presentation and the written elaboration. Details on the design of the examination will be announced in the course.

**Prerequisites**
The Seasonal School is intended for advanced bachelor's and all master's students (all disciplines). Participation in the selection process is a prerequisite.

**Recommendation**
Basic knowledge of business administration, attendance of the lecture Entrepreneurship as well as openness and interest in intercultural exchange are recommended. Solid knowledge of the English language is an advantage.

**Annotation**
Entrepreneurship Seasonal School

*Below you will find excerpts from events related to this course:*

## V Entrepreneurship Seasonal School

2500215, WS 23/24, 2 SWS, Language: English, Open in study portal

**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.

# T 7.88 Course: Environmental and Resource Policy [T-WIWI-102616]

**Responsible:** Rainer Walz
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101468 - Environmental Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4 | Grade to a third | Each summer term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2560548 | Environmental and Ressource Policy | 2 SWS | Lecture / Practice | Walz |
| **Exams** | | | | | |
| ST 2023 | 7900277 | Environmental and Resource Policy | | | Mitusch, Walz |

**Competence Certificate**
See German version

**Recommendation**
It is recommended to already have knowledge in the area of industrial organization and economic policy. This knowledge may be acquired in the courses*Introduction to Industrial Organization* [2520371] and*Economic Policy*[2560280].

*Below you will find excerpts from events related to this course:*

## V Environmental and Ressource Policy

2560548, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture / Practice (VÜ)**

**Literature**
**Weiterführende Literatur:**

Michaelis, P.: Ökonomische Instrumente in der Umweltpolitik. Eine anwendungsorientierte Einführung, Heidelberg
OECD: Environmental Performance Review Germany, Paris

# T 7.89 Course: Environmental Economics and Sustainability [T-WIWI-102615]

**Responsible:** Prof. Dr. Rainer Walz
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101468 - Environmental Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each winter term | 2 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2521547 | Umweltökonomik und Nachhaltigkeit (mit Übung) | 2 SWS | Lecture / Practice | Walz |
| **Exams** | | | | | |
| ST 2023 | 7900273 | Environmental Economics and Sustainability | | | Mitusch |

**Competence Certificate**
See German version

**Prerequisites**
None

**Recommendation**
It is recommended to already have knowledge in the area of macro- and microeconomics. This knowledge may be acquired in the courses *Economics I: Microeconomics* [2600012] and *Economics II: Macroeconomics* [2600014].

# T 7.90 Course: Environmental Law [T-BGU-111102]

**Responsible:** Dr. Urich Smeddinck
**Organisation:** KIT Department of Civil Engineering, Geo and Environmental Sciences
**Part of:** M-WIWI-101468 - Environmental Economics

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|---|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each winter term | 1 terms | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 6111177 | Environmental Law | | Lecture / 🗣 | Smeddinck |
| **Exams** | | | | | |
| WT 23/24 | 8262111102_1 | Environmental Law | | | Smeddinck |

Legend: 📱 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Written exam with 120 min

**Prerequisites**
None

**Annotation**
None

# T 7.91 Course: European and International Law [T-INFO-101312]

**Responsible:** Ulf Brühann
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101217 - Public Business Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 24666 | Europäisches und Internationales Recht | 2 SWS | Lecture / 🗣 | Brühann |
| **Exams** | | | | | |
| ST 2023 | 7500084 | European and International Law | | | Dreier |
| WT 23/24 | 7500048 | European and International Law | | | Zufall |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

# T 7.92 Course: Experimental Design [T-WIWI-111395]

**Responsible:** Prof. Dr. Benjamin Scheibehenne
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105714 - Consumer Research

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|---|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each term | 1 terms | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500044 | Experimental Design | | Others / 🗣 | Seidler |
| WT 23/24 | 2540603 | Experimental Design | 2 SWS | Others / 🗣 | Seidler |
| **Exams** | | | | | |
| ST 2023 | 7900292 | Experimental Design | | | Scheibehenne |

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment. Details will be announced at the beginning of the course.

**Annotation**
The course provides an overview of important methods of empirical research. Students learn basic theories and methods that are relevant in planning, conducting and evaluating experiments. They learn to analyze, critique, and independently develop experimental designs. The course covers, for example, the development of a research question, formulation of scientific hypotheses, sample selection, calculation of statistical power, the difference between correlative and causal relationships, and the relevance of experimental research to test the latter.

Exemplary studies from decision research are analyzed and discussed with respect to experimental design.

The workload of the course is 4.5 ECTS. This consists of exercises, smaller presentations by the students during the semester, as well as the preparation of the examination at the end of the semester.

The number of participants is limited. Places are allocated via the Wiwi-Portal. Course language is German.

# T 7.93 Course: Experimental Economics [T-WIWI-102614]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101446 - Market Engineering
M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-101505 - Experimental Economics
M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540489 | Experimental Economics | 2 SWS | Lecture / | Knierim |
| WT 23/24 | 2540493 | Übung zu Experimental Economics | 1 SWS | Practice / | Greif-Winzrieth, Knierim |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 min).

By successful completion of 70% of the maximum number of points in the exercise(s) a bonus can be obtained.

If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4). The exact criteria for the award of a bonus will be announced at the beginning of the lecture.

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Experimental Economics

2540489, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Literature**

- Strategische Spiele; S. Berninghaus, K.-M. Ehrhart, W. Güth; Springer Verlag, 2. Aufl. 2006.
- Handbook of Experimental Economics; J. Kagel, A. Roth; Princeton University Press, 1995.
- Experiments in Economics; J.D. Hey; Blackwell Publishers, 1991.
- Experimental Economics; D.D. Davis, C.A. Holt; Princeton University Press, 1993.
- Experimental Methods: A Primer for Economists; D. Friedman, S. Sunder; Cambridge University Press, 1994.

# T 7.94 Course: Extraordinary Additional Course in the Module Cross-Functional Management Accounting [T-WIWI-108651]

**Responsible:** Prof. Dr. Marcus Wouters
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101510 - Cross-Functional Management Accounting

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each term | 1 |

**Competence Certificate**
The assessment depends on which extraordinary course becomes part of the module "Cross-Functional Management Accounting".

.

**Prerequisites**
None

**Annotation**
The pupose of this placeholder is to make it possible zu include an extraordinary course in the module "Cross-Functional Management Accounting". Proposals for specific courses have to be approved in advance by the module coordinator.

# T 7.95 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-106412 - Computation & Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 4 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2550486 | Facility Location and Strategic Supply Chain Management | 2 SWS | Lecture / 🗣 | Nickel |
| WT 23/24 | 2550487 | Übungen zu Standortplanung und strategisches SCM | 1 SWS | Practice / 🗣 | Hoffmann |
| **Exams** | | | | | |
| ST 2023 | 7900027 | Facility Location and Strategic Supply Chain Management | | | Nickel |
| WT 23/24 | 7900091 | Facility Location and Strategic Supply Chain Management | | | Nickel |

Legend: 🖥 Online, 🌀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 min) according to Section 4 (2), 1 of the examination regulation.
The exam takes place in every semester.
Prerequisite for admission to examination is the succesful completion of the online assessments.

**Prerequisites**
Prerequisite for admission to examination is the succesful completion of the online assessments.

**Recommendation**
None

**Annotation**
The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

*Below you will find excerpts from events related to this course:*

## V Facility Location and Strategic Supply Chain Management

2550486, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**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:**


- Daskin: Network and Discrete Location: Models, Algorithms, and Applications, Wiley, 1995
- Domschke, Drexl: Logistik: Standorte, 4. Auflage, Oldenbourg, 1996
- Francis, McGinnis, White: Facility Layout and Location: An Analytical Approach, 2nd Edition, Prentice Hall, 1992
- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
- Thonemann: Operations Management - Konzepte, Methoden und Anwendungen, Pearson Studium, 2005

# T 7.96 Course: Financial Analysis [T-WIWI-102900]

**Responsible:** Dr. Torsten Luedecke
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2530205 | Financial Analysis | 2 SWS | Lecture / | Luedecke |
| ST 2023 | 2530206 | Übungen zu Financial Analysis | 2 SWS | Practice / | Luedecke |
| **Exams** | | | | | |
| ST 2023 | 7900075 | Financial Analysis | | | Luedecke |
| WT 23/24 | 7900059 | Financial Analysis | | | Ruckes, Luedecke |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
See German version.

**Prerequisites**
None

**Recommendation**
Basic knowledge in corporate finance, accounting, and valuation is required.

*Below you will find excerpts from events related to this course:*

## V Financial Analysis

2530205, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Literature**


- Alexander, D. and C. Nobes (2017): Financial Accounting – An International Introduction, 6th ed., Pearson.
- Penman, S.H. (2013): Financial Statement Analysis and Security Valuation, 5th ed., McGraw Hill.

# T 7.97 Course: Financial Econometrics [T-WIWI-103064]

**Responsible:** Prof. Dr. Melanie Schienle
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2520022 | Financial Econometrics I | 2 SWS | Lecture / | Schienle, Buse |
| WT 23/24 | 2520023 | Übungen zu Financial Econometrics I | 2 SWS | Practice / | Schienle, Buse |
| **Exams** | | | | | |
| ST 2023 | 7900223 | Financial Econometrics | | | Schienle |
| WT 23/24 | 7900123 | Financial Econometrics II | | | Schienle |
| WT 23/24 | 7900126 | Financial Econometrics | | | Schienle |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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:*

## V Financial Econometrics I

2520022, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Learning objectives:**

The student

- shows a broad knowledge of fincancial 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**

Taylor, S. J. (2005): "Asset Price Dynamics, Volatility, and Prediction", Princeton University Press.

Tsay, R. S. (2005): "Analysis of Financial Time Series: Financial Econometrics", Wiley, 2nd edition.

Cochrane, J. H. (2005): "Asset Pricing", revised edition, Princeton University Press.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay (1997): "The Econometrics of Financial Markets", Princeton University Press.

Hamilton, J. D. (1994): "Time Series Analysis", Princeton University Press.

Additional literature will be discussed in the lecture.

# T 7.98 Course: Financial Econometrics II [T-WIWI-110939]

**Responsible:** Prof. Dr. Melanie Schienle
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2521302 | Financial Econometrics II | 2 SWS | Lecture / | Schienle, Buse |
| ST 2023 | 2521303 | Übung zu Financial Econometrics II | 1 SWS | Practice / | Buse, Schienle |
| **Exams** | | | | | |
| ST 2023 | 7900081 | Financial Econometrics II | | | Schienle |

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.

# T 7.99 Course: Financial Intermediation [T-WIWI-102623]

**Responsible:** Prof. Dr. Martin Ruckes
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2
M-WIWI-101502 - Economic Theory and its Application in Finance

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2530232 | Financial Intermediation | 2 SWS | Lecture / 🗣 | Ruckes |
| WT 23/24 | 2530233 | Übung zu Finanzintermediation | 1 SWS | Practice | Ruckes, Benz |
| **Exams** | | | | | |
| ST 2023 | 7900078 | Financial Intermediation | | | Ruckes |
| WT 23/24 | 7900063 | Financial Intermediation | | | Ruckes |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.

The exam is offered each semester.

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Financial Intermediation

2530232, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Organizational issues**
Terminankündigungen des Instituts beachten

**Literature**
**Weiterführende Literatur:**

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6. Auflage, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2. Auflage, MIT Press.

# T 7.100 Course: Firm creation in IT security [T-WIWI-110374]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

**Competence Certificate**
Alternative exam assessment. The grade consists of the presentation and the written elaboration.

**Prerequisites**
None

# T 7.101 Course: Fundamentals for Financial -Quant and -Machine Learning Research [T-WIWI-111846]

**Responsible:** Prof. Dr. Maxim Ulrich
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105894 - Foundations for Advanced Financial -Quant and -Machine Learning Research

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 9 | Grade to a third | see Annotations | 1 |

**Competence Certificate**
Due to the professor's research sabbatical, the BSc module "Financial Data Science" and MSc module "Foundations for Advanced Financial -Quant and -Machine Learning Research" and the MSc module "Advanced Machine Learning and Data Science" along with the respective examinations will not be offered in SS2023. Bachelor and Master thesis projects are not affected and will be supervised.

The module examination is an alternative exam assessment with a maximum score of 100 points to be achieved. These points are distributed over 4 worksheets to be submitted during the semester. The worksheets cover the respective material of the module and are handed out, worked on and assessed in lecture weeks 3 (10 points), 6 (20 points), 9 (30 points) and 12 (40 points).

The module-wide exam (all 4 worksheets) must be taken in the same semester.

The worksheets are a mixture of analytical tasks and programming tasks with financial data.

**Recommendation**

- Strongly recommended to have good knowledge in financial econometrics (MLE, OLS, GLS, ARMA-GARCH), mathematics (differential equations, difference equations and optimization), investments (CAPM, factor models), asset pricing (SDF, SDF pricing), derivatives (Black-Scholes, risk-neutral pricing), and programming of statistical concepts (Java or R or Python or Matlab or C or ...)
- Strongly recommended to have a strong interest for interdisciplinary research work in statistics, programming, applied math and financial economics.
- Students lacking the prior knowledge might find the resources of the Chair helpful: www.youtube.com/c/cram-kit.

**Annotation**
The course is offered every second year.

# T 7.102 Course: Fundamentals of National and International Group Taxation [T-WIWI-111304]

**Responsible:** Prof. Dr. Berthold Wigger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101511 - Advanced Topics in Public Finance

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2560133 | Fundamentals of National and International Group Taxation | 3 SWS | Lecture / 🗣 | Wigger, Gutekunst |
| **Exams** | | | | | |
| ST 2023 | 790kobe | Fundamentals of National and International Group Taxation | | | Wigger |
| WT 23/24 | 790kobe | Fundamentals of National and International Group Taxation | | | Wigger |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

**Prerequisites**
None

**Recommendation**
It is recommended to attend the course “Basics of German Company Tax Law and Tax Planning” beforehand.

# T 7.103 Course: Global Manufacturing [T-WIWI-112103]

**Responsible:** Dr. Henning Sasse
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101412 - Industrial Production III
M-WIWI-101471 - Industrial Production II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581956 | Global Manufacturing | 2 SWS | Lecture / | Sasse |
| **Exams** | | | | | |
| ST 2023 | 7981956 | Global Manufacturing | | | Schultmann |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The lecture will be held for the first time in the winter semester 2022/23.

*Below you will find excerpts from events related to this course:*

## V Global Manufacturing

2581956, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**

- Fundamentals of international business
- Forms of international cooperation and value creation
- Site selection
- Cost driven internationalization and site selection
- Sales and customer driven internationalization and site selection
- Challenges, risks and risk mitigation
- Management of international production sites
- Types and case studies of international production

**Organizational issues**
Blockveranstaltung, siehe Homepage

**Literature**
Wird in der Veranstaltung bekannt gegeben.

# T 7.104 Course: Global Optimization I [T-WIWI-102726]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-106412 - Computation & Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550134 | Global Optimization I | 2 SWS | Lecture / 🗣 | Stein |
| **Exams** | | | | | |
| ST 2023 | 7900205_SS2023_HK | Global Optimization I | | | Stein |
| WT 23/24 | 7900004_WS2324_NK | Global Optimization I | | | Stein |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO). The successful completion of the exercises is required for admission to the written exam.

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-103638 - Global Optimization I and II must not have been started.

**Recommendation**
None

**Annotation**
Part I and II of the lecture are held consecutively in the **same** semester.

*Below you will find excerpts from events related to this course:*

## V Global Optimization I

2550134, SS 2023, 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**
O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

**Weiterführende Literatur:**

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

# T 7.105 Course: Global Optimization I and II [T-WIWI-103638]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 9 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550134 | Global Optimization I | 2 SWS | Lecture / 🗣 | Stein |
| ST 2023 | 2550135 | Exercise to Global Optimization I and II | 2 SWS | Practice / 🗣 | Stein, Beck |
| ST 2023 | 2550136 | Global Optimization II | 2 SWS | Lecture / 🗣 | Stein |
| **Exams** | | | | | |
| ST 2023 | 7900207_SS2023_HK | Global Optimization I and II | | | Stein |
| WT 23/24 | 7900006_WS2324_NK | Global Optimization I and II | | | Stein |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-102726 - Global Optimization I must not have been started.
2. The course T-WIWI-102727 - Global Optimization II must not have been started.

**Recommendation**
None

**Annotation**
Part I and II of the lecture are held consecutively in the **same** semester.

*Below you will find excerpts from events related to this course:*

## V Global Optimization I

2550134, SS 2023, 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**
O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

**Weiterführende Literatur:**

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

## V Global Optimization II

2550136, SS 2023, 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 nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

The treatment of *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

- knows and understands the fundamentals of deterministic global optimization in the nonconvex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the nonconvex case in practice.

**Literature**
O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

**Weiterführende Literatur:**

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

# T 7.106 Course: Global Optimization II [T-WIWI-102727]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550136 | Global Optimization II | 2 SWS | Lecture / 🗣 | Stein |
| **Exams** | | | | | |
| ST 2023 | 7900206_SS2023_HK | Global Optimization II | | | Stein |
| WT 23/24 | 7900005_WS2324_NK | Global Optimization II | | | Stein |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-103638 - Global Optimization I and II must not have been started.

**Annotation**
Part I and II of the lecture are held consecutively in the **same** semester.

*Below you will find excerpts from events related to this course:*

## V Global Optimization II

2550136, SS 2023, 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 nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz optimization

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

The treatment of *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

- knows and understands the fundamentals of deterministic global optimization in the nonconvex case,
- is able to choose, design and apply modern techniques of deterministic global optimization in the nonconvex case in practice.

**Literature**
O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

**Weiterführende Literatur:**

- W. Alt, Numerische Verfahren der konvexen, nichtglatten Optimierung, Teubner, 2004
- C.A. Floudas, Deterministic Global Optimization, Kluwer, 2000
- R. Horst, H. Tuy, Global Optimization, Springer, 1996
- A. Neumaier, Interval Methods for Systems of Equations, Cambridge University Press, 1990

# T 7.107 Course: Graph Theory and Advanced Location Models [T-WIWI-102723]

**Responsible:** Prof. Dr. Stefan Nickel
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500007 | | 1,5 SWS | Practice / 🏵 | Bakker |
| WT 23/24 | 2550484 | Graph Theory and Advanced Location Models | 3 SWS | Lecture / 🏵 | Nickel |
| WT 23/24 | 2550485 | | 1 SWS | Practice | Dunke, Bindewald |
| **Exams** | | | | | |
| WT 23/24 | 7900033 | Graph Theory and Advanced Location Models | | | Nickel |

Legend: 🖥 Online, 🏵 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

**Prerequisites**
None

**Recommendation**
Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

**Annotation**
The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

*Below you will find excerpts from events related to this course:*

## V Graph Theory and Advanced Location Models

2550484, WS 23/24, 3 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
Graph Theory is an important part of Discrete Mathematics. A special attraction is in its clearness and variety of proof techniques. Topic of the first part “Graph Theory” is the mediation of basic graph theoretical concepts and algorithms, which are deployed in many areas of operations research. In focus is the modeling of different problems with graph theoretical methods und their solutions with efficient algorithms. Significant focal points are shortest paths, flows, matchings, colorings and matroids. A variety of application areas of location theory has attracted increasing research interest within the last decades, because location decisions are a critical factor in strategic planning. In the second part “Advanced Location Models”, some current research questions of modern industrial location theory are discussed after a short introduction. Thereby, practical models and suitable solution methods for location problems in general networks are presented. The lecture goes into details about pareto solutions in networks, ordered median problems, covering problems and allocation problems.

**Literature**
• Jungnickel: Graphs, Networks and Algorithms, 2nd edition, Springer, 2005
• Diestel: Graph Theory, 3rd edition, Springer, 2006
• Bondy, Murty: Graph Theory, Springer, 2008
• Nickel, Puerto: Location Theory, Springer, 2005
• Drezner: Facility Location – Applications and Theory, 2nd edition, Springer, 2005

# T 7.108 Course: Growth and Development [T-WIWI-112816]

**Responsible:** Prof. Dr. Ingrid Ott
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101478 - Innovation and Growth
M-WIWI-101496 - Growth and Agglomeration

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2561503 | Growth and Development | 2 SWS | Lecture / 🗣 | Ott |
| WT 23/24 | 2561504 | Exercise for Growth and Development | 1 SWS | Practice / 🗣 | Völkle, Ott, Zoroglu |
| **Exams** | | | | | |
| ST 2023 | 7900105 | Growth and Development | | | Ott |

Legend: 💻 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as an open-book examination or as a 60-minute written examination.

**Prerequisites**
None

**Recommendation**
Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

*Below you will find excerpts from events related to this course:*

## V Growth and Development

2561503, WS 23/24, 2 SWS, Language: German/English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
This course is intended as an introduction to the field of advanced macroeconomics with a special focus on economic growth. Lectures aim to deal with the theoretical foundations of exogenous and endogenous growth models. The importance of growth for nations and discussion of some (well-known) growth theories together with the role of innovation, human capital and environment will therefore be primary focuses of this course.

**Learning objective:**

Students shall be given the ability to understand, analyze and evaluate selected models of endogenous growth theory.

**Course content:**

- Intertemporal consumption decision
- Growth models with exogenous saving rates: Solow
- Growth models with endogenous saving rates: Ramsey
- Growth and environmental resources
- Basic models of endogenous growth
- Human capital and economic growth
- Modelling of technological progress
- Diversity Models
- Schumpeterian growth
- Directional technological progress
- Diffusion of technologies

**Recommendations:**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

**Workload:**

The total workload for this course is approximately 135.0 hours. For further information see German version.

**Exam description:**

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

**Literature**
Auszug:


- Acemoglu, D. (2009): Introduction to modern economic growth. Princeton University Press, New Jersey.
- Aghion, P., Howitt, P. (2009): Economics of growth, MIT-Press, Cambridge/MA.
- Barro, R.J., Sala-I-Martin, X. (2003): Economic Growth. MIT-Press, Cambridge/MA.
- Sydsaeter, K., Hammond, P. (2008): Essential mathematics for economic analysis. Prentice Hall International, Harlow.
- Sydsæter, K., Hammond, P., Seierstad, A., Strom, A., (2008): Further Mathematics for Economic Analysis, Second Edition, Pearson Education Limited, Essex.

# T 7.109 Course: Heat Economy [T-WIWI-102695]

**Responsible:** Prof. Dr. Wolf Fichtner
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101452 - Energy Economics and Technology

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2581001 | Heat Economy | 2 SWS | Lecture / 🗣 | Fichtner |
| **Exams** | | | | | |
| ST 2023 | 7981001 | Heat Economy | | | Fichtner |
| WT 23/24 | 7981001 | Heat Economy | | | Fichtner |

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written (60 minutes) or oral exam (30 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**
None.

**Recommendation**
None

**Annotation**
See German version.

*Below you will find excerpts from events related to this course:*

## V Heat Economy

2581001, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Organizational issues**
Block, Seminarraum Standort West - siehe Institutsaushang

# T 7.110 Course: Human Factors in Security and Privacy [T-WIWI-109270]

**Responsible:** Prof. Dr. Melanie Volkamer
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-106413 - Digitalization & Society

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | see Annotations | 3 |

**Competence Certificate**
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation. Only those who have successfully participated in the exercises and the lecture will be admitted to the examination.

The exam takes place every semester and can be repeated at every regular examination date.

**Prerequisites**
Both need to be done:

- Pass Quiz on Paper for Graphical Passwords
- Presentation of Results Exercise 2

+ 9 of the following 11 need to be done:

- Submit ILIAS certificate until Oct 24
- Pass Quiz on InfoSec Lecture
- Active participation exercise 1 Part 1 - Evaluation and analyses methods
- Pass Quiz Paper Discussion 1 - User Behaviour and motivation theories
- Active participation exercise 1 Part 2
- Pass Quiz Paper Discussion 2 - User Behaviour and motivation theories
- Pass Quiz Paper Discussion 3 - Security Awareness
- Active participation exercise 1 Part 3
- Pass Quiz Paper Discussion 4 - Graphical Authentication
- Pass Quiz Paper Discussion 5 - Shoulder Surfing Authentication
- Active participation exercise 2

**Recommendation**
The prior attendance of the lecture "Information Security" is strongly recommended.

**Annotation**
The lecture will not be offered in winter semester 2020/21.

Some lectures are in English, some in German.

# T 7.111 Course: Incentives in Organizations [T-WIWI-105781]

**Responsible:** Prof. Dr. Petra Nieken
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-101500 - Microeconomic Theory
M-WIWI-101505 - Experimental Economics
M-WIWI-101510 - Cross-Functional Management Accounting
M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations
M-WIWI-106410 - Economics & Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2573003 | Incentives in Organizations | 2 SWS | Lecture / 🗣 | Nieken |
| ST 2023 | 2573004 | Übung zu Incentives in Organizations | 2 SWS | Practice / 🗣 | Nieken, Mitarbeiter, Walther, Gorny |
| **Exams** | | | | | |
| ST 2023 | 7900132 | Incentives in Organizations | | | Nieken |
| WT 23/24 | 7900201 | Incentives in Organizations | | | Nieken |

Legend: 💻 Online, 🗣💻 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of this course is a written examination (60 min). The exam takesplace in every semester. Re-examinations are offered at every ordinaryexamination date. In case of a small number of registrations, we might offer an oral exam instead of a written exam.

**Prerequisites**
None

**Recommendation**
Knowledge of microeconomics, game theory, and statistics is assumed.

*Below you will find excerpts from events related to this course:*

## V Incentives in Organizations

2573003, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The students acquire profound knowledge about the design and the impact of different incentive and compensation systems. Topics covered are, for instance, performance based compensation, team work, intrinsic motivation, multitasking, and subjective performance evaluations. We will use microeconomic or behavioral models as well as empirical data to analyze incentive systems. We will investigate several widely used compensation schemes and their relationship with corporate strategy. Students will learn to develop practical implications which are based on the acquired knowledge of this course.

**Aim**
The student

- develops a strategic understanding about incentives systems and how they work.
- analyzes models from personnel economics.
- understands how econometric methods can be used to analyze performance and compensation data.
- knows incentive schemes that are used in companies and is able to evaluate them critically.
- can develop practical implications which are based on theoretical models and empirical data from companies.
- understands the challenges of managing incentive and compensation systems and their relationship with corporate strategy.

**Workload**
The total workload for this course is: approximately 135 hours.

Lecture: 32 hours

Preparation of lecture: 52 hours

Exam preparation: 51 hours

**Literature**
Slides, Additional case studies and research papers will be announced in the lecture.

Literature (complementary):

Managerial Economics and Organizantional Architecture, Brickley / Smith / Zimmerman, McGraw-Hill Education, 2015

Behavioral Game Theory, Camerer, Russel Sage Foundation, 2003

Personnel Economics in Practice, Lazear / Gibbs, Wiley, 2014

Introduction to Econometrics, Wooldridge, Andover, 2014

Econometric Analysis of Cross Section and Panel Data, Wooldridge, MIT Press, 2010

# T 7.112 Course: Information Service Engineering [T-WIWI-106423]

**Responsible:** Prof. Dr. Harald Sack
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-105880 - Informatics & Machine Learning

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511606 | Information Service Engineering | 2 SWS | Lecture / 🗣 | Sack, Tan, Vafaie |
| ST 2023 | 2511607 | Exercises to Information Service Engineering | 1 SWS | Practice / 🗣 | Sack |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_ISE_B3 | Information Service Engineering (Registration until 17 July 2023) | | | Sack |
| WT 23/24 | 79AIFB_ISE_B2 | Information Service Engineering | | | Sack |

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Information Service Engineering

2511606, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
- The Art of Understanding

- Data, Information, Knowledge and Wisdom
- Syntax, Semantics, Context, Pragmatics, and Experience

- Natural Language Processing

- NLP and Basic Linguistic Knowledge
- NLP Applications, Techniques & Challenges
- Evaluation, Precision and Recall
- Regular Expressions and Automata
- Tokenization
- Language Model and N-Grams
- Part-of-Speech Tagging
- Distributional Semantics & Word Embeddings

- Knowledge Graphs

- Knowledge Representations and Ontologies
- Resource Description Framework (RDF) as simple Data Model
- Creating new Models with RDFS
- Querying RDF(S) with SPARQL
- More Expressivity via Web Ontology Language (OWL)
- From Linked Data to Knowledge Graphs
- Wikipedia, DBpedia, and Wikidata
- Knowledge Graph Quality Assurance with SHACL

- Basic Machine Learning

- Machine Learning Fundamentals
- Evaluation and Generalization Problems
- Linear Regression
- Decision Trees
- Unsupervised Learning
- Neural Networks and Deep Learning

- ISE Applications

- Knowledge Graph Embeddings
- Knowledge Graph Completion
- Knowledge Graphs and Large Language Models
- Semantic Search
- Exploratory Search and Recommender Systems

**Learning objectives:**

- The students know the fundamentals and measures of information theory and are able to apply those in the context of Information Service Engineering.
- The students have basic skills of natural language processing and are enabled to apply natural language processing technology to solve and evaluate simple text analysis tasks.
- The students have fundamental skills of knowledge representation with ontologies as well as basic knowledge of Semantic Web and Linked Data technologies. The students are able to apply these skills for simple representation and analysis tasks.
- The students have fundamental skills of information retrieval and are enabled to conduct and to evaluate simple information retrieval tasks.
- The students apply their skills of natural language processing, Linked Data engineering, and Information Retrieval to conduct and evaluate simple knowledge mining tasks.
- The students know the fundamentals of recommender systems as well as of semantic and exploratory search.

**Literature**


- D. Jurafsky, J.H. Martin, Speech and Language Processing, 2nd ed. Pearson Int., 2009.
- A. Hogan, The Web of Data, Springer, 2020.
- G. Rebala, A. Ravi, S. Churiwala, An Introduction to Machine Learning, Springer, 2019.

# T 7.113 Course: Innovation Lab [T-ETIT-110291]

**Responsible:** Prof. Dr.-Ing. Sören Hohmann
Prof. Dr. Werner Nahm
Prof. Dr.-Ing. Eric Sax
Prof. Dr. Wilhelm Stork
Prof. Dr.-Ing. Thomas Zwick

**Organisation:** KIT Department of Electrical Engineering and Information Technology

**Part of:** M-WIWI-105011 - Student Innovation Lab (SIL) 2

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|---|---|---|---|---|---|
| Examination of another type | 9 | Grade to a third | Each winter term | 2 terms | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2303192 | Innovation Lab | 2 SWS | Project / 🗣 | Hohmann, Zwick, Sax, Stork, Nahm |
| **Exams** | | | | | |
| WT 23/24 | 7303192 | Innovation Lab | | | Hohmann, Zwick, Stork, Sax, Nahm |

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
see module description

# T 7.114 Course: Innovation Management: Concepts, Strategies and Methods [T-WIWI-102893]

**Responsible:** Prof. Dr. Marion Weissenberger-Eibl
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-101507 - Innovation Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545100 | Innovation Management: Concepts, Strategies and Methods | 2 SWS | Lecture / | Weissenberger-Eibl |
| **Exams** | | | | | |
| ST 2023 | 7900144 | Innovation Management: Concepts, Strategies and Methods | | | Weissenberger-Eibl |
| WT 23/24 | 7900145 | Innovation Management: Concepts, Strategies and Methods | | | Weissenberger-Eibl |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes). The exam takes place in every summer semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Innovation Management: Concepts, Strategies and Methods

2545100, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
The course ‘Innovation Management: Concepts, Strategies and Methods’ offers scientific concepts which facilitate the understanding of the different phases of the innovation process and resulting strategies and appropriate methodologies suitable for application. The concepts refer to the entire innovation process so that an integrated perspective is made possible. This is the basis for the teaching of strategies and methods which fulfil the diverse demands of the complex innovation process. The course focuses particularly on the creation of interfaces between departments and between various actors in a company’s environment and the organisation of a company’s internal procedures. In this context a basic understanding of knowledge and communication is taught in addition to the specific characteristics of the respective actors. Subsequently methods are shown which are suitable for the profitable and innovation-led implementation of integrated knowledge.

Aim: Students develop a differentiated understanding of the different phases and concepts of the innovation process, different strategies and methods in innovation management.

**Organizational issues**
**Wichtig!** Bitte treten Sie dem **ILIAS-Kurs zur Vorlesung** bei, damit wir Ihnen weitere Informationen mitteilen können.

**Literature**
Eine ausführliche Literaturliste wird mit den Vorlesungsunterlagen zur Verfügung gestellt.

Eine Einführung bei: Vahs,D./Brem,A. (2013): Innovationsmanagement. Von der Idee zur erfolgreichen Vermarktung, 4. Auflage, Stuttgart 2013.

# T 7.115 Course: Innovation Theory and Policy [T-WIWI-102840]

**Responsible:** Prof. Dr. Ingrid Ott
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106408 - Digital Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2560236 | Economics of Innovation | 2 SWS | Lecture / 🗣 | Ott |
| ST 2023 | 2560237 | Exercises of Economics of Innovation | 1 SWS | Practice / 🗣 | Ott, Mirzoyan |
| **Exams** | | | | | |
| ST 2023 | 7900107 | Economics of Innovation | | | Ott |
| WT 23/24 | 7900077 | Economics of Innovation | | | Ott |

Legend: 💻 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-112822 - Economics of Innovation must not have been started.

**Recommendation**
Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

*Below you will find excerpts from events related to this course:*

## V Economics of Innovation

2560236, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Learning objectives:**

Students shall be given the ability to

- identify the importance of alternative incentive mechanisms for the emergence and dissemination of innovations
- understand the relationships between market structure and the development of innovation
- explain, in which situations market interventions by the state, for example taxes and subsidies, can be legitimized, and evaluate them in the light of economic welfare

**Course content:**

**The course covers the following topics:**

- Incentives for the emergence of innovations
- Patents
- Diffusion
- Impact of technological progress
- Innovation Policy

**Recommendations:**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. In addition, an interest in quantitative-mathematical modeling is required.

**Workload:**

The total workload for this course is approximately 135.0 hours. For further information see German version.

**Exam description:**

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Students will be given the opportunity of writing and presenting a short paper during the lecture time to achieve a bonus on the exam grade. If the mandatory credit point exam is passed, the awarded bonus points will be added to the regular exam points. A deterioration is not possible by definition, and a grade does not necessarily improve, but is very likely to (not every additional point improves the total number of points, since a grade can not become better than 1). The voluntary elaboration of such a paper can not countervail a fail in the exam.

**Literature**
Auszug:


- Aghion, P., Howitt, P. (2009), The Economics of Growth, MIT Press, Cambridge MA.
- de la Fuente, A. (2000), Mathematical Methods and Models for Economists. Cambridge University Press, Cambridge, UK.
- Klodt, H. (1995), Grundlagen der Forschungs- und Technologiepolitik. Vahlen, München.
- Linde, R. (2000), Allokation, Wettbewerb, Verteilung - Theorie, UNIBUCH Verlag, Lüneburg.
- Ruttan, V. W. (2001), Technology, Growth, and Development. Oxford University Press, Oxford.
- Scotchmer, S. (2004), Incentives and Innovation, MIT Press.
- Tirole, Jean (1988), The Theory of Industrial Organization, MIT Press, Cambridge MA.

# T 7.116 Course: Intelligent Agent Architectures [T-WIWI-111267]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540525 | Intelligent Agent Architectures | 2 SWS | Lecture / 🗣 | Geyer-Schulz |
| WT 23/24 | 2540526 | Übung zu Intelligent Agent Architectures | 1 SWS | Practice / 🗣 | Geyer-Schulz, Schweizer |
| **Exams** | | | | | |
| ST 2023 | 7900069 | Intelligent Agent Architectures (Nachklausur WS 2022/2023) | | | Geyer-Schulz |
| WT 23/24 | 79011480 | Intelligent Agent Architectures (WS 2023/2024) | | | Geyer-Schulz |

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

**Prerequisites**
None

**Recommendation**
It is recommended to additionally review the Bachelor-level lecture "Customer Relationship Management" from the module "CRM and Servicemanagement".

*Below you will find excerpts from events related to this course:*

## V Intelligent Agent Architectures

2540525, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Course content:**

The lecture is structured in three parts:

In the first part the methods used for architecture design are introduced (system analysis, UML, formal specification of interfaces, software and analysis patterns, and the separation in conceptual and IT-architectures. The second part is dedicated to learning architectures and machine learning methods. The third part presents examples of learning CRM-Architectures.

**Workload:**

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

**Sum: 135h 00m**

**Learning Goals:**

Students have special knowledge of software architectures and of the methods which are used in their development (Systems analysis, formal methods for the specification of interfaces and algebraic semantic, UML, and, last but not least, the mapping of conceptual architectures to IT architectures.

Students know important architectural patterns and they can – based on their CRM knowledge – combine these patterns for innovative CRM applications.

**Assessment:**

The assessment consists of a written exam of 1-hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

The course is considered successfully taken if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from exercise work will be added.

**Grade: Minimum points**

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

**Literature**


- P. Clements *u. a.*, *Documenting Software Architectures. Views and Beyond*. Upper Saddle River: Addison-Wesley, 2011.
- Fowler, *Patterns of Enterprise Application Architecture*. Amsterdam: Addison-Wesley Longman, 2002.
- S. Russell und P. Norvig, *Artificial Intelligence: A Modern Approach*, 3. Aufl. Harlow Essex England: Pearson New International Edition, 2014.
- V. N. Vapnik, *The Nature of Statistical Learning Theory*. New York: Springer, 1995.

# T 7.117 Course: Intelligent Agents and Decision Theory [T-WIWI-110915]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540537 | Intelligent Agents and Decision Theory | 2 SWS | Lecture | Geyer-Schulz |
| ST 2023 | 2540538 | Übung zu Intelligent Agents and Decision Theory | 1 SWS | Practice | Schweizer |
| **Exams** | | | | | |
| ST 2023 | 7900306 | Intelligent Agents and Decision Theory | | | Geyer-Schulz |
| WT 23/24 | 7900294 | Intelligent Agents and Decision Theory (Nachklausur SS 2023) | | | Geyer-Schulz |

**Competence Certificate**
Oral (30 minutes) or written examination (60 minutes). The exam is held in each semester and can be repeated at any regular examination date.Details of the grading system and any exam bonus that may be achieved from the practice are announced in the course.

**Prerequisites**
None

**Recommendation**
We assume knowledge in statistics, operations research and microeconomics as taught in the Bachelor program (VWL I, Operations Research I + II, Statistics I + II) and a familiarity with preferably the Python programming language.

**Annotation**
new lecture starting summer semester 2020

*Below you will find excerpts from events related to this course:*

## V Intelligent Agents and Decision Theory

2540537, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**

**Content**
The key assumption of this lecture is that the concept of artificial intelligence is inseparably linked to the economic concept of rationality of agents. We consider different classes of decision problems - decisions under certainty, risk and uncertainty - from an economic, managerial and AI-engineering perspective:

From an economic point of view, we analyze how to act rationally in these situations based on classic utility theory. In this regard, the course also introduces the relevant parts of decision theory for dealing with

- multiple conflicting objectives,
- incomplete, risky and uncertain information about the world,
- assessing utility functions, and
- quantifying the value of information ...

From an engineering perspective, we discuss how to develop practical solutions for these decision problems, using appropriate AI components. We introduce

- a general, agent-based design framework for AI systems,

as well as AI methods from the fields of

- search (for decisions under certainty),
- inference (for decions under risk) and
- learning (for decisions under uncertainty).

Where applicable, the course highlights the theoretical ties of these methods with decision theory.

We conclude with a discussion of ethical and philosophical issues concerning the development and use of AI.

**Learning objectives**

Students are able to design, analyze, implement, and evaluate intelligent agents.

**Lecture Outline**

1. Introduction: Artificial intelligence and the economic concept of rationality
2. Intelligent Agents: A general, agent-based design framework for AI systems
3. Decision under certainty: Assessing utility functions for decisions with multiple objectives
4. Search: Linear programming for decisions under certainty
5. Decisions under risk: The expected utility principle
6. Information systems: Improving economic decisions under risk
7. Inference: Bayesian networks for decisions under risk
8. Information Learning objectives value: When should an agent gather new information?
9. Decisions under uncertainty: Complete lack of information
10. Learning: Statistical learning of bayesian networks
11. Learning: Supervised learning with neural networks
12. Learning: Reinforcement learning
13. Learning: Preference-based reinforcement learning
14. Discussion: Ethical and philosophical issues

Note: This rough outline may be subject to change.

**Literature**
**Basic literature (by lecture):**

1. Russell & Norvig (2016, chapter 1), Bamberg et al. (2019, chapters 1 & 2)
2. Russell & Norvig (2016, chapter 2)
3. Keeney & Raiffa (1993, chapter 3)
4. Nickel et al. (2014, chapter 1) [German], Russell & Norvig (2016, chapter 3)
5. Bamberg et al. (2019, chapter 4), Fishburn (1988)
6. Bamberg et al. (2019, chapter 6)
7. Russell & Norvig (2016, chapters 13, 14, 16)
8. Russell & Norvig (2016, chapter 16), Bamberg et al. (2019, chapter 6)
9. Bamberg et al. (2019, chapter 5)
10. Russell & Norvig (2016, chapter 20)
11. Goodfellow et al. (2016, chapter 6)
12. Sutton & Barto (2018, chapter 3)
13. Wirth et al. (2017)
14. Russell & Norvig (2016, chapter 26)

**Detailed references:**

Bamberg, Coenenberg & Krapp (2019). Betriebswirtschaftliche Entscheidungslehre (16th ed.). Verlag Franz Vahlen GmbH.

Fishburn (1988). Nonlinear preference and utility theory. Baltimore: Johns Hopkins University Press.

Goodfellow, Bengio & Courville (2016). Deep learning. Cambridge: MIT press.

Keeney & Raiffa (1993). Decisions with multiple objectives: preferences and value trade-offs. Cambridge University Press.

Nickel, S., Stein, O., & Waldmann, K.-H. (2014). Operations Research (2nd ed.). Springer Berlin Heidelberg.

Russell & Norvig (2016). Artificial Intelligence: A Modern Approach (3rd Global Edition). Pearson.

Sutton & Barto (2018). Reinforcement learning: An introduction. Cambridge: MIT press.

Wirth, Akrour, Neumann & Fürnkranz (2017). A Survey of Preference-Based Reinforcement Learning Methods. Journal of Machine Learning Research, 18(1), 1–46.

# T 7.118 Course: International Business Development and Sales [T-WIWI-110985]

**Responsible:** Erice Casenave
Prof. Dr. Martin Klarmann
Prof. Dr. Orestis Terzidis

**Organisation:** KIT Department of Economics and Management

**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-105312 - Marketing and Sales Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 6 | Grade to a third | see Annotations | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2572189 | International Business Development and Sales | 4 SWS | Block / 🗣 | Klarmann, Terzidis, Schmitt |

Legend: 📱 Online, 🎛 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Non exam assessment. The grade is based on the presentation, the subsequent discussion and the written elaboration.

**Annotation**
Please note that currently it cannot be guaranteed that the course will take place in the winter term 22/23 . Please contact the Marketing and Sales Research Group for further information.

*Below you will find excerpts from events related to this course:*

## V International Business Development and Sales

2572189, WS 23/24, 4 SWS, Language: English, Open in study portal

**Block (B)**
**On-Site**

**Content**
This course is offered as part of the EUCOR programme in cooperation with EM Strasbourg. Max. 10 students of KIT and max. 10 students of EM Strasbourg will develop a sales presentation in tandems (teams of 2). This is based on the value proposition of a business model.

- An application is required to participate in this event. The application phase usually takes place at the beginning of the lecture period. Further information on the application process can be found on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the start of the lecture period.

Total workload for 6 ECTS: about 180 hours.

# T 7.119 Course: International Finance [T-WIWI-102646]

**Responsible:** Prof. Dr. Marliese Uhrig-Homburg
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101480 - Finance 3
M-WIWI-101483 - Finance 2

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | see Annotations | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2530570 | International Finance | 2 SWS | Lecture / 🗣 | Walter, Uhrig-Homburg |
| **Exams** | | | | | |
| ST 2023 | 7900097 | International Finance | | | Uhrig-Homburg |
| WT 23/24 | 7900052 | International Finance | | | Uhrig-Homburg |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The course is offered as a 14-day or block course.

*Below you will find excerpts from events related to this course:*

## V International Finance

2530570, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Organizational issues**
Kickoff am Mittwoch, 26.04.23, 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:**

- Eiteman, D. et al., Multinational Business Finance, 13. Auflage, 2012.
- Solnik, B. und D. McLeavey, Global Investments, 6. Auflage, 2008.

# T 7.120 Course: Internet Law [T-INFO-101307]

**Responsible:** N.N.
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101215 - Intellectual Property Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 24354 | Internet Law | 2 SWS | Lecture / | Sattler |
| **Exams** | | | | | |
| ST 2023 | 7500057 | Internet Law | | | Dreier, Matz |
| WT 23/24 | 7500060 | Internet Law | | | Matz |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-INFO-108462 - Selected Legal Issues of Internet Law must not have been started.

# T 7.121 Course: Introduction to Bayesian Statistics for Analyzing Data [T-WIWI-110918]

**Responsible:** Prof. Dr. Benjamin Scheibehenne
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-103117 - Data Science: Data-Driven Information Systems

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500016 | Bayesian Statistics for Analyzing Data | | Lecture | Scheibehenne |
| WT 23/24 | 2500025 | Bayesian Statistics for Analyzing Data | 2 SWS | Lecture | Scheibehenne |

**Competence Certificate**
Grades will be based on active participation (50%) and homework assignments (50%).

**Prerequisites**
Participants should already have a basic knowledge of R and standard frequentist statistical tests. Please bring your own Laptop with you as we will be using R for several hands-on examples and exercises during the class. We will mainly work with the book “Statistical Rethinking. A Bayesian Course with Examples in R and Stan” by Richard McElrath. Students are advised to obtain the book before the class starts.

**Annotation**
Due to its interactive nature, the number of participants will be limited.

# T 7.122 Course: Introduction to Sociology [T-GEISTSOZ-112798]

**Responsible:** Prof. Dr. Michael Mäs
**Organisation:** KIT Department of Humanities and Social Sciences
**Part of:** M-WIWI-106413 - Digitalization & Society

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|---|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each term | 1 terms | 1 |

**Self service assignment of supplementary stdues**
This course can be used for self service assignment of grade aquired from the following study providers:

- House of Competence

# T 7.123 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

**Responsible:** Prof. Dr. Steffen Rebennack
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550470 | Introduction to Stochastic Optimization | 2 SWS | Lecture / | Rebennack |
| ST 2023 | 2550471 | Übung zur Einführung in die Stochastische Optimierung | 1 SWS | Practice / | Rebennack, Füllner |
| ST 2023 | 2550474 | Rechnerübung zur Einführung in die Stochastische Optimierung | 2 SWS | Others | Rebennack, Füllner |
| **Exams** | | | | | |
| ST 2023 | 7900311 | Introduction to Stochastic Optimization | | | Rebennack |

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.

# T 7.124 Course: Joint Entrepreneurship Summer School [T-WIWI-109064]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 6 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545021 | Joint Entrepreneurship School | 4 SWS | Seminar / | Kleinn, Terzidis |
| **Exams** | | | | | |
| ST 2023 | 7900346 | Joint Entrepreneurship Summer School | | | Terzidis |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The learning control of the program (Summer School) consists of two parts:
A) **Investor Pitch**:
Based on a presentation (investor pitch) in front of a jury, the insights gained and developed during the course of the event are presented and the business idea presented. Among other things, the presentation performance of the team, the structured content and the logical consistency of the business idea are evaluated. The exact evaluation criteria will be announced in the course.

B) **Written elaboration:**
The second part of the assessment is a written report. The iterative knowledge gain of the entire event is systematically logged and can be further supplemented by the contents of the presentation. The report documents key action steps, applied methods, findings, market analyzes and interviews and prepares them in writing. The exact structure and requirements will be announced in the course.

The grade consists of 50% presentation performance and 50% written preparation.

**Prerequisites**
The Summer School is aimed at master students of KIT. Prerequisite is the participation in the selection process.

**Recommendation**
We recommend basic business knowledge, the lecture Entrepreneurship as well as openness and interest in intercultural exchange. Solid knowledge of the English language is an advantage.

**Annotation**
The working language during the Summer School is English. A one-week stay in China is part of the Summer School.

*Below you will find excerpts from events related to this course:*

## V Joint Entrepreneurship School

2545021, SS 2023, 4 SWS, Language: English, Open in study portal

**Seminar (S)**
**Online**

**Content**
During the Summer School in Shanghai and Karlsruhe, students develop a business model of technologies and patents developed at KIT in workshops in German-Chinese tandems over the period of two weeks.

Click on our website for detailed information and a video: https://etm.entechnon.kit.edu/english/1095.php

**Organizational issues**
Preparation dates: Dates will be announced.

JES: Dates will be announced, expected to be in July and/or September

# T 7.125 Course: Judgement and Decision Making [T-WIWI-111099]

**Responsible:** Prof. Dr. Benjamin Scheibehenne
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105312 - Marketing and Sales Management
M-WIWI-105714 - Consumer Research
M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations
M-WIWI-106258 - Digital Marketing
M-WIWI-106410 - Economics & Management

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|---|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 1 terms | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500041 | Exercise Judgment and Decision Making | 2 SWS | Practice / 🏵 | Seidler |
| WT 23/24 | 2540440 | Judgment and Decision Making | 3 SWS | Lecture / 🏵 | Scheibehenne, Seidler |
| **Exams** | | | | | |
| ST 2023 | 7900001 | Judgement and Decision Making | | | Scheibehenne |

Legend: 🖥 Online, 🏵 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment. The grading includes the following aspects:

- a written exam (60 minutes)
- a presentation during the exercise.

The scoring system for the grading will be announced at the beginning of the course.

**Prerequisites**
Registration via the WIWI-Portal is required for participation in the Übung. The Übung is a prerequisite for the exam.

**Annotation**
The judgments and decisions that we make can have long ranging and important consequences for our (financial) well-being and individual health. Hence, the goal of this lecture is to gain a better understanding of how people make judgments and decisions and the factors that influences their behavior. We will look into simple heuristics and mental shortcuts that decision makers use to navigate their environment, in particular so in an economic context. Following this the lecture will provide an overview into social and emotional influences on decision making. In the second half of the semester we will look into some more specific topics including self-control, nudging, and food choice. The last part of the lecture will focus on risk communication and risk perception. We will address these questions from an interdisciplinary perspective at the intersection of Psychology, Behavioral Economics, Marketing, Cognitive Science, and Biology. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates.

The workload of the class is 4.5 ECTS. This consists of 3 ETCS for the lecture and 1.5 ETCS for the Übung. Details about the Übung will be communicated at the first day of the class.

*Below you will find excerpts from events related to this course:*

## V Judgment and Decision Making

2540440, WS 23/24, 3 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
In this lecture, students will be introduced to fundamental theories and key insights on human judgment and decision making. Topics include decision making under uncertainty, choice biases, simple heuristics, risk perception and -communication, as well as social and emotional influences on decision making, to name but a few. In the Wintersemester 20/21 this class will be held online. The lecture videos will be available for download and there will be regular online meetings to discuss the topics. The lecture will be held in English.

# T 7.126 Course: KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics [T-WIWI-111109]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101446 - Market Engineering
M-WIWI-104080 - Designing Interactive Information Systems
M-WIWI-105714 - Consumer Research
M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations

| Type | Credits | Grading scale | Recurrence | Expansion | Version |
|---|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 1 terms | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540474 | KD²Lab Forschungspraktikum: New Ways and Tools in Experimental Economics | 3 SWS | Lecture / 🗣 | Greif-Winzrieth, Knierim |
| **Exams** | | | | | |
| ST 2023 | 7900368 | KD²Lab Hands-On Research Course: New Ways and Tools in Experimental Economics | | | Weinhardt |

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Non exam assessment. Grading will be based on a continuous basis throughout the semester. The assessment consists of:

- A written paper, and
- a group presentation with subsequent discussion and question and answer session of 30 minutes.

For particularly active and constructive participation in the discussions of other papers during the final presentation, a bonus of one grade level (0.3 or 0.4) can be achieved on the passed exam. Details on the grading will be announced at the beginning of the event.

**Annotation**
Due to the laboratory capacity and in order to ensure an optimal supervision of the project groups, the number of participants is limited. Places are allocated according to preferences and suitability for the topics. In particular, previous knowledge in the field of experimental economics plays a role.
The course will be offered starting in the summer semester 2021.

# T 7.127 Course: Knowledge Discovery [T-WIWI-102666]

**Responsible:** Dr.-Ing. Michael Färber
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-105880 - Informatics & Machine Learning

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2511302 | Knowledge Discovery and Graph Representation Learning | 2 SWS | Lecture / 🗣 | Färber |
| WT 23/24 | 2511303 | Exercises to Knowledge Discovery and Graph Representation Learning | 1 SWS | Practice / 🗣 | Färber, Saier, Shao |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_KD_C3 | Knowledge Discovery (Registration until 17 July 2023) | | | Färber |
| WT 23/24 | 79AIFB_KD_B3 | Knowledge Discovery | | | Färber |

Legend: 📱 Online, 🎭 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment is a written exam (60 minutes).

1. Successful participation in the exercises can earn a grade bonus in two ways:
   By handing in the answers to an exercise sheet and reaching or exceeding 80% correct answers.
2. By handing in the results of an implementation task related to machine learning, which reaches or exceeds a given evaluation value.

If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by a maximum of one grade level (0.3 or 0.4).

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Knowledge Discovery and Graph Representation Learning

2511302, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The lecture provides a comprehensive overview of various approaches in machine learning and data mining for knowledge extraction. It explores multiple fields, including machine learning, natural language processing, and knowledge representation. The main focus is on discovering patterns and regularities in extensive data sets, particularly unstructured text found in news articles, publications, and social media. This process is known as knowledge discovery. The lecture delves into specific techniques, methods, challenges, as well as current and future research topics within this field.
One part of the lecture is dedicated to understanding large language models (LLMs), such as ChatGPT, by exploring their underlying principles, training methods, and applications. Additionally, the lecture dives into graph representation learning, which involves extracting meaningful representations from graph data. It covers the mathematical foundations of graph and geometric deep learning, highlighting the latest applications in areas like explainable recommender systems.
Moreover, the lecture highlights the integration of knowledge graphs with large language models, known as neurosymbolic AI. This integration aims to combine structured and unstructured data to enhance knowledge extraction and representation.
The content of the lecture encompasses the entire machine learning and data mining process. It covers topics on supervised and unsupervised learning techniques, as well as empirical evaluation. Various learning methods are explored, ranging from classical approaches like decision trees, support vector machines, and neural networks to more recent advancements such as graph neural networks.

**Learning obectives:**

Students

- know fundamentals of Machine Learning, Data Mining and Knowledge Discovery.
- are able to design, train and evaluate adaptive systems.
- conduct Knowledge Discovery projects in regards to algorithms, representations and applications.

**Workload**:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 60 hours
- Exam and exam preperation: 30 hours

**Literature**

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (http://www-stat.stanford.edu/~tibs/ElemStatLearn/)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

## V Exercises to Knowledge Discovery and Graph Representation Learning

**Practice (Ü)**
**On-Site**

2511303, WS 23/24, 1 SWS, Language: English, Open in study portal

**Content**
The exercises are based on the lecture Knowledge Discovery. Several exercises are covered, which take up and discuss in detail the topics covered in the lecture Knowledge Discovery. Practical examples are demonstrated to the students to enable a knowledge transfer of the theoretical aspects learned into practical application.
Contents of the lecture cover the entire machine learning and data mining process with topics on monitored and unsupervised learning processes and empirical evaluation. The learning methods covered range from classical approaches like decision trees, support vector machines and neural networks to selected approaches from current research. Learning problems considered include feature vector-based learning and text mining.

**Learning objectives**:

Students

- know fundamentals of Machine Learning, Data Mining and Knowledge Discovery.
- are able to design, train and evaluate adaptive systems.
- conduct Knowledge Discovery projects in regards to algorithms, representations and applications.

**Literature**

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (http://www-stat.stanford.edu/~tibs/ElemStatLearn/)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

# T 7.128 Course: Large-scale Optimization [T-WIWI-106549]

**Responsible:** Prof. Dr. Steffen Rebennack
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization
M-WIWI-106412 - Computation & Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 3 |

**Competence Certificate**
The assessment consists of a written exam (60 minutes). The exam takes place in every semester.

**Prerequisites**
None.

# T 7.129 Course: Liberalised Power Markets [T-WIWI-107043]

**Responsible:** Prof. Dr. Wolf Fichtner
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101451 - Energy Economics and Energy Markets
M-WIWI-102808 - Digital Service Systems in Industry
M-WIWI-106410 - Economics & Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 5,5 | Grade to a third | Each winter term | 2 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581998 | Liberalised Power Markets | 2 SWS | Lecture / 🗣 | Fichtner |
| WT 23/24 | 2581999 | Übungen zu Liberalised Power Markets | 2 SWS | Practice / 🗣 | Signer, Fichtner, Beranek |
| **Exams** | | | | | |
| ST 2023 | 7900253 | Liberalised Power Markets | | | Fichtner |
| WT 23/24 | 7900160 | Liberalised Power Markets NEW | | | Fichtner |
| WT 23/24 | 7900193 | Liberalised Power Markets | | | Fichtner |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

V **Liberalised Power Markets** — **Lecture (V) On-Site**
2581998, WS 23/24, 2 SWS, Language: English, Open in study portal

**Content**
**1. Power markets in the past, now and in future**
**2. Designing liberalised power markets**
2.1. Unbundling Dimensions of liberalised power markets
2.2. Central dispatch versus markets without central dispatch
2.3. The short-term market model
2.4. The long-term market model
2.5. Market flaws and market failure
2.6. Regulation in liberalised markets
**3. The power (sub)markets**
3.1 Day-ahead market
3.2 Intraday market
3.3 (Long-term) Forwards and futures markets
3.4 Emission rights market
3.5 Market for ancillary services
3.6 The “market” for renewable energies
3.7 Future market segments
**4. Grid operation and congestion management**
4.1. Grid operation
4.2. Congestion management
**5. Market power**
5.1. Defining market power
5.2. Indicators of market power
5.3. Reducing market power
**6. Future market structures in the electricity value chain**
**1. Power markets in the past, now and in future**
**2. Designing liberalised power markets**
2.2. Unbundling Dimensions of liberalised power markets
2.3. Central dispatch versus markets without central dispatch
2.4. The short-term market model
2.5. The long-term market model
2.6. Market flaws and market failure
2.7. Regulation in liberalised markets
**3. The power (sub)markets**
3.1 Day-ahead market
3.2 Intraday market
3.3 (Long-term) Forwards and futures markets
3.4 Emission rights market
3.5 Market for ancillary services
3.6 The “market” for renewable energies
3.7 Future market segments
**4. Grid operation and congestion management**
4.1. Grid operation
4.2. Congestion management
**5. Market power**
5.1. Defining market power
5.2. Indicators of market power
5.3. Reducing market power
**6. Future market structures in the electricity value chain**

**Literature**
**Weiterführende Literatur:**
Power System Economics; Steven Stoft, IEEE Press/Wiley-Interscience Press, 0-471-15040-1

# T 7.130 Course: Life Cycle Assessment – Basics and Application Possibilities in an Industrial Context [T-WIWI-113107]

**Responsible:** Prof. Dr. Frank Schultmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101412 - Industrial Production III
M-WIWI-101471 - Industrial Production II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581995 | Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context | 2 SWS | Lecture / 🗣 | Steffl, Treml |

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

**Competence Certificate**
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None.

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Life Cycle Assessment - Basics and Application Possibilities in an Industrial Context

**Lecture (V) On-Site**

2581995, WS 23/24, 2 SWS, Language: German, Open in study portal

**Content**
The lecture focuses on the analysis of the environmental impacts of products and processes using Life Cycle Assessment (short: LCA). Structure and steps are conveyed in detail and selected further developments are shown. In order to record the methodology and classify potential environmental impacts, the practical development of what has been learned is also focused on using LCA software and interactive formats.

Topics include:

- Significance and areas of application
- Calculation models
- Attributional/Consequential LCA
- Life Cycle Sustainability Assessment, Social LCA and Life Cycle Costing
- Limitations
- Development of a Case Study

**Literature**
werden in der Veranstaltung bekannt gegeben

# T 7.131 Course: Machine Learning 1 - Basic Methods [T-WIWI-106340]

**Responsible:** Prof. Dr.-Ing. Johann Marius Zöllner
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-105880 - Informatics & Machine Learning

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 4 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2511500 | Machine Learning 1 - Fundamental Methods | 2 SWS | Lecture / 🗣 | Zöllner |
| WT 23/24 | 2511501 | Exercises to Machine Learning 1 - Fundamental Methods | 1 SWS | Practice / 🗣 | Zöllner, Polley, Fechner, Daaboul |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_ML1_C4 | Machine Learning 1 - Basic Methods (Registration until 17 July 2023) | | | Zöllner |
| WT 23/24 | 79AIFB_ML1_C5 | Machine Learning 1 - Basic Methods | | | Zöllner |

Legend: 💻 Online, Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min):

The exam takes place every semester and can be repeated at every regular examination date.

A grade bonus can be earned by successfully completing practice exercises. If the grade of the written exam 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.

*Below you will find excerpts from events related to this course:*

## V Machine Learning 1 - Fundamental Methods

2511500, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The course prepares students for the rapidly evolving field of machine learning by providing a solid foundation, covering core concepts and techniques to get started in the field. Students delve into different methods in supervised, unsupervised, and reinforcement learning, as well as various model types, ranging from basic linear classifiers to more complex methods, such as deep neural networks. Topics include general learning theory, support vector machines, decision trees, neural network fundamentals, convolutional neural networks, recurrent neural networks, unsupervised learning, reinforcement learning, and Bayesian learning.

The course is accompanied by a corresponding exercise, where students gain hands-on experience by implementing and experimenting with different machine learning algorithms, helping them to apply machine learning algorithms on real world problems.

By the end of the course, students will have acquired a solid foundation in machine learning, enabling them to apply state-of-the-art algorithms to solve complex problems, contribute to research efforts, and explore advanced topics in the field.

**Learning obectives**:

- Students acquire knowledge of the fundamental methods in the field of machine learning.
- Students can classify, formally describe and evaluate methods of machine learning.
- Students can use their knowledge to select suitable models and methods for selected problems in the field of of machine learning.

**Literature**
Die Foliensätze sind als PDF verfügbar

**Weiterführende Literatur**

- Machine Learning - Tom Mitchell
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto

**Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.**

# T 7.132 Course: Machine Learning 2 – Advanced Methods [T-WIWI-106341]

**Responsible:** Prof. Dr.-Ing. Johann Marius Zöllner
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-101637 - Analytics and Statistics
M-WIWI-105880 - Informatics & Machine Learning

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 4 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511502 | Machine Learning 2 - Advanced methods | 2 SWS | Lecture / 🗣 | Zöllner |
| ST 2023 | 2511503 | Exercises for Machine Learning 2 - Advanced Methods | 1 SWS | Practice / 🗣 | Zöllner |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_ML2_B1 | Machine Learning 2 – Advanced Methods (Registration until 17 July 2023) | | | Zöllner |
| WT 23/24 | 79AIFB_ML2_B8 | Machine Learning 2 – Advanced Methods | | | Zöllner |

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min).

The exam takes place every semester and can be repeated at every regular examination date.

**Prerequisites**
None.

*Below you will find excerpts from events related to this course:*

## V Machine Learning 2 - Advanced methods

2511502, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The subject area of machine intelligence and, in particular, machine learning, taking into account real challenges of complex application domains, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.

The lecture "Machine Learning 2" deals with modern advanced methods of machine learning such as semi-supervised and active learning, deep neural networks (deep learning, CNNs, GANs, diffusion models, transformer, adversarial attacks) and hierarchical approaches, e.g. reinforcement learning. Another focus is the embedding and application of machine learning methods in real systems.

The lecture introduces the latest basic principles as well as extended basic structures and elucidates previously developed algorithms. The structure and the mode of operation of the methods and methods are presented and explained by means of some application scenarios, especially in the field of technical (sub) autonomous systems (vehicles, robotics, neurorobotics, image processing, etc.).

**Learning objectives:**

- Students understand extended concepts of machine learning and their possible applications.
- Students can classify, formally describe and evaluate methods of machine learning.
- In detail, methods of machine learning can be embedded and applied in complex decision and inference systems.
- Students can use their knowledge to select suitable models and methods of machine learning for existing problems in the field of machine intelligence.

**Recommendations:**

Attending the lecture ***Machine Learning 1*** or a comparable lecture is very helpful in understanding this lecture.

**Literature**
Die Foliensätze sind als PDF verfügbar

**Weiterführende Literatur**

- Deep Learning - Ian Goodfellow
- Artificial Intelligence: A Modern Approach - Peter Norvig and Stuart J. Russell
- Machine Learning - Tom Mitchell
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- Reinforcement Learning: An Introduction - Richard S. Sutton and Andrew G. Barto
- Deep Learning - Ian Goodfellow, Yoshua Bengio, Aaron Courville

**Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.**

# T 7.133 Course: Machine Learning and Optimization in Energy Systems [T-WIWI-113073]

**Responsible:** Prof. Dr. Wolf Fichtner
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101452 - Energy Economics and Technology

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581050 | Machine Learning and Optimization in Energy Systems | 3 SWS | Lecture / Practice / 🗣 | Dengiz, Yilmaz, Perau |
| **Exams** | | | | | |
| WT 23/24 | 7900179 | Machine Learning and Optimization in Energy Systems | | | Fichtner |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of this course is a written examination (60 min) or an oral exam (30 min) depending on the number of participants.

*Below you will find excerpts from events related to this course:*

## V Machine Learning and Optimization in Energy Systems

2581050, WS 23/24, 3 SWS, Language: English, Open in study portal

**Lecture / Practice (VÜ)**
**On-Site**

**Content**
Goals:
Participants should know about the most common optimization and machine learning approaches for the application in energy systems. They should understand the basic principles of the methods and should be able to apply them for solving important problems of future energy systems with high shares of renewable energy sources.

Content:
In the beginning, the essential transition of the energy system into a smart grid and the need for methods from the field of optimization and machine learning are explained. The course can be subdivided into an optimization part and a larger machine learning part. In the optimization part, the basics of optimization approaches that are used in energy systems are shown. Further, heuristic methods and approaches from the field of multiobjective optimization are introduced. In the machine learning part, the most important methods from the field of unsupervised learning, supervised learning and reinforcement learning are introduced and their application in future energy systems are investigated.

Amongst the considered applications are power plant dispatch, intelligent heating with heat pumps, charging strategies for electric vehicles, clustering of energy data for energy system models and electricity demand and renewable generation forecasting.

We also offer a voluntary computer exercise that deepens the understanding of the methods and applications covered in the lecture. The students will have the opportunity to solve problems from the energy domain by using optimization and machine learning approaches implemented in the programming language Python.

The course's general focus is on the application of the methods in the energy field and not on the mathematical details of the different approaches.

The total workload for this course is approximately 105 hours:

- Attendance: 30 hours
- Self-study: 30 hours
- Exam preparation: 45 hours

# T 7.134 Course: Management Accounting 1 [T-WIWI-102800]

**Responsible:** Prof. Dr. Marcus Wouters
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101498 - Management Accounting

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2579900 | Management Accounting 1 | 2 SWS | Lecture / | Wouters |
| ST 2023 | 2579901 | Tutorial Management Accounting 1 (Bachelor) | 2 SWS | Practice / | Dickemann |
| ST 2023 | 2579902 | Tutorial Management Accounting 1 (Master) | 2 SWS | Practice / | Dickemann |
| **Exams** | | | | | |
| ST 2023 | 79-2579900-B | Management Accounting 1 (Bachelor) | | | Wouters |
| ST 2023 | 79-2579900-M | Management Accounting 1 (Mastervorzug und Master) | | | Wouters |
| WT 23/24 | 79-2579900-B | Management Accounting 1 (Bachelor) | | | Wouters |
| WT 23/24 | 79-2579900-M | Management Accounting 1 (Mastervorzug und Master) | | | Wouters |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

**Recommendation**
We recommend that you take part in our exercise for the lecture.

**Annotation**
The exercise is offered separately for Bachelor's students as well as for students in the Master's transfer and Master's program.

Note for exam registration:

- Bachelor students: 79-2579900-B Management Accounting 1 (Bachelor)
- Students in the Master's transfer and Master's program: 79-2579900-M Management Accounting 1 (Master's transfer and Master)

*Below you will find excerpts from events related to this course:*

## V Management Accounting 1

2579900, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**Online**

**Content**
The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA1 are: short-term planning, investment decisions, budgeting and activity-based costing.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

**Learning objectives:**

- Students have an understanding of theory and applications of management accounting topics.
- They can use financial information for various purposes in organizations.

**Examination:**

- The assessment consists of a written exam (120 minutes) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

**Workload:**

- The total workload for this course is approximately 135.0 hours. For further information see German version.

**Literature**

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Publisher: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- In addition, several papers that will be available on ILIAS.

### V Tutorial Management Accounting 1 (Bachelor)

**Practice (Ü)**
**On-Site**

2579901, SS 2023, 2 SWS, Language: English, Open in study portal

**Content**
see Module Handbook

### V Tutorial Management Accounting 1 (Master)

**Practice (Ü)**
**On-Site**

2579902, SS 2023, 2 SWS, Language: English, Open in study portal

**Content**
see Module Handbook

# T 7.135 Course: Management Accounting 2 [T-WIWI-102801]

**Responsible:** Prof. Dr. Marcus Wouters
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101498 - Management Accounting

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2579903 | Management Accounting 2 | 2 SWS | Lecture / | Wouters |
| WT 23/24 | 2579904 | Tutorial Management Accounting 2 (Bachelor) | 2 SWS | Practice / | Letmathe |
| WT 23/24 | 2579905 | Tutorial Management Accounting 2 (Master) | 2 SWS | Practice / | Letmathe |
| **Exams** | | | | | |
| ST 2023 | 79-2579903-B | Management Accounting 2 (Bachelor) | | | Wouters |
| ST 2023 | 79-2579903-M | Management Accounting 2 (Mastervorzug und Master) | | | Wouters |
| WT 23/24 | 79-2579903-B | Management Accounting 2 (Bachelor) | | | Wouters |
| WT 23/24 | 79-2579903-M | Management Accounting 2 (Mastervorzug und Master) | | | Wouters |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of a written exam (120 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

**Prerequisites**
None

**Recommendation**
It is recommended:

- to take part in the course "Management Accounting1" before this course
- participation in the exercise for the lecture "Management Accounting 2"

**Annotation**
The exercise for the lecture is offered separately for Bachelor's students as well as for students in the Master's transfer and Master's program.

Note for exam registration: Bachelor students:

- 79-2579903-B Management Accounting 2 (Bachelor)
- Students in the Master's transfer and Master's program: 79-2579903-M Management Accounting 2 (Master's transfer and Master)

*Below you will find excerpts from events related to this course:*

## V Management Accounting 2

2579903, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**Online**

**Content**
The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA2 are: cost estimation, product costing and cost allocation, financial performance measures, transfer pricing, strategic performance measurement systems.

We will use international material written in English.

We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).

The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

**Learning objectives:**

- Students have an understanding of theory and applications of management accounting topics. They can use financial information for various purposes in organizations.

**Recommendations:**

- It is recommended to take part in the course "Management Accounting 1" before this course.

**Examination:**

- The assessment consists of a written exam (120 min) at the end of each semester (following § 4 (2) No. 1 of the examination regulation).

**Workload:**

- The total workload for this course is approximately 135.0 hours. For further information see German version.

**Literature**

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Verlag: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- Zusätzlich werden Artikel auf ILIAS zur Vergügung gestellt.

### V Tutorial Management Accounting 2 (Bachelor)
2579904, WS 23/24, 2 SWS, Language: English, Open in study portal

**Practice (Ü)**
**On-Site**

**Content**
see ILIAS

### V Tutorial Management Accounting 2 (Master)
2579905, WS 23/24, 2 SWS, Language: English, Open in study portal

**Practice (Ü)**
**On-Site**

**Content**
see ILIAS

# T 7.136 Course: Management of IT-Projects [T-WIWI-112599]

**Responsible:** Dr. Roland Schätzle
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511214 | Management of IT-Projects | 2 SWS | Lecture / 🗣 | Schätzle |
| ST 2023 | 2511215 | Übungen zu Management von IT-Projekten | 1 SWS | Practice / 🗣 | Schätzle |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_MvIP_A1 | Management of IT-Projects (Registration until 17 July 2023) | | | Oberweis |
| WT 23/24 | 79AIFB_MvIP_C3 | Management of IT-Projects | | | Oberweis |

Legend: 📱 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment takes place in the form of a written examination (exam) in the amount of 60 minutes. The examination is offered every semester and can be repeated at any regular examination date.

**Prerequisites**
Prerequisite for the participation in the examination is the successful participation in the exercise, which takes place in the summer semester, starting from summer semester 2020. The number of participants in the exercise is limited.

*Below you will find excerpts from events related to this course:*

## V Management of IT-Projects

2511214, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The lecture deals with the general framework, impact factors and methods for planning, handling, and controlling of IT projects. Especially following topics are addressed:

- project environment
- project organisation
- project planning including the following items:
  - plan of the project structure
  - flow chart
  - project schedule
  - plan of resources
- effort estimation
- project infrastructur
- project controlling
- risk management
- feasibility studies
- decision processes, conduct of negotiations, time management.

**Learning objectives:**

Students

- explain the terminology of IT project management and typical used methods for planning, handling and controlling,
- apply methods appropiate to current project phases and project contexts,
- consider organisational and social impact factors.

**Recommendations**:

Knowledge from the lecture Software Engineering is helpful.

**Workload**:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

**Literature**


- B. Hindel, K. Hörmann, M. Müller, J. Schmied. Basiswissen Software-Projektmanagement. dpunkt.verlag 2004
- Project Management Institute Standards Committee. A Guide to the Project Management Body of Knowledge (PMBoK guide). Project Management Institute. Four Campus Boulevard. Newton Square. PA 190733299. U.S.A.


V

## Übungen zu Management von IT-Projekten

2511215, SS 2023, 1 SWS, Language: German, Open in study portal

**Practice (Ü)**
**On-Site**

**Content**
The general conditions, influencing factors and methods in the planning, execution and control of IT projects are dealt with. In particular, the following topics will be dealt with: Project environment, project organization, project structure plan, effort estimation, project infrastructure, project control, decision-making processes, negotiation, time management. The lecture is accompanied by exercises in the form of tutorials. The date of the exercise will be announced later.

# T 7.137 Course: Managing New Technologies [T-WIWI-102612]

**Responsible:** Dr. Thomas Reiß
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545003 | Managing New Technologies | 2 SWS | Lecture / 🗣 | Reiß |
| **Exams** | | | | | |
| ST 2023 | 7900169 | Managing New Technologies | | | Reiß |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Written exam 100% following §4, Abs. 2.

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The credit points for T-WIWI-102612 "Management of New Technologies" were reduced to 3 credit points in the 2019 summer semester.

*Below you will find excerpts from events related to this course:*

## V Managing New Technologies

2545003, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Organizational issues**
Bitte melden Sie sich für die Prüfung Nr. 7900169 an, das ist die Prüfungs-Nr. für die schriftliche Prüfung.

(Die Prüfungs-Nr. 7900235 ist eine mündliche Prüfung, zu der sich Studierende nur nach Aufforderung durch das EnTechnon Sekretariat anmelden sollen, wenn Studierende eine mündliche Prüfung haben.)

**Literature**

- Hausschildt/Salomo: Innovationsmanagement; Borchert et al.: Innovations- und Technologiemanagement;
- Specht/Möhrle; Gabler Lexikon Technologiemanagement

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

# T 7.138 Course: Market Engineering: Information in Institutions [T-WIWI-102640]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106413 - Digitalization & Society

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540460 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | 2 SWS | Lecture / 🗣 | Fegert, Weinhardt |
| ST 2023 | 2540461 | Übungen zu Platform & Market Engineering: Commerce, Media, and Digital Democracy | 1 SWS | Practice / 🗣 | Jachimowicz, Stein, Bezzaoui, Fegert |
| **Exams** | | | | | |
| ST 2023 | 7979235 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | | | Weinhardt |

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) up to 6 bonus points can be obtained. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by max. one grade level (0.3 or 0.4).

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-112823 - Platform & Market Engineering: Commerce, Media, and Digital Democracy must not have been started.

*Below you will find excerpts from events related to this course:*

## V Platform & Market Engineering: Commerce, Media, and Digital Democracy

**Lecture (V) On-Site**

2540460, SS 2023, 2 SWS, Language: English, Open in study portal

**Organizational issues**
ehemals: **"Market Engineering: Information in Institutions"**

**Literature**


- Roth, A., The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics. Econometrica 70(4): 1341-1378, 2002.
- Weinhardt, C. ,Holtmann, C., Neumann, D., Market Engineering. Wirtschaftsinformatik, 2003.
- Wolfstetter, E., Topics in Microeconomics - Industrial Organization, Auctions, and Incentives. Cambridge, Cambridge University Press, 1999.
- Smith, V. "Theory, Experiments and Economics", The Journal of Economic Perspectives,Vol. 3, No. 1, 151-69 1989

# T 7.139 Course: Market Research [T-WIWI-107720]

**Responsible:** Prof. Dr. Martin Klarmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101510 - Cross-Functional Management Accounting
M-WIWI-101647 - Data Science: Evidence-based Marketing
M-WIWI-105312 - Marketing and Sales Management
M-WIWI-105714 - Consumer Research
M-WIWI-106258 - Digital Marketing
M-WIWI-106410 - Economics & Management
**Prerequisite for:** T-WIWI-103139 - Marketing Analytics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2571150 | Market Research | 2 SWS | Lecture / 🗣 | Klarmann |
| ST 2023 | 2571151 | Market Research Tutorial | 1 SWS | Practice / 🗣 | Pade |
| **Exams** | | | | | |
| ST 2023 | 7900015 | Market Research | | | Klarmann |
| WT 23/24 | 7900053 | Market Research | | | Klarmann |

Legend: 💻 Online, 🌸 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of success takes place through a written exam with additional aids in the sense of an open book exam. Further details will be announced during the lecture.

**Prerequisites**
None

**Recommendation**
None

**Annotation**
Please note that this course has to be completed successfully by students interested in master thesis positions at the Marketing & Sales Research Group.

*Below you will find excerpts from events related to this course:*

V **Market Research** — **Lecture (V) On-Site**
2571150, SS 2023, 2 SWS, Language: English, Open in study portal

**Content**
Within the lecture, essential statistical methods for measuring customer attitudes (e.g. satisfaction measurement), understanding customer behavior and making strategic decisions will be discussed. The practical use as well as the correct handling of different survey methods will be taught, such as experiments and surveys. To analyze the collected data, various analysis methods are presented, including hypothesis tests, factor analyses, cluster analyses, variance and regression analyses. Building on this, the interpretation of the results will be discussed.

Topics addressed in this course are for example:

- Theoretical foundations of market research
- Statistical foundations of market research
- Measuring customer attitudes
- Understanding customer reactions
- Strategical decision making

The aim of this lecture is to give an overview of essential statistical methods. In the lecture students learn the practical use as well as the correct handling of different statistical survey methods and analysis procedures. In addition, emphasis is put on the interpretation of the results after the application of an empirical survey. The derivation of strategic options is an important competence that is required in many companies in order to react optimally to customer needs.

The assessment is carried out (according to §4(2), 3 SPO) in the form of a written open book exam.

The total workload for this course is approximately 135.0 hours.

Presence time: 30 hours

Preparation and wrap-up of the course: 45.0 hours

Exam and exam preparation: 60.0 hours

Please note that this course has to be completed successfully by students interested in master thesis positions at the chair of marketing.

**Literature**
Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

# T 7.140 Course: Marketing Analytics [T-WIWI-103139]

**Responsible:** Prof. Dr. Martin Klarmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101647 - Data Science: Evidence-based Marketing

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 5 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2572170 | Marketing Analytics | 2 SWS | Lecture / 🗣 | Klarmann |
| WT 23/24 | 2572171 | | 1 SWS | Practice / 🗣 | Pade |
| **Exams** | | | | | |
| WT 23/24 | 7900082 | Marketing Analytics | | | Klarmann |

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative (according to §4(2), 3 of the examination regulation) exam assessment (working on tasks in groups during the lecture).

**Prerequisites**
The prerequisite for taking the course is the successful completion of the course "Market Research".

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-107720 - Market Research must have been passed.

**Recommendation**
It is strongly recommended to complete the course "Market Research" prior to taking the "Marketing Analytics" course.

**Annotation**
"Marketing Analytics" is offered as a block course with an alternative exam assessment.
Starting in the winter semester 22/23, the course will be scheduled to be completed after two thirds of the semester. For further information, please contact the Marketing and Sales Research Group (marketing.iism.kit.edu). Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing and Sales Research Group.

*Below you will find excerpts from events related to this course:*

V **Marketing Analytics** — **Lecture (V) On-Site**
2572170, WS 23/24, 2 SWS, Language: English, Open in study portal

**Content**
In this course various relevant market research questions are addressed, as for example measuring and understanding customer attitudes, preparing strategic decisions and sales forecasting. In order to analyze these questions, students learn to handle social media data, panel data, nested observations and experimental design. To analyze the data, advanced methods, as for example multilevel modeling and return on marketing models are taught. Also, problems of causality are addressed in-depth. The lecture is accompanied by a computer-based exercise, in the course of which the methods are applied practically.

Students

- receive based on the course market research an overview of advanced empirical methods
- learn in the course of the lecture to handle advanced data collection and data analysis methods
- are based on the acquired knowledge able to interpret results and derive strategic implications

Total workload for 4.5 ECTS: ca. 135 hours.

In order to attend Marketing Analytics, students are required to have passed the course Market Research.

Exchange students can bypass the requirement of passing Market Research if they can prove that they possess sufficient statistical knowledge based on courses attended at their home institution. This will be examined individually by the Marketing & Sales Research Group.

For further information please contact the Marketing and Sales Research Group (marketing.iism.kit.edu).

**Literature**


- Hanssens, Dominique M., Parsons, Leonard J., Schultz, Randall L. (2003), Market response models: Econometric and time series analysis, 2nd ed, Boston.
- Gelman, Andrew, Hill, Jennifer (2006), Data analysis using regression and multilevel/hierarchical models, New York.
- Cameron, A. Colin, Trivedi, Pravin K. (2005), Microeconometrics: methods and applications, New York.
- Chapman, Christopher, Feit, Elea M. (2015), R for Marketing Research and Analytics, Cham.
- Ledolter, Johannes (2013), Data mining and business analytics with R, New York.


V 2572171, WS 23/24, 1 SWS, Language: English, Open in study portal **Practice (Ü) On-Site**

**Content**
Tasks parallel to the lecture to work on in a group of students.

**Organizational issues**
Blockveranstaltung: genaue Uhrzeiten und Raum werden noch bekannt gegeben

# T 7.141 Course: Marketing Strategy Business Game [T-WIWI-102835]

**Responsible:** Prof. Dr. Martin Klarmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101510 - Cross-Functional Management Accounting

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 1,5 | Grade to a third | Irregular | 1 |

**Competence Certificate**
The assessment (alternative exam assessment) consists of a group presentation and a subsequent round of questions totalling 20 minutes.

**Prerequisites**
None

**Recommendation**
None

**Annotation**
Please note that only one of the courses from the election block can be chosen in the module.
Please note: The number of participants for this course is limited. The Marketing and Sales Research Group typically provides the possibility to attend a course with 1.5 ECTS points in the respective module to all students. Participation in a specific course cannot be guaranteed.
In order to participate in this course, you need to apply. Applications are usually accepted at the start of the lecture period in summer term. Detailed information on the application process is usually provided on the website of the Marketing and Sales Research Group (marketing.iism.kit.edu) shortly before the lecture period in summer term starts.

# T 7.142 Course: Master's Thesis [T-WIWI-113003]

**Responsible:** Studiendekan des KIT-Studienganges
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106420 - Module Master's Thesis

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Final Thesis | 30 | Grade to a third | 1 |

**Competence Certificate**
see module description

**Prerequisites**
see module description

**Final Thesis**
This course represents a final thesis. The following periods have been supplied:

| | |
|---|---|
| **Submission deadline** | 6 months |
| **Maximum extension period** | 3 months |
| **Correction period** | 8 weeks |

# T 7.143 Course: Matching Theory [T-WIWI-113264]

**Responsible:** Prof. Dr. Clemens Puppe
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101500 - Microeconomic Theory

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500042 | Matching Theory | 3 SWS | Lecture / Practice / | Okulicz |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Written examination (90 minutes)

*Below you will find excerpts from events related to this course:*

## V Matching Theory

2500042, WS 23/24, 3 SWS, Language: English, Open in study portal

**Lecture / Practice (VÜ)**
**On-Site**

**Content**
How should we organize recruitment of students to schools? Could we improve the placement of doctors to hospitals? Why there always seems to be a better roommate to the one you currently have? Matching Theory answers all these questions and more. During the course we will formally study mathematical systems of allocating goods and people, and see their many real life applications from organizing kidney exchange to improving dating apps. The course will cover three main topics in Matching Theory and Market Design: (1) assignment problems (e.g., allocation of social housing), (2) two-sided matching (e.g., allocation of children to schools), (3) transferable-utility matching (e.g., labor market).

The students are expected to:

1. Understand the mathematical properties of allocations and commonly used mechanism
2. Understand the connection between Matching Theory and real-life allocation systems
3. Be able to use their knowledge to propose solutions for novel real-life problems

# T 7.144 Course: Mathematics for High Dimensional Statistics [T-WIWI-111247]

**Responsible:** Prof. Dr. Oliver Grothe
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-101637 - Analytics and Statistics
M-WIWI-103289 - Stochastic Optimization
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Oral examination | 4,5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550562 | Mathematische Grundlagen hochdimensionaler Statistik | 2 SWS | Lecture / 🗣 | Grothe |
| ST 2023 | 2550563 | Übung zu Mathematische Grundlagen hochdimensionaler Statistik | 2 SWS | Practice / 🗣 | Grothe, Rieger |
| **Exams** | | | | | |
| ST 2023 | 7900362 | Mathematics for High Dimensional Statistics | | | Grothe |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of an oral exam (30 min.) taking place in the recess period.

**Prerequisites**
None

**Recommendation**
Basic knowledge of mathematics and statistics is assumed.
Knowledge in multivariate statistics is an advantage, but not necessary for the course.

*Below you will find excerpts from events related to this course:*

## V Mathematische Grundlagen hochdimensionaler Statistik

2550562, SS 2023, 2 SWS, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Content**:

The lecture focuses on modelling statistical objects (random vectors, random matrices and random graphs) in high dimensions. It deals with concentration inequalities that limit the fluctuations of such objects as well as complexity measures for quantities and functions. The theory is transferred to well-known and widespread applications such as neighbourhood detection in networks, statistical learning theory and LASSO.

**Learning objectives:**

Students are able to

- name and justify statistical properties of high-dimensional objects (vectors, matrices, functions).
- describe and explain differences in the behaviour between low- and high-dimensional random objects.
- name procedures for assess uncertainties in statistical models and apply them in simple examples.
- decide well-founded which modeling of high-dimensional structures is best suited in a specific situation.
- transform data into lower dimensions and quantify approximation errors.
- understand basic proofs in high-dimensional statistics using examples.
- develop, implement and evaluate smaller simulations in a programming language of their choice.

# T 7.145 Course: Media Management [T-WIWI-112711]

**Responsible:** Prof. Dr. Ann-Kristin Kupfer
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106258 - Digital Marketing

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2572192 | Media Management | 2 SWS | Lecture / 🗣 | Kupfer |
| WT 23/24 | 2572193 | Media Management Exercise | 1 SWS | Practice / 🗣 | Mitarbeiter |
| **Exams** | | | | | |
| WT 23/24 | 7900135 | Media Management | | | Kupfer |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The control of success is done by the elaboration and presentation of a group task as well as a written exam. Further details on the design of the performance review will be announced during the lecture.

**Prerequisites**
None

**Recommendation**
Students are highly encouraged to actively participate in class.

**Annotation**
The course will take place in the winter term 23/24 for the first time.

*Below you will find excerpts from events related to this course:*

## V Media Management

2572192, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Students learn the theoretical foundations of media management and its most important concepts. They learn both about the key characteristics of both media products and media markets. They further get to know essential business models of media markets. Special emphasis will be given to understanding media consumers and the marketing mix of media products. A tutorial offers the opportunity to apply the key learnings of the lecture.

The learning objectives are as follows:

- Getting to know the theoretical foundations of media management
- Evaluating strategies for media products and services as media-specific marketing mix instruments
- Fostering critical and analytical thinking skills and the application of knowledge to marketing problems
- Improvement of skills and competences in the area of project management within the framework of group work
- Improvement of foreign language skills (business English)

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

**Organizational issues**
Appointments to be announced.

# T 7.146 Course: Methods in Economic Dynamics [T-WIWI-102906]

**Responsible:** Prof. Dr. Ingrid Ott
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101514 - Innovation Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 1,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2560240 | Methods in Economic Dynamics | 1 SWS | Lecture / 🗣 | Ott |
| **Exams** | | | | | |
| ST 2023 | 7900108 | Methods in Economic Dynamics | | | Ott |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment.

**Prerequisites**
None

**Recommendation**
Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012] and Economics II [2600014]. Further, it is assumed that students have interest in using quantiative-mathematical methods.

*Below you will find excerpts from events related to this course:*

## V Methods in Economic Dynamics

2560240, SS 2023, 1 SWS, Language: German/English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The economic exploitation of inventions is an important part of innovation economics. Intellectual property rights such as patents or trademarks play a central role. Within this workshop, the recording, processing and analysis of such intellectual property rights will be deepened, e.g. considering specific technologies. Students will learn how to work with relational databases, the econometric evaluation of recorded data, and methods for visualising them.

**Learning objectives:**

The student

- learns to query data sources.
- is able to analyse data with statistical methods.
- visualises and interprets data evaluations (e.g. using dashboards or methods of network analysis).

**Recommendations:**

An interest in working with data, basic knowledge on databases as well as basic knowledge in economics and statistics are advantageous.

**Workload:**

The total workload for this course is approximately 45 hours.

- Classes: ca. 5 h
- Self-study: ca. 40 h

**Assessment:**

Non exam assessment according to § 4 paragraph 3 of the examination regulation (SPO 2015).

**Organizational issues**
The course is structured along two assignments, the first of which is an individual assignment, whereas the second assignment is a group project. Assignment 1 will be completed within one month's time, whereas assignment 2 will take place on a different date.

**Assignment 1** will take place on **03.05.2023** in **Building 01.87, B5.25**. **Assignment 2** will take place on **23.06.2023** in **Building 01.87, B5.25**.The exact time will be announced later.

Students are offered the opportunity to participate in this course jointly with the course “Seminar in Economic Policy”, within the module “Economics of Innovation”. The work in both courses will be strongly related to each other, as students will work on the same topic from two different perspectives. Students in the course “Seminar in Economic Policy” will be provided with the opportunity to write a paper that addresses the results found by the students in the course “Methods in Economic Dynamics”. Taking both courses together will enable the students to earn 4.5 ECTS.

**Literature**
Relevante Literatur wird in der Vorlesung bekanntgegeben.
(Relevant literature will be announced in the lecture.)

# T 7.147 Course: Methods in Innovation Management [T-WIWI-110263]

**Responsible:** Dr. Daniel Jeffrey Koch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101507 - Innovation Management
M-WIWI-101507 - Innovation Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each winter term | 1 |

**Competence Certificate**
Alternative exam assessments (§4(2), 3 SPO). The final grade is composed 75% of the grade of the written paper and 25% of the grade of the presentation.

**Prerequisites**
None.

**Recommendation**
Prior attendance of the course “Innovation Management: Concepts, Strategies and Methods” is recommended.

# T 7.148 Course: Mixed Integer Programming I [T-WIWI-102719]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization
M-WIWI-106412 - Computation & Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2550138 | Mixed-integer Programming I | 2 SWS | Lecture / 🗣 | Stein |
| WT 23/24 | 2550139 | Exercises Mixted Integer Programming I | | Practice / 🗣 | Stein, Beck |
| **Exams** | | | | | |
| WT 23/24 | 7900180_WS2324_HK | Mixed Integer Programming I | | | Stein |

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of *Mixed Integer Programming II* [25140]. In this case, the duration of the written examination takes 120 minutes.

**Prerequisites**
None

**Recommendation**
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**
The lecture is offered irregularly. The curriculum of the next three years is available online (kop.ior.kit.edu).

*Below you will find excerpts from events related to this course:*

## V Mixed-integer Programming I

2550138, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Many optimization problems from economics, engineering and natural sciences are modeled with continuous as well as with discrete variables. Examples are the energy minimal design of a chemical process in which several reactors may be switched on or off, and portfolio optimization with limitations on the number of securities. For the algorithmic identification of optimal points of such problems an interaction of ideas from discrete as well as continuous optimization is necessary.

The lecture focusses on mixed-integer *linear* optimization problems and is structured as follows:

- Introduction, solvability, and basic concepts
- LP relaxation and error bounds for roundings
- Branch-and-bound method
- Gomory's cutting plane method
- Benders decomposition

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

The treatment of mixed-integer *nonlinear* optimization problems forms the contents of the lecture "Mixed-integer Programming II".

**Learning objectives:**

The student

- knows and understands the fundamentals of linear mixed integer programming,
- is able to choose, design and apply modern techniques of linear mixed integer programming in practice.

**Literature**


- C.A. Floudas, Nonlinear and Mixed-Integer Optimization: Fundamentals and Applications, Oxford University Press, 1995
- J. Kallrath: Gemischt-ganzzahlige Optimierung, Vieweg, 2002
- D. Li, X. Sun: Nonlinear Integer Programming, Springer, 2006
- G.L. Nemhauser, L.A. Wolsey, Integer and Combinatorial Optimization, Wiley, 1988
- M. Tawarmalani, N.V. Sahinidis, Convexification and Global Optimization in Continuous and Mixed-Integer Nonlinear Programming, Kluwer, 2002.

# T 7.149 Course: Mixed Integer Programming II [T-WIWI-102720]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

**Competence Certificate**
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.
The examination is held in the semester of the lecture and in the following semester.
The examination can also be combined with the examination of *Mixed Integer Programming I* [2550138]. In this case, the duration of the written examination takes 120 minutes.

**Prerequisites**
None

**Recommendation**
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**
The lecture is offered irregularly. The curriculum of the next three years is available online (kop.ior.kit.edu).

# T 7.150 Course: Modeling and OR-Software: Advanced Topics [T-WIWI-106200]

**Responsible:** Prof. Dr. Stefan Nickel
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102808 - Digital Service Systems in Industry
M-WIWI-102832 - Operations Research in Supply Chain Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 4 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2550490 | Modellieren und OR-Software: Fortgeschrittene Themen | 3 SWS | Practical course / | Pomes, Linner, Nickel |
| **Exams** | | | | | |
| ST 2023 | 7900035 | Modeling and OR-Software: Advanced Topics | | | Nickel |
| WT 23/24 | 7900071 | Modeling and OR-Software: Advanced Topics | | | Nickel |

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**
Basic knowledge as conveyed in the module *Introduction to Operations Research* is assumed.

Successful completion of the course *Modeling and OR-Software: Introduction*.

**Annotation**
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

The lecture is held in every term. The planned lectures and courses for the next three years are announced online.

*Below you will find excerpts from events related to this course:*

## V Modellieren und OR-Software: Fortgeschrittene Themen

2550490, WS 23/24, 3 SWS, Language: German, Open in study portal

**Practical course (P)**
**Blended (On-Site/Online)**

**Content**
The advanced course is designated for Master students that already attended the introductory course or gained equivalent experience elsewhere, e.g. during a seminar or bachelor thesis. We will work on advanced topics and methods in OR, among others cutting planes, column generation and constraint programming. The Software used for the exercises is IBM ILOG CPLEX Optimization Studio. The associated modelling progamming languages are OPL and ILOG Script.

**Organizational issues**
Link zur Bewerbung:

http://go.wiwi.kit.edu/OR_Bewerbung

Bewerberzeitraum:

01.09.2023 00:00 - 12.10.2023 23:55

# T 7.151 Course: Modeling and Simulation [T-WIWI-112685]

**Responsible:** Prof. Dr. Sanja Lazarova-Molnar
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511100 | Modeling and Simulation | 2 SWS | Lecture | Lazarova-Molnar |
| ST 2023 | 2511101 | Exercises Modeling and Simulation | 1 SWS | Practice | Lazarova-Molnar |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_MaS_C6 | Modeling and Simulation (Registration until 17 July 2023) | | | Lazarova-Molnar |
| WT 23/24 | 79AIFB_MaS_A6 | Modeling and Simulation | | | Lazarova-Molnar |

**Competence Certificate**
Depending on the number of participants in the course, the exam will be offered either as an oral exam (20 min), or as a written exam (60 min).

The exam takes place every semester and can be repeated at every regular examination date.

**Prerequisites**
None

**Recommendation**
Some experience in programming and knowledge of basic mathematics and statistics.

**Annotation**
Instruction is in the form of lectures and exercises. A detailed course schedule will be published before the start of the semester.

*Below you will find excerpts from events related to this course:*

## V Modeling and Simulation

2511100, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**

**Content**
Modeling and Simulation is the most widely used operations research / systems engineering technique for designing new systems and optimizing the performance of existing systems. In one way or another, just about every engineering or scientific field uses simulation as an exploration, modeling, or analysis technique. The course is designed to provide students with basic knowledge of modeling and simulation approaches and to provide them with first experience of using a simulation package. The course will focus on modeling and simulation of real-world discrete event systems. Examples of discrete events are customer arrivals at a queue of a service desk, machine failures in manufacturing systems, telephone calls in a call center, etc. Moreover, continuous and hybrid models will be also discussed. Topics include Discrete-Event Simulation, Input Modeling, Output Analysis, Random Number Generation, Verification and Validation, Stochastic Petri Nets and Markov Chains.

**Competence Certificate**

Depending on the number of participants in the course, the exam will be offered either as an oral exam (20 min), or as a written exam (60 min).

The exam takes place every semester and can be repeated at every regular examination date.

**Learning Objectives**

Knowledge:

- Demonstrate knowledge about general and specific theories, challenges, algorithms, methods, technologies, and tools related to modelling and simulation
- Demonstrate knowledge of two important classes of simulation:
    - Discrete-event Monte-Carlo simulation,
    - Continuous simulation with ODEs
- Demonstrate knowledge of algorithms necessary to build a simulator

Skills:

- Analyse suitability of an approach/tool for a given modelling problem
- Understand simulation models of various types
- Demonstrate methods and techniques to overcome common challenges in modelling and simulation
- Model simulation input data
- Analyse and model discrete stochastic systems
- Analyse and interpret simulation results

Competences:

- Use different methods to conduct simulation-based analysis of real-world data
- Build and simulate stochastic models
- Use simulation software

**Prerequisites**

Some experience in programming and knowledge of basic mathematics and statistics

**Form of instruction**

Lectures and exercises. A detailed course plan will be published before the semester start.

**Literature**
Discrete-Event System Simulation, 5th Edition

Jerry Banks, John S. Carson, II, Barry L. Nelson and David M. Nicol

# T 7.152 Course: Multicriteria Optimization [T-WIWI-111587]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | see Annotations | 1 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900209_SS2023_NK | Multicriteria Optimization | Stein |

**Competence Certificate**
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.
The examination is held in the semester of the lecture and in the following semester.

**Prerequisites**
None

**Recommendation**
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**
The course is offered every second winter semester (starting WiSe 22/23). The curriculum of the next three years is available online (www.ior.kit.edu).

Contents:

Multicriteria optimization deals with optimization problems with multiple objective functions. In practice, the minimization or maximization of several objectives often conflict with each other, such as weight and stability of mechanical components, return and risk of stock portfolios, or cost and duration of transports. Various scalarization approaches allow one to formulate single-objective problems that can be solved using nonlinear or global optimization techniques, and whose optimal points have a reasonable interpretation for the underlying multicriteria problem.

However, some seemingly obvious scalarization approaches suffer from various drawbacks, so that regardless of scalarization approaches, it is necessary to clarify what is meant by the solution of a multicriteria optimization problem in the first place. For such Pareto-optimal points, optimality conditions and solution procedures based on them can be formulated. From the usually non-unique Pareto set, decision makers finally choose an alternative based on their subjective preferences.

The lecture gives a mathematically sound introduction to multicriteria optimization and is structured as follows:

- Introductory examples and terminology
- Solution concepts
- Methods for the determination of the Pareto set
- Selection of Pareto-optimal points under subjective preferences

# T 7.153 Course: Multivariate Statistical Methods [T-WIWI-103124]

**Responsible:** Prof. Dr. Oliver Grothe
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-101637 - Analytics and Statistics
M-WIWI-101639 - Econometrics and Statistics II
M-WIWI-103289 - Stochastic Optimization
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550554 | Analysis of Multivariate Data | 2 SWS | Lecture / 🗣 | Grothe |
| ST 2023 | 2550555 | Übung zu Multivariate Verfahren | 2 SWS | Practice / 🗣 | Kächele |
| **Exams** | | | | | |
| ST 2023 | 7900351 | Multivariate Statistical Methods | | | Grothe |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

The exam is offered every semester. Re-examinations are offered only for repeaters.

**Prerequisites**
None

**Recommendation**
The course covers highly advanced statistical methods with a quantitative focus. Hence, participants are necessarily expected to have advanced statistical knowledge, e.g. acquired in the course "Advanced Statistics". Without this, participation in the course is not advised.

Previous attendance of the course Analysis of Multivariate Data is recommended. Alternatively, the script can be provided to interested students.

*Below you will find excerpts from events related to this course:*

## V Analysis of Multivariate Data

2550554, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Literature**
Skript zur Vorlesung

# T 7.154 Course: Nature-Inspired Optimization Methods [T-WIWI-102679]

**Responsible:** apl. Prof. Dr. Pradyumn Kumar Shukla
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-106412 - Computation & Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511106 | Nature-Inspired Optimization Methods | 2 SWS | Lecture / | Shukla |
| ST 2023 | 2511107 | Übungen zu Nature-Inspired Optimization Methods | 1 SWS | Practice / | Shukla |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_NOM_C1 | Nature-Inspired Optimization Methods (Registration until 17 July 2023) | | | Shukla |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**
**Please note: no exam can be offered in the winter semester 2023/2024.**

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Nature-Inspired Optimization Methods

2511106, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
Many optimization problems are too complex to be solved to optimality. A promising alternative is to use stochastic heuristics, based on some fundamental principles observed in nature. Examples include evolutionary algorithms, ant algorithms, or simulated annealing. These methods are widely applicable and have proven very powerful in practice. During the course, such optimization methods based on natural principles are presented, analyzed and compared. Since the algorithms are usually quite computational intensive, possibilities for parallelization are also investigated.

**Learning objectives**:
Students learn:

- Different nature-inspired methods: local search, simulated annealing, tabu search, evolutionary algorithms, ant colony optimization, particle swarm optimization
- Different aspects and limitation of the methods
- Applications of such methods
- Multi-objective optimization methods
- Constraint handling methods
- Different aspects in parallelization and computing platforms

**Literature**
* E. L. Aarts and J. K. Lenstra: 'Local Search in Combinatorial Optimization'. Wiley, 1997 * D. Corne and M. Dorigo and F. Glover: 'New Ideas in Optimization'. McGraw-Hill, 1999 * C. Reeves: 'Modern Heuristic Techniques for Combinatorial Optimization'. McGraw-Hill, 1995 * Z. Michalewicz, D. B. Fogel: How to solve it: Modern Heuristics. Springer, 1999 * E. Bonabeau, M. Dorigo, G. Theraulaz: 'Swarm Intelligence'. Oxford University Press, 1999 * A. E. Eiben, J. E. Smith: 'Introduction to Evolutionary Computation'. * M. Dorigo, T. Stützle: 'Ant Colony Optimization'. Bradford Book, 2004 Springer, 2003

# T 7.155 Course: Non- and Semiparametrics [T-WIWI-103126]

**Responsible:** Prof. Dr. Melanie Schienle
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2521300 | Non- and Semiparametrics | 2 SWS | Lecture | Schienle |
| WT 23/24 | 2521301 | | 2 SWS | Practice | Schienle, Rüter, Wolffram |
| **Exams** | | | | | |
| WT 23/24 | 7900009 | Non- and Semiparametrics | | | Schienle |

**Competence Certificate**
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**
None

**Recommendation**
Knowledge of the contents covered by the course *"Applied Econometrics"* [2520020]

**Annotation**
The course takes place every second winter semester: 2018/19 then 2020/21

*Below you will find excerpts from events related to this course:*

## V Non- and Semiparametrics

2521300, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**

**Content**
**Learning objectives:**

The student

- has profound knowledge of non- and semiparametric estimation methods
- is capable of implementing these methods using statistical software and using them to assess empirical problems

**Content:**

Kernel density estimation, local constant and local linear regression, bandwidth choice, series and sieve estimators, additive models, semiparametric models

**Requirements:**

It is recommended to attend the course *Applied Econometrics* 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**
Li, Racine: Nonparametric Econometrics: Theory and Practice. Princeton University Press, 2007.

# T 7.156 Course: Nonlinear Optimization I [T-WIWI-102724]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 4 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2550111 | Nonlinear Optimization I | 2 SWS | Lecture / 🗣 | Stein |
| WT 23/24 | 2550112 | Exercises Nonlinear Optimization I + II | | Practice / 🗣 | Stein, Schwarze |
| **Exams** | | | | | |
| ST 2023 | 7900202_SS2023_NK | Nonlinear Optimization I | | | Stein |
| WT 23/24 | 7900001_WS2324_HK | Nonlinear Optimization I | | | Stein |

Legend: 💻 Online, Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam. The exam takes place in the semester of the lecture and in the following semester.
The examination can also be combined with the examination of Nonlinear Optimization II [2550113]. In this case, the duration of the written examination takes 120 minutes.

**Prerequisites**
The module component exam T-WIWI-103637 "Nonlinear Optimization I and II" may not be selected.

**Annotation**
Part I and II of the lecture are held consecutively in the *same* semester.

*Below you will find excerpts from events related to this course:*

## V Nonlinear Optimization I

2550111, WS 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 condtions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

**Literature**
O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

**Weiterführende Literatur:**

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

# T 7.157 Course: Nonlinear Optimization I and II [T-WIWI-103637]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 9 | Grade to a third | Each winter term | 6 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2550111 | Nonlinear Optimization I | 2 SWS | Lecture / 🗣 | Stein |
| WT 23/24 | 2550112 | Exercises Nonlinear Optimization I + II | | Practice / 🗣 | Stein, Schwarze |
| WT 23/24 | 2550113 | Nonlinear Optimization II | 2 SWS | Lecture / 🗣 | Stein |
| **Exams** | | | | | |
| ST 2023 | 7900204_SS2023_NK | Nonlinear Optimization I and II | | | Stein |
| WT 23/24 | 7900003_WS2324_HK | Nonlinear Optimization I and II | | | Stein |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consits of a written exam (120 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

**Prerequisites**
None.

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-102724 - Nonlinear Optimization I must not have been started.
2. The course T-WIWI-102725 - Nonlinear Optimization II must not have been started.

**Annotation**
Part I and II of the lecture are held consecutively in the **same** semester.

*Below you will find excerpts from events related to this course:*

## V 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 condtions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

**Literature**
O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

**Weiterführende Literatur:**

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

## V Nonlinear Optimization II

2550113, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

**Literature**
O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

**Weiterführende Literatur:**

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

# T 7.158 Course: Nonlinear Optimization II [T-WIWI-102725]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2550112 | Exercises Nonlinear Optimization I + II | | Practice / 🗣 | Stein, Schwarze |
| WT 23/24 | 2550113 | Nonlinear Optimization II | 2 SWS | Lecture / 🗣 | Stein |
| **Exams** | | | | | |
| ST 2023 | 7900203_SS2023_NK | Nonlinear Optimization II | | | Stein |
| WT 23/24 | 7900002_WS2324_HK | Nonlinear Optimization II | | | Stein |

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consits of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The exam takes place in the semester of the lecture and in the following semester.

The exam can also be combined with the examination of *Nonlinear Optimization I* [2550111]. In this case, the duration of the written exam takes 120 minutes.

**Prerequisites**
None.

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-103637 - Nonlinear Optimization I and II must not have been started.

**Annotation**
Part I and II of the lecture are held consecutively in the same semester.

*Below you will find excerpts from events related to this course:*

## V Nonlinear Optimization II

2550113, 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 under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

**Remark:**

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

**Literature**
O. Stein, Grundzüge der Nichtlinearen Optimierung, 2. Aufl., SpringerSpektrum, 2021

**Weiterführende Literatur:**

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

# T 7.159 Course: Online Concepts for Karlsruhe City Retailers [T-WIWI-111848]

**Responsible:** Prof. Dr. Martin Klarmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101510 - Cross-Functional Management Accounting
M-WIWI-105312 - Marketing and Sales Management
M-WIWI-106258 - Digital Marketing

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2571184 | Online concepts for Karlsruhe city retailers | 2 SWS | Others / 🗣 | Klarmann, Kupfer, Weber, Gerlach |
| **Exams** | | | | | |
| ST 2023 | 7900221 | Online Concepts for Karlsruhe City Retailers | | | Klarmann |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment:

- presentations in teams (in each case to the extent of approx. 15 minutes per team with subsequent discussio)
- delivery of a written elaboration per team.

**Annotation**
Please note that an application is required to participate in this workshop. The application phase usually takes place at the beginning of the lecture period in the summer semester. More information on the application process is usually available on the Marketing and Sales Research Group website (marketing.iism.kit.edu) shortly before the start of the lecture period in the summer semester.

*Below you will find excerpts from events related to this course:*

## V Online concepts for Karlsruhe city retailers

2571184, SS 2023, 2 SWS, Language: German, Open in study portal

**Others (sonst.)**
**On-Site**

**Content**
**Content**
As part of a practical project in cooperation with the city marketing department of KME Karlsruhe Marketing und Event GmbH, students will have the opportunity to directly interact with retailers in Karlsruhe. Challenges of the digitalization of brick-and-mortar retailing will be analyzed and solutions will be developed and implemented.

In a theoretical part at the beginning of the event, students will gain an insight into the theoretical foundations of specific online marketing instruments. In cooperation with Karlsruhe City Marketing, students are taught application-oriented skills in online marketing tools, such as content management systems, social media platforms, search engine optimization or Google Ads campaigns.

In the practical part of the course, student teams cooperate with a real retailer in Karlsruhe's city center and learn how to analyze and optimize online presences and digital solutions based on key performance indicators. Possible use cases range from social media communication and website optimization to the introduction of innovative pricing and payment methods. In this way, students are given the tools for developing, maintaining and optimizing individual websites and digital solutions in stationary retailing.

Learning objectives result accordingly as follows:
- Learning of theoretical basics of central, application-oriented tools of online marketing
- Application and practical deep-dive of the acquired knowledge in a real case
- Concise and structured presentation of results

Total time required for 3 credit points: approx. 90.0 hours

Attendance time: 12 hours

Preparation and wrap-up of the course: 58 hours

Exam and exam preparation: 20 hours

# T 7.160 Course: Operations Research in Health Care Management [T-WIWI-102884]

**Responsible:** Prof. Dr. Stefan Nickel
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102805 - Service Operations

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 2 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900229 | Operations Research in Health Care Management | Nickel |

**Competence Certificate**
The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

**Prerequisites**
None

**Recommendation**
Basic knowledge as conveyed in the module "Introduction to Operations Research" is assumed.

**Annotation**
The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

# T 7.161 Course: Operations Research in Supply Chain Management [T-WIWI-102715]

**Responsible:** Prof. Dr. Stefan Nickel
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-102805 - Service Operations
M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550480 | Operations Research in Supply Chain Management | 2 SWS | Lecture / 🗣 | Nickel |
| ST 2023 | 2550481 | Übungen zu OR in Supply Chain Management | 1 SWS | Practice / 🗣 | Hoffmann |
| **Exams** | | | | | |
| ST 2023 | 00013 | Operations Research in Supply Chain Management | | | Nickel |
| WT 23/24 | 7900076 | Operations Research in Supply Chain Management | | | Nickel |

Legend: 🖥 Online, 🌼 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment is a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the lecture and the following lecture.

**Prerequisites**
None

**Recommendation**
Basic knowledge as conveyed in the module Introduction to Operations Research and in the lectures Facility Location and Strategic SCM,Tactical and operational SCMis assumed.

**Annotation**
The course is offered irregularly. Planned lectures for the next three years can be found in the internet at http://dol.ior.kit.edu/english/Courses.php.

*Below you will find excerpts from events related to this course:*

## V Operations Research in Supply Chain Management

2550480, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Supply Chain Management constitutes a general tool for logistics process planning in supply networks. To an increasing degree quantitative decision support is provided by methods and models from Operations Research. The lecture "OR in Supply Chain Management" conveys concepts and approaches for solving practical problems and presents an insight to current research topics. The lecture's focus is set on modeling and solution methods for applications originating in different domains of a supply chain. The emphasis is put on mathematical methods like mixed integer programming, valid inequalities or column generation, and the derivation of optimal solution strategies.

In form and content, the lecture addresses multiple areas of Supply Chain Management: After a short introduction, inventory models, scheduling, assembly line balancing as well as cutting and packing will be discussed. Another main focus of the lecture is the application of methods from online optimization. This optimization discipline has gained more and more importance in the optimization of supply chains over the several past years due to an increasing amount of dynamic data flows.

**Literature**


- Simchi-Levi, D.; Chen, X.; Bramel, J.: The Logic of Logistics: Theory, Algorithms, and Applications for Logistics and Supply Chain Management, 2nd edition, Springer, 2005
- Simchi-Levi, D.; Kaminsky, P.; Simchi-Levi, E.: Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies, McGraw-Hill, 2000
- Silver, E. A.; Pyke, D. F.; Peterson, R.: Inventory Management and Production Planning and Scheduling, 3rd edition, Wiley, 1998
- Blazewicz, J.: Handbook on Scheduling - From Theory to Applications, Springer, 2007
- Pinedo, M. L.: Scheduling - Theory, Algorithms, and Systems (3rd edition), Springer, 2008
- Dyckhoff, H.; Finke, U.: Cutting and Packing in Production and Distribution - A Typology and Bibliography, Physica-Verlag, 1992
- Borodin, A.; El-Yaniv, R.: Online Computation and Competitive Analysis, Cambridge University Press, 2005
- Francis, R. L.; McGinnis, L. F.; White, A.: Facility Layout and Location: An Analytical Approach, 2nd edition, Prentice-Hall, 1992

# T 7.162 Course: Optimization Models and Applications [T-WIWI-110162]

**Responsible:** Dr. Nathan Sudermann-Merx
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | see Annotations | 1 |

**Competence Certificate**
The examination will take place for the last time in the winter semester 2020/2021.

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

The prerequisite for participation in the exam is the achievement of a minimum number of points in delivery sheets. Details will be announced at the beginning of the course.

**Prerequisites**
None.

**Annotation**
The course will take place for the last time in the winter semester 20/21.

# T 7.163 Course: Optimization under Uncertainty [T-WIWI-106545]

**Responsible:** Prof. Dr. Steffen Rebennack
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-103289 - Stochastic Optimization
M-WIWI-106412 - Computation & Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2550464 | Optimization Under Uncertainty | 2 SWS | Lecture / | Rebennack |
| WT 23/24 | 2550465 | Übungen zu Optimierungsansätze unter Unsicherheit | 1 SWS | Practice / | Rebennack |
| WT 23/24 | 2550466 | | 2 SWS | Others | Rebennack |
| **Exams** | | | | | |
| ST 2023 | 7900309 | Optimization under Uncertainty | | | Rebennack |
| ST 2023 | 7900322 | Optimization under Uncertainty | | | Rebennack |

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 every the semester.

**Prerequisites**
None.

# T 7.164 Course: Panel Data [T-WIWI-103127]

**Responsible:** apl. Prof. Dr. Wolf-Dieter Heller
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2520320 | Panel Data | 2 SWS | Lecture | Heller |
| ST 2023 | 2520321 | Übungen zu Paneldaten | 2 SWS | Practice | Heller |
| **Exams** | | | | | |
| ST 2023 | 7900115 | Panel Data | | | Heller |

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Panel Data

2520320, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**

**Content**
**Content:**
Fixed-Effects-Models, Random-Effects-Models, Time-Demeaning
**Workload:**
Total workload for 4.5 CP: approx. 135 hours
Attendance: 30 hours
Preparation and follow-up: 65 hours
Exam preparation: 40 hours
Exam preparation: 40 hours

**Literature**
Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge and London: MIT Press.
Wooldridge, J. M. (2009). *Introductory Econometrics: A Modern Approach* (5th ed.). Mason, Ohio: South-Western Cengage Learning.

# T 7.165 Course: Parametric Optimization [T-WIWI-102855]

**Responsible:** Prof. Dr. Oliver Stein
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

**Competence Certificate**
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

The examination is held in the semester of the lecture and in the following semester.

**Prerequisites**
None

**Recommendation**
It is strongly recommended to visit at least one lecture from the Bachelor program of this chair before attending this course.

**Annotation**
The lecture is offered irregularly. The curriculum of the next three years is available online (www.ior.kit.edu).

# T 7.166 Course: Patent Law [T-INFO-101310]

**Responsible:** Patric Werner
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101215 - Intellectual Property Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each summer term | 3 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 24656 | Patent Law | 2 SWS | Lecture / 🗣 | Werner |
| **Exams** | | | | | |
| ST 2023 | 7500109 | Patent Law | | | Dreier, Matz |
| WT 23/24 | 7500006 | Patent Law | | | Matz |

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

# T 7.167 Course: Planning and Management of Industrial Plants [T-WIWI-102631]

**Responsible:** Prof. Dr. Frank Schultmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101471 - Industrial Production II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 5,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581952 | Planning and Management of Industrial Plants | 2 SWS | Lecture / 🗣 | Schultmann, Rudi |
| WT 23/24 | 2581953 | Übungen Anlagenwirtschaft | 2 SWS | Practice / 🗣 | Heck, Heinzmann |
| **Exams** | | | | | |
| ST 2023 | 7981952 | Planning and Management of Industrial Plants | | | Schultmann |

Legend: 💻 Online, 🎭 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (90 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Planning and Management of Industrial Plants

2581952, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Industrial plant management incorporates a complex set of tasks along the entire life cycle of an industrial plant, starting with the initiation and erection up to operating and dismantling.

During this course students will get to know special characteristics of industrial plant management. Students will learn important methods to plan, realize and supervise the supply, start-up, maintenance, optimisation and shut-down of industrial plants. Alongside, students will have to handle the inherent question of choosing between technologies and evaluating each of them. This course pays special attention to the specific characteristics of plant engineering, commissioning and investment.

**Literature**
Wird in der Veranstaltung bekannt gegeben.

# T 7.168 Course: Platform & Market Engineering: Commerce, Media, and Digital Democracy [T-WIWI-112823]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101409 - Electronic Markets
M-WIWI-101411 - Information Engineering
M-WIWI-101446 - Market Engineering
M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-102754 - Service Economics and Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540460 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | 2 SWS | Lecture / 🗣 | Fegert, Weinhardt |
| ST 2023 | 2540461 | Übungen zu Platform & Market Engineering: Commerce, Media, and Digital Democracy | 1 SWS | Practice / 🗣 | Jachimowicz, Stein, Bezzaoui, Fegert |
| **Exams** | | | | | |
| ST 2023 | 7979235 | Platform & Market Engineering: Commerce, Media, and Digital Democracy | | | Weinhardt |

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) up to 6 bonus points can be obtained. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by max. one grade level (0.3 or 0.4).

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-102640 - Market Engineering: Information in Institutions must not have been started.

*Below you will find excerpts from events related to this course:*

## V Platform & Market Engineering: Commerce, Media, and Digital Democracy

2540460, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Organizational issues**
ehemals: **"Market Engineering: Information in Institutions"**

**Literature**


- Roth, A., The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics. Econometrica 70(4): 1341-1378, 2002.
- Weinhardt, C. ,Holtmann, C., Neumann, D., Market Engineering. Wirtschaftsinformatik, 2003.
- Wolfstetter, E., Topics in Microeconomics - Industrial Organization, Auctions, and Incentives. Cambridge, Cambridge University Press, 1999.
- Smith, V. "Theory, Experiments and Economics", The Journal of Economic Perspectives,Vol. 3, No. 1, 151-69 1989

# T 7.169 Course: Portfolio and Asset Liability Management [T-WIWI-103128]

**Responsible:** Dr. Mher Safarian
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101639 - Econometrics and Statistics II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2520357 | Portfolio and Asset Liability Management | 2 SWS | Lecture | Safarian |
| ST 2023 | 2520358 | Übungen zu Portfolio and Asset Liability Management | 2 SWS | Practice | Safarian |
| **Exams** | | | | | |
| ST 2023 | 7900116 | Portfolio and Asset Liability Management | | | Safarian |

**Competence Certificate**
The assessment of this course consists of a written examination (following §4(2), 1 SPOs, 180 min.).

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Portfolio and Asset Liability Management

2520357, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**

**Content**
**Learning objectives:**

Knowledge of various portfolio management techniques in the financial industry.

**Content:**

Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment

Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

**Workload:**

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

**Organizational issues**
Blockveranstaltung, Termine werden über Ilias bekanntgegeben

**Literature**
To be announced in the lecture

# T 7.170 Course: Practical Philosophy 1.1 [T-GEISTSOZ-101170]

**Responsible:** Prof. Dr. Michael Schefczyk
**Organisation:** KIT Department of Humanities and Social Sciences
**Part of:** M-WIWI-106413 - Digitalization & Society

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Completed coursework | 4,5 | pass/fail | Each winter term | 4 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 5012044 | Introduction to Political and Moral Philosophy | 2 SWS | Course / 🗣 | Schefczyk |
| **Exams** | | | | | |
| WT 23/24 | 7400078 | Introduction to Practical Philosophy | | | Schefczyk |

Legend: 📱 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Prerequisites**
none

# T 7.171 Course: Practical Seminar Digital Service Systems [T-WIWI-106563]

**Responsible:** Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102808 - Digital Service Systems in Industry

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Irregular | 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Events** | | | | | |
| ST 2023 | 2540554 | Practical Seminar: Information Systems & Service Design (Master) | 3 SWS | Lecture / | Mädche |
| WT 23/24 | 2540554 | Practical Seminar: Information Systems & Service Design | 3 SWS | Lecture / | Mädche |
| **Exams** | | | | | |
| ST 2023 | 7900293 | Service Design Thinking | | | Satzger |
| ST 2023 | 7900301 | Practical Seminar Service Innovation | | | Satzger |
| ST 2023 | 7900314 | Practical Seminar Digital Service Systems | | | Satzger |
| WT 23/24 | 7900341 | Practical Seminar: Information Systems and Service Design | | | Mädche |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

**Prerequisites**
None

**Recommendation**
None

**Annotation**
New course title starting summer term 2017: "Practical Seminar Digital Service Systems".
The current range of seminar topics is announced on the KSRI website www.ksri.kit.edu.

*Below you will find excerpts from events related to this course:*

## V Practical Seminar: Information Systems & Service Design (Master)

2540554, SS 2023, 3 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

**Prerequisites**

Profound skills in software development are required

**Literature**

Further literature will be made available in the seminar.

## V Practical Seminar: Information Systems & Service Design

2540554, WS 23/24, 3 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

# T 7.172 Course: Practical Seminar: Artificial Intelligence in Service Systems [T-WIWI-112152]

**Responsible:** Prof. Dr. Gerhard Satzger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101506 - Service Analytics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Irregular | 1 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900301 | Practical Seminar Service Innovation | Satzger |

**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 final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

**Prerequisites**
None.

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-108437 - Practical Seminar: Information Systems and Service Design must not have been started.

**Recommendation**
Knowledge in the field of Artificial Intelligence in Service Systems is assumed. Therefore, it is recommended to attend the course Artificial Intelligence in Service Systems [2595650] beforehand.

# T 7.173 Course: Practical Seminar: Data-Driven Information Systems [T-WIWI-106207]

**Responsible:** Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger
Prof.Dr. Thomas Setzer
Prof. Dr. Christof Weinhardt

**Organisation:** KIT Department of Economics and Management

**Part of:** M-WIWI-103117 - Data Science: Data-Driven Information Systems

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Irregular | 1 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900165 | Practical Seminar: Data Science for Industrial Applications | Satzger |

**Competence Certificate**
The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

**Prerequisites**
None

**Recommendation**
At least one module offered by the institute should have been chosen before attending this seminar.

**Annotation**
The course is held in english. The course is not offered regularly.

# T 7.174 Course: Practical Seminar: Health Care Management (with Case Studies) [T-WIWI-102716]

**Responsible:** Prof. Dr. Stefan Nickel
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102805 - Service Operations

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550498 | Practical seminar: Health Care Management | 3 SWS | Seminar / | Nickel, Mitarbeiter |
| WT 23/24 | 2500008 | Practical seminar: Health Care Management | 3 SWS | Others / | Nickel, Mitarbeiter |
| **Exams** | | | | | |
| ST 2023 | 7900312 | Practical Seminar: Health Care Management (with Case Studies) | | | Nickel |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Due to a research semester of Professor Nickel in WS 19/20, the courses *Location Planning and Strategic SCM* and *Practice Seminar: Health Care Management* do NOT take place in WS 19/20. Please also refer to the information at https://dol.ior.kit.edu/Lehrveranstaltungen.php for further details.

The assessment consists in a case study, the writing of a corresponding paper, and an oral exam (according to §4(2), 2 of the examination regulation).

**Prerequisites**
None.

**Recommendation**
Basic knowledge as conveyed in the module *Introduction toOperations Research* is assumed.

**Annotation**
The credits have been reduced to 4,5 starting summer term 2016.

The lecture is offered every term.

The planned lectures and courses for the next three years are announced online.

# T 7.175 Course: Practical Seminar: Information Systems and Service Design [T-WIWI-108437]

**Responsible:** Prof. Dr. Alexander Mädche
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102806 - Service Innovation, Design & Engineering
M-WIWI-104068 - Information Systems in Organizations
M-WIWI-104080 - Designing Interactive Information Systems

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540554 | Practical Seminar: Information Systems & Service Design (Master) | 3 SWS | Lecture / | Mädche |
| **Exams** | | | | | |
| WT 23/24 | 7900341 | Practical Seminar: Information Systems and Service Design | | | Mädche |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

**Prerequisites**
None.

**Recommendation**
Attending the course „Digital Service Design“ is recommended, but not mandatory.

**Annotation**
The course is held in English.

*Below you will find excerpts from events related to this course:*

## V Practical Seminar: Information Systems & Service Design (Master)

2540554, SS 2023, 3 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
In this practical seminar, students get an individual assignment and develop a running software prototype. Beside the software prototype, the students also deliver a written documentation.

**Prerequisites**

Profound skills in software development are required

**Literature**

Further literature will be made available in the seminar.

# T 7.176 Course: Practical Seminar: Service Innovation [T-WIWI-110887]

**Responsible:** Prof. Dr. Gerhard Satzger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101410 - Business & Service Engineering
M-WIWI-102806 - Service Innovation, Design & Engineering

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Irregular | 1 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900293 | Service Design Thinking | Satzger |
| ST 2023 | 7900301 | Practical Seminar Service Innovation | Satzger |

**Competence Certificate**
The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted pracitical components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

**Prerequisites**
None

**Recommendation**
Knowledge of Service Innovation Methods is assumed. Therefore it is recommended to attend the course Service Innovation [2540468] beforehand.

**Annotation**
Due to the project work, the number of participants is limited and participation requires knowledge about models, concepts and approaches that are taught in the Service Innovation lecture. Having taken the Service Innovation lecture or demonstrating equivalent knowledge is a prerequisite for participating in this Practical Seminar. Details for registration will be announced on the web pages for this course.

The seminar is not offered regularly.

# T 7.177 Course: Predictive Mechanism and Market Design [T-WIWI-102862]

**Responsible:** Prof. Dr. Johannes Philipp Reiß
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101453 - Applied Strategic Decisions
M-WIWI-101505 - Experimental Economics
M-WIWI-106408 - Digital Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

**Competence Certificate**
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

**Prerequisites**
None

**Annotation**
The course is given every second fall term, e.g., WS2017/18, WS2019/20, ...

The retake exam is given in the summer term subsequent to the fall term where the course (lecture and final exam) is given.

# T 7.178 Course: Predictive Modeling [T-WIWI-110868]

**Responsible:** Prof. Dr. Fabian Krüger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2521311 | Predictive Modeling | 2 SWS | Lecture / 🗣 | Krüger, Eberl, Koster |
| ST 2023 | 2521312 | Predictive Modeling (Tutorial) | 2 SWS | Practice / 🗣 | Koster, Eberl |
| **Exams** | | | | | |
| ST 2023 | 7900298 | Predictive Modeling | | | Krüger |
| WT 23/24 | 7900014 | Predictive Modeling | | | Krüger |

Legend: 💻 Online, Blended (On-Site/Online), 🗣 On-Site, × Cancelled

**Competence Certificate**
The assessment of this course is a written examination (90 minutes) according to §4(2), 1 of the examination regulation. 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

*Below you will find excerpts from events related to this course:*

## V Predictive Modeling

2521311, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
**Contents**

This course presents methods for making and evaluating statistical predictions based on data. We consider various types of predictions (mean, probability, quantile, and full distribution), all of which are practically relevant. In each case, we discuss selected modeling approaches and their implementation using R software. We consider various economic case studies. Furthermore, we present methods for absolute evaluation (assessing whether a given model is compatible with the data) and relative evaluation (comparing the predictive performance of alternative models).

**Learning objectives**
Students have a good conceptual understanding of statistical prediction methods. They are able to implement these methods using statistical software, and can assess which method is suitable in a given situation.

**Prerequisites**

Students should know econometrics on the level of the course `Applied Econometrics' [2520020]

**Literature**


- Elliott, G., und A. Timmermann (Hrsg.): "Handbook of Economic Forecasting", vol. 2A und 2B, 2013.
- Gneiting, T., und M. Katzfuss: "Probabilistic Forecasting", Annual Review of Statistics and Its Application 1, 125-151, 2014.
- Hastie, T., Tibshirani, R., and J. Friedman: "The Elements of Statistical Learning", 2. Ausgabe, Springer, 2009.
- Weitere Literatur wird in der Vorlesung bekanntgegeben.


## V Predictive Modeling (Tutorial)

2521312, SS 2023, 2 SWS, Language: English, Open in study portal

**Practice (Ü)**
**On-Site**

# T 7.179 Course: Price Management [T-WIWI-105946]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz
Dr Paul Glenn
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101409 - Electronic Markets

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2540529 | Price Management | 2 SWS | Lecture / 🗣 | Glenn |
| **Exams** | | | | | |
| ST 2023 | 7900139 | Price Management | | | Geyer-Schulz |
| WT 23/24 | 7900170 | Price Management (Nachklausur SS 2023) | | | Geyer-Schulz |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Lecture and exam will not be offered in summer semester 2019. The next examination is in the summer semester 2020.

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The lecture is offered for the first time in summer term 2016.

*Below you will find excerpts from events related to this course:*

## V Price Management

2540529, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Organizational issues**
Termine:

Samstags von 9:00 - 19:00 Uhr

29.04.2023 => (verschoben auf **06.05.2023**) - **Termin 1**

20.05.2023 => (verschoben auf **03.06.2023**) - **Termin 2**

**17.06.2023 - Termin 3**
**08.07.2023 - Termin 4**

**Literature**

- H. Simon and M. Fassnacht, *Preismanagement*, vol. 4. Wiesbaden: Springer Gabler, 2016.
- T. T. Nagle, J. E. Hogan, und J. Zalee, *The Strategy and Tactics of Pricing: A guide to growing more profitably*. New Jersey: Prentice Hall, 2010.

# T 7.180 Course: Pricing [T-WIWI-102883]

**Responsible:** Prof. Dr. Martin Klarmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105312 - Marketing and Sales Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2572199 | Pricing | 3 SWS | Block / 🗣 | Bill, Klarmann, Schröder |

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment. The examination (and thus the grade) is composed of three parts:

1. The design and execution of your own small experimental study around the topic of behavioral pricing (as group work).
2. The processing and presentation of a case study on pricing (as group work).
3. The execution of a simulated price negotiation based on a systematic preparation (usually in teams of two).

**Prerequisites**
Since the earlier course (a) "Pricing Excellence" and (b) "Price Negotiations and Sales Presentations" become parts of the Pricing course, Pricing cannot be taken if (a) and/or (b) have already been completed.

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-111246 - Pricing Excellence must not have been started.
2. The course T-WIWI-102891 - Price Negotiation and Sales Presentations must not have been started.

**Recommendation**
Students are highly encouraged to actively participate in class.

**Annotation**
A small application is required for participation in this class. The application phase usually takes place at the beginning of the lecture period in the winter semester. More information on the application process will be made available on the Marketing and Sales Research Group website (marketing.iism.kit.edu) shortly before the start of the winter semester lecture period. This course is limited to 24 participants.

*Below you will find excerpts from events related to this course:*

V **Pricing** **Block (B) On-Site**
2572199, WS 23/24, 3 SWS, Language: English, Open in study portal

**Content**
At the Pricing lecture, students learn about current research and best practices in price management. Delivered in workshop format, the lecture has three key elements:

1. "Behavioral Pricing" workshop
   In this part of the course, central concepts and findings from behavioral pricing research (e.g. price information processing, reference prices, price fairness and mental accounting) are presented and discussed on the basis of important behavioral theories (e.g. prospect theory and information economics). After a brief introduction to experimental research, participants will then conduct their own small experimental study in the form of group work on a hypothesis they have developed on pricing behavior, analyze the data, and present it.

2. "Pricing Excellence" workshop
   In a theory section at the beginning of the course, students are taught theoretical principles of pricing. This includes an introduction to (1) pricing of product prices as well as (2) pricing of net customer prices (development of discount systems). Furthermore, theoretical basics of price enforcement and price monitoring are discussed. This will be followed by a practical application of what has been learned by working on a case study in small groups with a concluding presentation.

3. "Price Negotiation" workshop
   After an introduction to key theories and concepts of negotiation, students prepare and then conduct a simulated price negotiation in small groups with guidance.

Learning Objectives:

Students...

- are familiar with central theories explaining behavioral phenomena regarding consumers dealing with prices
- are able to describe and explain central phenomena of behavioral science with regard to price behavior and derive implications from them
- can formulate their own hypotheses on price behavior and design, conduct and evaluate a suitable experimental study for this purpose
- learn theoretical basics of pricing behavior
- learn the theoretical basics of price enforcement and price monitoring
- apply the acquired knowledge in a practical case study
- know important conceptual basics on the subject of price negotiations
- can prepare and competently conduct price negotiations
- present the results of their group work in a concise and structured manner

All events will take place in presence with compulsory attendance at all dates.

Total time required for 4.5 credit points: approx. 135 hours

Attendance time: 30 hours

Self-study: 105 hours

**Organizational issues**
Dates will be announced.

# T 7.181 Course: Probabilistic Time Series Forecasting Challenge [T-WIWI-111387]

**Responsible:** Prof. Dr. Fabian Krüger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Irregular | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500080 | Probabilistic Time Series Forecasting Challenge | 2 SWS | Practice / | Bracher, Koster, Lerch |
| WT 23/24 | 2500081 | Probabilistic Time Series Forecasting Challenge | | Project / | Bracher, Koster, Lerch |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment. Necessary conditions to pass the course:

1. Weekly submission of statistical forecasts during the semester (excluding the Christmas break),
2. Submission of a final report (10-15 pages) at the end of the semester, describing the forecasting methods and their statistical evaluation.

Grading is based on the final report.

**Prerequisites**
Good methodological knowledge in statistics and data science.
Good knowledge in applied data analysis, incl. programming skills in R, Python or similar.
Knowledge of time series analysis is helpful, but not required.

**Annotation**
The course is limited in participation. Participants will be selected via the WIWI portal.

*Below you will find excerpts from events related to this course:*

## V Probabilistic Time Series Forecasting Challenge

2500081, WS 23/24, SWS, Language: English, Open in study portal

**Project (PRO)**
**Blended (On-Site/Online)**

**Content**
Statistical forecasts are relevant across all fields of society. In this data science project, students make, evaluate and communicate their own statistical forecasts in a real-time setting. We consider probabilistic forecasts that involve a measure of uncertainty in addition to a point forecast. Students are asked to make forecasts of several real-world time series (including weather variables and the DAX stock market index). Historical data on all series are available from public sources that are updated as time proceeds. While the time series differ from each other in important ways, statistical methods can meaningfully be used for prediction in all cases. We focus on quantile forecasts which are useful to measure forecast uncertainty in a relatively simple way.

**Organizational issues**
**Short description**

In this data science project, students make and evaluate statistical forecasts in a realistic setup (involving real-time predictions and real-world time series data). A kick-off meeting will take place in mid October. During the semester, there will be a weekly meeting in which students and instructors discuss the current state of the forecasting challenge.

**Prerequisites**

Students should have a good working knowledge of statistics and data science, including proficiency in a programming language like R, Python, or Matlab. Knowledge of time series analysis is helpful but not strictly required. Motivation and curiosity are particularly important in this course format that requires regular, active participation over the whole semester.

Please note that the number of participants is limited due to the interactive course format. Application takes place via the Wiwi portal, where further information is available.

**Examination rules**

The project seminar counts for 4.5 credit points (Leistungspunkte). Examination is via an alternative exam assessment (§4(2), 3 SPO). Necessary conditions to pass the course: 1) Weekly submission of statistical forecasts during the semester (excluding the Christmas break), 2) Submission of a final report (10-15 pages) at the end of the semester, describing the forecasting methods and their statistical evaluation. Grading is based on the final report.

# T 7.182 Course: Process Mining [T-WIWI-109799]

**Responsible:** Prof. Dr. Andreas Oberweis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-105880 - Informatics & Machine Learning

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511204 | Process Mining | 2 SWS | Lecture / 🗣 | Oberweis |
| ST 2023 | 2511205 | Exercise Process Mining | 1 SWS | Practice / 🗣 | Oberweis, Schreiber, Schüler, Rybinski |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_PM_C2 | Process Mining (Registration until 17 July 2023) | | | Oberweis |
| WT 23/24 | 79AIFB_PM_A5 | Process Mining | | | Oberweis |

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**
None

**Annotation**
Former name (up to winter semester 2018/1019) "Workflow Management".

*Below you will find excerpts from events related to this course:*

V **Process Mining** — **Lecture (V) On-Site**
2511204, SS 2023, 2 SWS, Language: German, Open in study portal

**Content**
The area of process mining covers approaches which aim at deducting new knowledge on the basis of logfiles generated by information systems. Such information systems are e.g., workflow-management-systems which are used for an efficient control of processes in enterprises and organisations. The lecture introduces the foundations of processes and respective modeling and analysis techniques. In the following, the foundations of process mining and the three classical types of approaches - discovery, conformance and enhancement - will be taught. In addition to the theoretical basics, tools, application scenarios in practice and open research questions are covered as well.

**Learning objectives:**

Students

- understand the concepts and approaches of process mining and know how they are applied,
- create and evaluate business process models,
- analyze static and dynamic properties of workflows,
- apply approaches and tools of process mining.

**Recommendations**:

Knowledge of course Applied Informatics - Modelling is expected.

**Workload**:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

**Literature**


- W. van der Aalst, H. van Kees: Workflow Management: Models, Methods and Systems, Cambridge, The MIT Press, 2002.
- W. van der Aalst: Process Mining: Data Science in Action. Springer, 2016.
- J. Carmona, B. van Dongen, A. Solti, M. Weidlich: Conformance Checking: Relating Processes and Models. Springer, 2018.
- A. Drescher, A. Koschmider, A. Oberweis: Modellierung und Analyse von Geschäftsprozessen: Grundlagen und Übungsaufgaben mit Lösungen. De Gruyter Studium, 2017.
- A. Oberweis: Modellierung und Ausführung von Workflows mit Petri-Netzen. Teubner-Reihe Wirtschaftsinformatik, B.G. Teubner Verlag, 1996.
- R. Peters, M. Nauroth: Process-Mining: Geschäftsprozesse: smart, schnell und einfach, Springer, 2019.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer, 2012.
- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer, 2012.


Weitere Literatur wird in der Vorlesung bekannt gegeben.

# T 7.183 Course: Product and Innovation Management [T-WIWI-109864]

**Responsible:** Prof. Dr. Martin Klarmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101510 - Cross-Functional Management Accounting
M-WIWI-101514 - Innovation Economics
M-WIWI-105312 - Marketing and Sales Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each summer term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2571154 | Product and Innovation Management | 2 SWS | Lecture / 🗣 | Klarmann |
| **Exams** | | | | | |
| ST 2023 | 7900024 | Product and Innovation Management | | | Klarmann |
| WT 23/24 | 7900055 | Product and Innovation Management | | | Klarmann |

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of success takes place through a written exam with additional aids in the sense of an open book exam. Further details will be announced during the lecture.

**Prerequisites**
None

**Annotation**
Please note that Product and Innovation Management will not be offered again until summer semester 2026. The course will not take place in the summer semester 2024 and 2025.
For further information, please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

*Below you will find excerpts from events related to this course:*

## V Product and Innovation Management

2571154, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
This course addresses topics around the management of new as well as existing products. After the foundations of product management, especially the product choice behavior of customers, students get to know in detail different steps of the innovation process. Another section regards the management of the existing product portfolio.

Students

- know the most important terms of the product and innovation concept

- understand the models of product choice behavior (e.g., the Markov model, the Luce model)

- are familiar with the basics of network theory (e.g. the Triadic Closure concept)

- know the central strategic concepts of innovation management (especially the market driving approach, pioneer and successor, Miles/Snow typology, blockbuster strategy)

- master the most important methods and sources of idea generation (e.g. open innovation, lead user method, crowdsourcing, creativity techniques, voice of the customer, innovation games, conjoint analysis, quality function deployment, online toolkits)

- are capable of defining and evaluating new product concepts and know the associated instruments like focus groups, product testing, speculative sales, test market simulation Assessor, electronic micro test market

- have advanced knowledge about market introduction (e.g. adoption and diffusion models Bass, Fourt/Woodlock, Mansfield)

- understand important connections of the innovation process (cluster formation, innovation culture, teams, stage-gate process)

The assessment is carried out (according to §4(2), 3 SPO) in the form of a written open book exam.

Total effort for 3 credit points: approx. 90 hours

Presence time: 30 hours

Preparation and wrap-up of LV: 45.0 hours

Exam and exam preparation: 15.0 hours

For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

**Literature**
Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

# T 7.184 Course: Production and Logistics Management [T-WIWI-102632]

**Responsible:** Prof. Dr. Frank Schultmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101412 - Industrial Production III

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 5,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2581954 | Production and Logistics Management | 2 SWS | Lecture / 🗣 | Schultmann, Rudi |
| ST 2023 | 2581955 | Production and Logistics Managment | 2 SWS | Practice / 🗣 | Huster, Treml |
| **Exams** | | | | | |
| ST 2023 | 7981954 | Production and Logistics Management | | | Schultmann |

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (90 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Production and Logistics Management

2581954, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
This course covers central tasks and challenges of operative production and logistics management. Students get to know the set-up and mode of planning systems such as production planning and control systems, enterprise resource planning systems and advanced planning systems to cope with the accompanying planning tasks in supply chain management. Methods to solve these tasks from the field of operational research will be explored with respect to manufacturing program planning, material requirement planning, lot size problems and scheduling. Alongside to MRP II (Manufacturing Resources Planning), students will be introduced to integrated supply chain management approaches. Finally, commercially available planning systems will be presented and discussed.

**Literature**
Wird in der Veranstaltung bekannt gegeben.

# T 7.185 Course: Project Lab Cognitive Automobiles and Robots [T-WIWI-109985]

**Responsible:** Prof. Dr.-Ing. Johann Marius Zöllner
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2512501 | Practical Course Cognitive automobiles and robots (Master) | 3 SWS | Practical course / | Zöllner, Daaboul |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The alternative exam assessment consists of:

- a practical work
- a presentation and
- a written seminar thesis

Details of the grade formation will be announced at the beginning of the course.

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Practical Course Cognitive automobiles and robots (Master)

2512501, WS 23/24, 3 SWS, Language: German/English, Open in study portal

**Practical course (P)**
**Blended (On-Site/Online)**

**Content**
The lab is intended as a practical supplement to courses such as "Machine Learning 1/2".
Scientific topics, mostly in the area of autonomous driving and robotics, will be addressed in joint work with ML/KI methods. The goal of the internship is for participants to design, develop, and evaluate ML Software system.

In addition to the scientific goals, such as the study and application of methods, the aspects of project-specific teamwork in research (from specification to presentation of results) are also worked on in this internship.

The individual projects require the analysis of the set task, selection of appropriate methods, specification and implementation and evaluation of the solution approach. Finally, the selected solution is to be documented and presented in a short lecture.

**Learning Objectives**:

- Students will be able to practically apply theoretical knowledge from lectures on machine learning to a selected area of current research.
- Students will be proficient in analyzing and solving thematic problems.
- Students will be able to evaluate, document, and present their concepts and results.

**Recommendations:**

- Theoretical knowledge of machine learning and/or AI.
- Python knowledge
- Initial experience with deep learning frameworks such as PyTorch/Jax/Tensorflow may be beneficial.

**Workload**:

The workload of 5 credit points consists of practical implementation of the selected solution, as well as time for literature research and planning/specification of the selected solution. In addition, a short report and presentation of the work performed will be prepared.

**Organizational issues**
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

# T 7.186 Course: Project Lab Machine Learning [T-WIWI-109983]

**Responsible:** Prof. Dr.-Ing. Johann Marius Zöllner
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 5 | Grade to a third | Each summer term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2512500 | Project Lab Machine Learning | 3 SWS | Practical course / | Zöllner |
| **Exams** | | | | | |
| ST 2023 | 7900086 | Project Lab Machine Learning | | | Zöllner |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The alternative exam assessment consists of:

- a practical work
- a presentation and
- a written seminar thesis

Details of the grade formation will be announced at the beginning of the course.

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Project Lab Machine Learning

2512500, SS 2023, 3 SWS, Language: German/English, Open in study portal

**Practical course (P)**
**Blended (On-Site/Online)**

**Content**
The lab is intended as a practical supplement to lectures such as "Machine Learning". The theoretical basics are applied in the lab course. The aim of the lab course is that the participants work together to design, develop and evaluate a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

In addition to the scientific objectives involved in the investigation and application of the methods, aspects of project-specific teamwork in research (from specification to presentation of the results) are also developed in this practical course.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and implementation and evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

**Learning objectives:**

- Students can practically apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles.
- Students master the analysis and solution of corresponding problems in a team.
- Students can evaluate, document and present their concepts and results.

**Recommendations:**

Attendance of the lecture machine learning, C/C++ knowledge, Python knowledge

**Workload:**

The workload of 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

**Organizational issues**
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

# T 7.187 Course: Project Management [T-WIWI-103134]

**Responsible:** Prof. Dr. Frank Schultmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101412 - Industrial Production III
M-WIWI-101471 - Industrial Production II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581963 | Project Management | 2 SWS | Lecture / 🗣 | Schultmann, Volk |
| **Exams** | | | | | |
| ST 2023 | 7981963 | Project Management | | | Schultmann |

Legend: 🖥 Online, 🖥🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (examination of another type, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Project Management

2581963, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**

1. Introduction
2. Principles of Project Management
3. Project Scope Management
4. Time Management and Resource Scheduling
5. Cost Management
6. Quality Management
7. Risk Management
8. Stakeholder
9. Communication, Negotiation and Leadership
10. Project Controlling
11. Agile Project Management

**Literature**
Wird in der Veranstaltung bekannt gegeben.

# T 7.188 Course: Public Management [T-WIWI-102740]

**Responsible:** Prof. Dr. Berthold Wigger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101504 - Collective Decision Making
M-WIWI-101511 - Advanced Topics in Public Finance

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2561127 | Public Management | 3 SWS | Lecture / Practice / | Wigger |
| **Exams** | | | | | |
| ST 2023 | 790puma | Public Management | | | Wigger |
| WT 23/24 | 790puma | Public Management | | | Wigger |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

**Prerequisites**
None

**Recommendation**
Basic knowledge of Public Finance is required.

*Below you will find excerpts from events related to this course:*

## V Public Management

2561127, WS 23/24, 3 SWS, Language: German, Open in study portal

**Lecture / Practice (VÜ)**
**Blended (On-Site/Online)**

**Literature**
**Weiterführende Literatur:**


- Damkowski, W. und C. Precht (1995): Public Management; Kohlhammer
- Richter, R. und E.G. Furubotn (2003): Neue Institutionenökonomik; 3. Auflage, Mohr
- Schedler, K. und I. Proeller (2003): New Public Management; 2. Auflage; UTB
- Mueller, D.C. (2009): Public Choice III; Cambridge University Press
- Wigger, B.U. (2006): Grundzüge der Finanzwissenschaft; 2. Auflage; Springer

# T 7.189 Course: Public Revenues [T-WIWI-102739]

**Responsible:** Prof. Dr. Berthold Wigger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101511 - Advanced Topics in Public Finance

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2560120 | Public Revenues | 2 SWS | Lecture / 🗣 | Wigger |
| ST 2023 | 2560121 | Übung zu Öffentliche Einnahmen | 1 SWS | Practice / 🗣 | Wigger, Schmelzer |
| **Exams** | | | | | |
| ST 2023 | 790oeff | Public Revenues | | | Wigger |
| WT 23/24 | 790oeff | Public Revenues | | | Wigger |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

**Prerequisites**
None

**Recommendation**
Basic knowledge of Public Finance is required.

*Below you will find excerpts from events related to this course:*

## V Public Revenues

2560120, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**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**
**Literatur:**


- Homburg, S.(2000): *Allgemeine Steuerlehre,* Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4. Aufl., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* und *Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2. Aufl., Springer

# T 7.190 Course: Quantitative Methods in Energy Economics [T-WIWI-107446]

**Responsible:** Dr. Patrick Plötz
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101451 - Energy Economics and Energy Markets

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Oral examination | 3,5 | Grade to a third | Each winter term | 3 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581007 | Quantitative Methods in Energy Economics | 2 SWS | Lecture / 🗣 | Plötz |
| WT 23/24 | 2581008 | Übungen zu Quantitative Methods in Energy Economics | 1 SWS | Practice / 🗣 | Plötz, Britto |
| **Exams** | | | | | |
| ST 2023 | 7981007 | Quantitative Methods in Energy Economics | | | Fichtner |

Legend: 💻 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of an oral (30 minutes) exam (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Quantitative Methods in Energy Economics

2581007, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Energy economics makes use of many quantitative methods in exploration and analysis of data as well as in simulations and modelling. This lecture course aims at introducing students of energy economics into the application of quantitative methods and techniques as taught in elementary courses to real problems in energy economics. The focus is mainly on regression, simulation, time series analysis and related statistical methods as applied in energy economics.

Learning Goals:

The student

- knows and understands selected quantitative methods of energy economics
- is able to use selected quantitative methods of energy economics
- understands they range of usage, limits and is autonomously able to adress new problems by them.

**Literature**
Wird in der Vorlesung bekannt gegeben.

# T 7.191 Course: Recommender Systems [T-WIWI-102847]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101410 - Business & Service Engineering
M-WIWI-105661 - Data Science: Intelligent, Adaptive, and Learning Information Services

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2540506 | Recommender Systems | 2 SWS | Lecture / 🗣 | Geyer-Schulz |
| WT 23/24 | 2540507 | Exercise Recommender Systems | 1 SWS | Practice / 🗣 | Geyer-Schulz, Nazemi |
| **Exams** | | | | | |
| ST 2023 | 7900138 | Recommender Systems | | | Geyer-Schulz |
| WT 23/24 | 7900310 | Recommender Systems (WS 2023/2024) | | | Geyer-Schulz |

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.
A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Recommender Systems

2540506, WS 23/24, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
At first, an overview of general aspects and concepts of recommender systems and its relevance for service providers and customers is given. Next, different categories of recommender systems are discussed. This includes explicit recommendations like customer reviews as well as implicit services based on behavioral data. Furthermore, the course gives a detailed view of the current research on recommender systems at the Chair of Information Services and Electronic Markets.

**Learning objectives:**

The student

- is proficient in different statistical, data-mining, and game theory methods of computing implicit and explicit recommendations
- evaluates recommender systems and compares these with related services

**Workload:**

The total workload for this course is approximately 135 hours (4.5 credits):

Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

**Sum: 135h 00m**

**Exam:**

Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation.

The course is considered successfully taken, if at least 50 out of 100 points are acquired in the written exam. In this case, all additional points (up to 10) from excersise work will be added.

**Grade: Minimum points**

- 1,0: 95
- 1,3: 90
- 1,7: 85
- 2,0: 80
- 2,3: 75
- 2,7: 70
- 3,0: 65
- 3,3: 60
- 3,7: 55
- 4,0: 50
- 5,0: 0

**Literature**

Rakesh Agrawal, Tomasz Imielinski, and Arun Swami. Mining association rules between sets of items in large databases. In Sushil Jajodia Peter Buneman, editor, Proceedings of the ACM SIGMOD International Conference on Management of Data, volume 22, Washington, D.C., USA, Jun 1993. ACM, ACM Press.

Rakesh Agrawal and Ramakrishnan Srikant. Fast algorithms for mining association rules. In Proceedings of the 20th Very Large Databases Conference, Santiago, Chile, pages 487 – 499, Sep 1994.

Asim Ansari, Skander Essegaier, and Rajeev Kohli. Internet recommendation systems. Journal of Marketing Research, 37:363 – 375, Aug 2000.

Christopher Avery, Paul Resnick, and Richard Zweckhauser. The market for evaluations. American Economic Review, 89(3):564 – 584, 1999.

Ibrahim Cingil, Asuman Dogac, and Ayca Azgin. A Broader Approach to Personalization. Communications of the ACM, 43(8):136 – 141, Aug 2000.

Richard O. Duda, Peter E. Hart, and David G. Stork. Pattern Classification. Wiley-Interscience, New York, 2 edition, 2001.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. A customer purchase incidence model applied to recommender services. In R. Kohavi et al., editor, Proceedings of the WebKDD 2001 – Mining log data across all customer touchpoints, volume 2356 of Lecture Notes in Artificial Intelligence LNAI, pages 25–47, Berlin, 2002. ACM, Springer-Verlag.

Jon M. Kleinberg. Authoritative sources in a hyperlinked environment. JACM, 46(5):604–632, sep 1999.

Joseph Konstan, Bradley Miller, David Maltz, Jonathan Herlocker, Lee Gordon, and John Riedl. Grouplens: Applying Collaborative Filtering to Usernet News. Communications of the ACM, 40(3):77 – 87, Mar 1997.

Paul Resnick, Neophytos Iacovou, Peter Bergstrom, and John Riedl. Grouplens: An open architecture for collaborative filtering of netnews. In Proceedings of the conference on Computer supported cooperative work, pages 175 – 186. ACM Press, 1994.

**Weiterführende Literatur:**

Antoinette Alexander. The return of hardware: A necessary evil? Accounting Technology, 15(8):46 – 49, Sep 1999.

Christopher Avery and Richard Zeckhauser. Recommender systems for evaluating computer messages. Communications of the ACM, 40(3):88 – 89, Mar 1997.

Steven Bellman, Gerald Lohse, and Eric Johnson. Predictors of Online Buying Behavior. Communications of the ACM, 42(12):32 – 38, Dec 1999.

Thomas J. Blischok. Every transaction tells a story. Chain Store Age Executive with Shopping Center Age, 71(3):50–56, Mar 1995.

Hans Hermann Bock. Automatische Klassifikation. Vandenhoeck und Ruprecht, Göttingen, 1974.

Andrew S.C. Ehrenberg. Repeat-Buying: Facts, Theory and Applications. Charles Griffin & Company Ltd, London, 2 edition, 1988.

Wolfgang Gaul, Andreas Geyer-Schulz, Michael Hahsler, and Lars Schmidt-Thieme. eMarketing mittels Recommendersystemen. Marketing ZFP, 24:47 – 55, 2002.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. myvu: a next generation recommender system based on observed consumer behavior and interactive evolutionary algorithms. In W. Gaul, O. Opitz, and M. Schader, editors, Data Analysis – Scientific Modeling and Practical Applications, volume 18 of Studies in Classification, Data Analysis and Knowledge Organization, pages 447 – 457, Heidelberg, Germany, 2000. Springer.

Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. Educational and scientific recommender systems: Designing the information channels of the virtual university. International Journal of Engineering Education, 17(2):153 – 163, 2001.

Mark-Edward Grey. Recommendersysteme auf Basis linearer Regression, 2004.

John A. Hartigan. Clustering Algorithms. John Wiley and Sons, New York, 1975.

Kevin Kelly. New Rules for the New Economy: 10 Radical Strategies for a Connected World. Viking, 1998.

Taek-Hun Kim, Young-Suk Ryu, Seok-In Park, and Sung-Bong Yang. An improved recommendation algorithm in collaborative filtering. In K. Bauknecht, A. Min Tjoa, and G. Quirchmayr, editors, E-Commerce and Web Technologies, Third International Conference, Aix-en-Provence, France, volume 2455 of Lecture Notes in Computer Science, pages 254–261, Berlin, Sep 2002. Springer-Verlag.

Ron Kohavi, Brij Masand, Myra Spiliopoulou, and Jaideep Srivastava. Web mining. Data Mining and Knowledge Discovery, 6:5 – 8, 2002.

G. S. Maddala. Introduction to Econometrics. John Wiley, Chichester, 3 edition, 2001.

Andreas Mild and Martin Natter. Collaborative filtering or regression models for Internet recommendation systems? Journal of Targeting, Measurement and Analysis for Marketing, 10(4):304 – 313, Jan 2002.

Andreas Mild and Thomas Reutterer. An improved collaborative filtering approach for predicting cross-category purchases based on binary market basket data. Journal of Retailing & Consumer Services, 10(3):123–133, may 2003.

Paul Resnick and Hal R. Varian. Recommender Systems. Communications of the ACM, 40(3):56 – 58, Mar 1997.

Badrul M. Sarwar, Joseph A. Konstan, Al Borchers, Jon Herlocker, Brad Miller, and John Riedl. Using filtering agents to improve prediction quality in the grouplens research collaborative filtering system. In Proceedings of ACM Conference on Computer-Supported Cooperative Work, Social Filtering, Social Influences, pages 345 – 354, New York, 1998. ACM Press.

J. Ben Schafer, Joseph Konstan, and Jon Riedl. Recommender Systems in E-commerce. In Proceedings of the 1st ACM conference on Electronic commerce, pages 158 – 166, Denver, Colorado, USA, Nov 1999. ACM.

Upendra Shardanand and Patti Maes. Social information filtering: Algorithms for automating "word of mouth". In Proceedings of ACM SIGCHI, volume 1 of Papers: Using the Information of Others, pages 210 – 217. ACM, 1995.

# T 7.192 Course: Regulation Theory and Practice [T-WIWI-102712]

**Responsible:** Prof. Dr. Kay Mitusch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101406 - Network Economics
M-WIWI-101451 - Energy Economics and Energy Markets

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Oral examination | 4,5 | Grade to a third | see Annotations | 2 |

**Competence Certificate**
The lecture is not offered for an indefinite period of time.
Result of success is made by a 20-30 minutes oral examination. Examination is offered every semester and can be retried at any regular examination date.

**Prerequisites**
None

**Recommendation**
Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics and Principal-Agent- or Contract theories. Prior attendance of the lecture*Competition in Networks* [26240] is helpful in any case but not considered a formal precondition.

**Annotation**
The lecture is not offered for an indefinite period of time.

# T 7.193 Course: Responsible Artificial Intelligence [T-WIWI-111385]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-103117 - Data Science: Data-Driven Information Systems
M-WIWI-105923 - Incentives, Interactivity & Decisions in Organizations

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2545164 | Responsible Artificial Intelligence | 2 SWS | Lecture / 🗣 | Hoffmann, Miskiw |
| WT 23/24 | 2545165 | Responsible Artificial Intelligence | 1 SWS | Practice / 🗣 | Hoffmann, Miskiw |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The final grade is based on an examination of other type according to § 4 Par. 2 No. 3. It consists of

- The completion of an exercise including a short presentation (15 min)(max. 30 points)
- The completion of a case study including an oral exam (max. 60 points).

Further details are explained during the lecture.

**Prerequisites**
Prior to the start of the lecture, introductory materials will be provided for self-study. The lecture has a limitation of participants. Therefore, prior registration via the Wiwi-Portal is mandatory.

# T 7.194 Course: Risk Management in Industrial Supply Networks [T-WIWI-102826]

**Responsible:** Prof. Dr. Frank Schultmann
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101412 - Industrial Production III
M-WIWI-101471 - Industrial Production II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581992 | Risk Management in Industrial Supply Networks | 2 SWS | Lecture / 🗣 | Schultmann, Kaiser |
| **Exams** | | | | | |
| ST 2023 | 7981992 | Risk Management in Industrial Supply Networks | | | Schultmann |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (examination of another type, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Risk Management in Industrial Supply Networks

2581992, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
Students learn methods and tools to manage risks in complex and dynamically evolving supply chain networks. Students learn the key terms and concepts of risk management and decision theory, in particular expected utility theory. Based on the theoretic prerequisites, students are able to determine and analyze risk diversification, risk pooling, insurance mechanisms and get an overview on statistical risk measures and real options. These approaches are adapted to analyze supply chain risks in a network context. In this manner, students gain knowledge in basic notions of network theory, network metrics and network-strategies for supply chain decisions.

- Introduction
- Risks in decisions under uncertainty: Expected Utility Theory & risk preferences
- The newsvendor model; multivariate risks and insurance
- Risk measures & evaluation techniques: Value-at-Risk, Conditional Value at Risk, Monte Carlo and Real Options
- Transparency in complex supply chains
- Network risk: network basics and criticality
- Risk in supply networks: empirical approaches and insights

**Literature**
Wird in der Veranstaltung bekannt gegeben.

# T 7.195 Course: Roadmapping [T-WIWI-102853]

**Responsible:** Dr. Daniel Jeffrey Koch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)
M-WIWI-101507 - Innovation Management
M-WIWI-101507 - Innovation Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

**Competence Certificate**
Non exam assessment (§4 (2), 3 SPO 2007) respectively alternative exam assessments (§4(2), 3 SPO).

**Prerequisites**
None

**Recommendation**
Prior attendance of the course Innovation Management is recommended.

**Annotation**
See German version.

# T 7.196 Course: Selected Legal Issues of Internet Law [T-INFO-108462]

**Responsible:** N.N.
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101215 - Intellectual Property Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 24821 | Selected legal issues of Internet law | 2 SWS | Colloquium / 🗣 | Dreier |
| **Exams** | | | | | |
| ST 2023 | 7500099 | Selected Legal Issues of Internet Law | | | Dreier, Matz |

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-INFO-101307 - Internet Law must not have been started.

# T 7.197 Course: Self-Booking-HOC-SPZ-ZAK-STK-Graded [T-WIWI-111440]

**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Examination of another type | 3 | Grade to a third | 2 |

**Self service assignment of supplementary stdues**
This course can be used for self service assignment of grade aquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Zentrum für Angewandte Kulturwissenschaft und Studium Generale
- Studienkolleg

**Annotation**
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

# T 7.198 Course: Self-Booking-HOC-SPZ-ZAK-STK-Graded [T-WIWI-111439]

**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Examination of another type | 2 | Grade to a third | 2 |

**Self service assignment of supplementary stdues**
This course can be used for self service assignment of grade aquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Zentrum für Angewandte Kulturwissenschaft und Studium Generale
- Studienkolleg

**Annotation**
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

# T 7.199 Course: Self-Booking-HOC-SPZ-ZAK-STK-Graded [T-WIWI-111438]

**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Examination of another type | 1 | Grade to a third | 2 |

**Self service assignment of supplementary stdues**
This course can be used for self service assignment of grade aquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Zentrum für Angewandte Kulturwissenschaft und Studium Generale
- Studienkolleg

**Annotation**
Placeholder for self-booking of a graded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

# T 7.200 Course: Self-Booking-HOC-SPZ-ZAK-STK-Ungraded [T-WIWI-111442]

**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Completed coursework | 2 | pass/fail | 1 |

**Self service assignment of supplementary stdues**
This course can be used for self service assignment of grade aquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Zentrum für Angewandte Kulturwissenschaft und Studium Generale
- Studienkolleg

**Annotation**
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

# T 7.201 Course: Self-Booking-HOC-SPZ-ZAK-STK-Ungraded [T-WIWI-111441]

**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Completed coursework | 1 | pass/fail | 1 |

**Self service assignment of supplementary stdues**
This course can be used for self service assignment of grade aquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Zentrum für Angewandte Kulturwissenschaft und Studium Generale
- Studienkolleg

**Annotation**
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

# T 7.202 Course: Self-Booking-HOC-SPZ-ZAK-STK-Ungraded [T-WIWI-111443]

**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Completed coursework | 3 | pass/fail | 1 |

**Self service assignment of supplementary stdues**
This course can be used for self service assignment of grade aquired from the following study providers:

- House of Competence
- Sprachenzentrum
- Zentrum für Angewandte Kulturwissenschaft und Studium Generale
- Studienkolleg

**Annotation**
Placeholder for self-booking of a ungraded interdisciplinary qualification, which was provided at the House of Competence, the "Sprachenzentrum" or the Center for Applied Cultural Studies and Studium Generale.

# T 7.203 Course: Semantic Web Technologies [T-WIWI-110848]

**Responsible:** Dr.-Ing. Tobias Christof Käfer
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics
M-WIWI-105880 - Informatics & Machine Learning

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511310 | Semantic Web Technologies | 2 SWS | Lecture / 🗣 | Färber, Käfer, Braun |
| ST 2023 | 2511311 | Exercises to Semantic Web Technologies | 1 SWS | Practice / 🗣 | Färber, Käfer |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_SWebT_A4 | Semantic Web Technologies (Registration until 17 July 2023) | | | Färber |
| 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:*

## V Semantic Web Technologies

2511310, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The aim of the Semantic Web is to make the meaning (semantics) of data on the web usable in intelligent systems, e.g. in e-commerce and internet portals

Central concepts are the representation of knowledge in form of RDF and ontologies, the access via Linked Data, as well as querying the data by using SPARQL. This lecture provides the foundations of knowledge representation and processing for the corresponding technologies and presents example applications.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

**Learning objectives:**

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

**Recommendations**:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

**Workload**:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 60 hours
- Exam and exam preperation: 30 hours

**Literature**

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

**Weitere Literatur**

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. http://www.w3.org/TR/webarch/
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

**V** **Exercises to Semantic Web Technologies** **Practice (Ü) On-Site**
2511311, SS 2023, 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 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.

**Organizational issues**
Die Übungen finden im Rahmen der Termine der Blockvorlesung statt.

**Literature**

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

**Weitere Literatur**

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. http://www.w3.org/TR/webarch/
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

# T 7.204 Course: Seminar Creating a Patent Specification [T-ETIT-100754]

**Responsible:** Prof. Dr. Wilhelm Stork
**Organisation:** KIT Department of Electrical Engineering and Information Technology
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Completed coursework | 3 | pass/fail | Each summer term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2311633 | Seminar Creating a Patent Specification | 2 SWS | Seminar / 🗣 | Stork |
| **Exams** | | | | | |
| ST 2023 | 7311633 | Seminar Creating a Patent Specification | | | Stork |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Prerequisites**
none

# T 7.205 Course: Seminar Data-Mining in Production [T-MACH-108737]

**Responsible:** Prof. Dr.-Ing. Gisela Lanza
**Organisation:** KIT Department of Mechanical Engineering

**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2151643 | Seminar Data Mining in Production | 2 SWS | Seminar / | Lanza |
| WT 23/24 | 2151643 | Seminar Data Mining in Production | 2 SWS | Seminar / | Lanza |
| **Exams** | | | | | |
| ST 2023 | 76-T-MACH-108737 | Seminar Data-Mining in Production | | | Lanza |
| WT 23/24 | 76-T-MACH-108737 | Seminar Data-Mining in Production | | | Lanza |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

**Prerequisites**
none

**Annotation**
The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at https://www.wbk.kit.edu/studium-und-lehre.php.

*Below you will find excerpts from events related to this course:*

## V Seminar Data Mining in Production

2151643, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
In the age of Industry 4.0, large amounts of production data are generated by the global production networks and value chains. Their analysis enables valuable conclusions about production and lead to an increasing process efficiency. The aim of the seminar is to get to know production data analysis as an important component of future industrial projects. The students get to know the data mining tool KNIME and use it for analyses. A specific industrial use case with real production data enables practical work and offers direct references to industrial applications. The participants learn selected methods of data mining and apply them to the production data. The work within the seminar takes place in small groups on the computer. Subsequently, presentations on specific data mining methods have to be prepared.

**Learning Outcomes:**
The students …

- can name, describe and distinguish between different methods, procedures and techniques of production data analysis.
- can perform basic data analyses with the data mining tool KNIME.
- can analyze and evaluate the results of data analyses in the production environment.
- are able to derive suitable recommendations for action.
- are able to explain and apply the CRISP-DM model.

**Workload:**
regular attendance: 10 hours
self-study: 80 hours

**Organizational issues**
Die Teilnehmerzahl ist auf zwölf Studierende begrenzt. Termine und Fristen zur Veranstaltung werden unter https://www.wbk.kit.edu/studium-und-lehre.php bekanntgegeben.

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at https://www.wbk.kit.edu/studium-und-lehre.php.

**Literature**
**Medien:**
KNIME Analytics Platform

**Media:**
KNIME Analytics Platform

V

## Seminar Data Mining in Production

**Seminar (S)**
**On-Site**

2151643, WS 23/24, 2 SWS, Language: German, Open in study portal

**Content**
In the age of Industry 4.0, large amounts of production data are generated by the global production networks and value chains. Their analysis enables valuable conclusions about production and lead to an increasing process efficiency. The aim of the seminar is to get to know production data analysis as an important component of future industrial projects. The students get to know the data mining tool KNIME and use it for analyses. A specific industrial use case with real production data enables practical work and offers direct references to industrial applications. The participants learn selected methods of data mining and apply them to the production data. The work within the seminar takes place in small groups on the computer. Subsequently, presentations on specific data mining methods have to be prepared.

**Learning Outcomes:**

The students …

- can name, describe and distinguish between different methods, procedures and techniques of production data analysis.
- can perform basic data analyses with the data mining tool KNIME.
- can analyze and evaluate the results of data analyses in the production environment.
- are able to derive suitable recommendations for action.
- are able to explain and apply the CRISP-DM model.

**Workload:**

regular attendance: 10 hours
self-study: 80 hours

**Organizational issues**
Die Teilnehmerzahl ist auf zwölf Studierende begrenzt. Termine und Fristen zur Veranstaltung werden unter https://www.wbk.kit.edu/studium-und-lehre.php bekanntgegeben.

The number of students is limited to twelve. Dates and deadlines for the seminar will be announced at https://www.wbk.kit.edu/studium-und-lehre.php.

**Literature**
**Medien:**
KNIME Analytics Platform

**Media:**
KNIME Analytics Platform

# T 7.206 Course: Seminar in Business Administration A (Master) [T-WIWI-103474]

**Responsible:** Professorenschaft des Fachbereichs Betriebswirtschaftslehre
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2400121 | Interactive Analytics Seminar | 2 SWS | / | Beigl, Mädche |
| ST 2023 | 2500018 | Successful transformation through innovation | 2 SWS | Seminar / | Busch |
| ST 2023 | 2500020 | Digital Democracy - Challenges and opportunities of the digital society | 2 SWS | Seminar / | Fegert |
| ST 2023 | 2500027 | Design Seminar: Digital Citizen Science | 2 SWS | Seminar | Mädche |
| ST 2023 | 2500125 | Engineering Seminar: Human-Centered Systems | 3 SWS | Seminar / | Mädche |
| ST 2023 | 2530580 | Seminar in Finance (Master) | 2 SWS | Seminar / | Uhrig-Homburg, Müller, Thimme |
| ST 2023 | 2540472 | Digital Citizen Science | 2 SWS | Seminar | Weinhardt, Knierim, Mädche |
| ST 2023 | 2540475 | Positive Information Systems | 2 SWS | Seminar | Knierim, del Puppo, Bartholomeyczik |
| ST 2023 | 2540477 | Digital Experience & Participation | 2 SWS | Seminar | Peukert, Fegert |
| ST 2023 | 2540478 | Smart Grid Economics & Energy Markets | 2 SWS | Seminar | Henni, Semmelmann, Bluhm, Golla |
| ST 2023 | 2540510 | Master Seminar in Data Science and Machine Learning | 2 SWS | Seminar | Geyer-Schulz |
| ST 2023 | 2540553 | User-Adaptive Systems Seminar | 2 SWS | Seminar / | Mädche, Beigl |
| ST 2023 | 2540557 | Research Seminar: Human-Centered Systems | 3 SWS | Seminar / | Mädche |
| ST 2023 | 2545002 | Entrepreneurship Research | 2 SWS | Seminar / | Terzidis |
| ST 2023 | 2550493 | Hospital Management | 2 SWS | Block / | Hansis |
| ST 2023 | 2571180 | Seminar in Marketing and Sales (Master) | 2 SWS | Seminar / | Klarmann, Mitarbeiter |
| ST 2023 | 2571182 | Seminar “The Future of Marketing” (Master) | 2 SWS | Seminar / | Kupfer |
| ST 2023 | 2573012 | Seminar Human Resource Management (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter, Gorny |
| ST 2023 | 2573013 | Seminar Human Resources and Organizations (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter, Walther |
| ST 2023 | 2579909 | Seminar Management Accounting - Special Topics | 2 SWS | Seminar / | Wouters, Jaedeke, Kepl |
| ST 2023 | 2579910 | Entrepreneurial Strategy and Financing of Start-Ups | 2 SWS | Seminar / | Burkardt |
| ST 2023 | 2579919 | Seminar Management Accounting - Sustainability Topics | 2 SWS | Seminar / | Letmathe |
| ST 2023 | 2581030 | Seminar Energiewirtschaft IV | 2 SWS | Seminar / | Fichtner |
| ST 2023 | 2581977 | Seminar Produktionswirtschaft und Logistik II | 2 SWS | Seminar / | Volk, Schultmann |
| ST 2023 | 2581980 | Seminar Energiewirtschaft II | 2 SWS | Seminar / | Kraft, Fichtner |

| | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500006 | Digital Citizen Science | 2 SWS | Seminar / | Woll, Bachert, Weinhardt, Volkamer, Mädche, Scheibehenne, Nieken, Szech |
| WT 23/24 | 2500125 | Engineering Seminar: Human-Centered Systems | 2 SWS | Seminar / | Mädche |
| WT 23/24 | 2530293 | | 2 SWS | Seminar / | Ruckes, Hoang, Benz, Luedecke, Silbereis, Wiegratz, Kohl |
| WT 23/24 | 2530586 | | | Seminar / | Uhrig-Homburg, Eska, Molnar |
| WT 23/24 | 2540473 | Business Data Analytics | 2 SWS | Seminar / | Badewitz, Grote, Schulz, Motz |
| WT 23/24 | 2540475 | Positive Information Systems | 2 SWS | Seminar / | Knierim, del Puppo |
| WT 23/24 | 2540478 | Smart Grids and Energy Markets | 2 SWS | Seminar / | Weinhardt, Semmelmann, Miskiw |
| WT 23/24 | 2540510 | Master Seminar in Data Science and Machine Learning | 2 SWS | Seminar / | Geyer-Schulz, Nazemi, Schweizer |
| WT 23/24 | 2540557 | Research Seminar: Human-Centered Systems | 2 SWS | Seminar / | Mädche |
| WT 23/24 | 2550493 | Hospital Management | 2 SWS | Block / | Hansis |
| WT 23/24 | 2571181 | Seminar Digital Marketing (Master) | 2 SWS | Seminar / | Kupfer |
| WT 23/24 | 2573012 | Seminar Human Resource Management (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter |
| WT 23/24 | 2573013 | Seminar Human Resources and Organizations (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter |
| WT 23/24 | 2579911 | Seminar Management Accounting - Special Topics | 2 SWS | Seminar / | Wouters, Dickemann, Letmathe |
| WT 23/24 | 2579919 | Seminar Management Accounting - Sustainability Topics | 2 SWS | Seminar / | Wouters, Dickemann |
| WT 23/24 | 2581030 | Seminar in Energy Economics | 2 SWS | Seminar / | Fichtner, Sloot |
| WT 23/24 | 2581976 | Seminar in Production and Operations Management I | 2 SWS | Seminar / | Schultmann, Rudi |
| WT 23/24 | 2581977 | Seminar in Production and Operations Management II | 2 SWS | Seminar / | Volk, Schultmann |
| WT 23/24 | 2581978 | Seminar Produktionswirtschaft und Logistik III | 2 SWS | Seminar / | Schultmann, Kaiser |
| WT 23/24 | 2581979 | Seminar in Energy Economics | 2 SWS | Seminar / | Fichtner, Kleinebrahm, Finck |
| WT 23/24 | 2581980 | Seminar in Energy Economics | 2 SWS | Seminar / | Fichtner |
| WT 23/24 | 2581981 | Seminar in Energy Economics | 2 SWS | Seminar / | Ardone, Fichtner |
| **Exams** | | | | | |
| ST 2023 | 00018 | Seminar Digital Democracy – Challenges and Opportunities of the Digital Society | | | Weinhardt |
| ST 2023 | 7900008 | Hospital Management | | | Nickel |
| ST 2023 | 7900019 | Master Seminar in Data Science and Machine Learning | | | Geyer-Schulz |
| ST 2023 | 7900025 | Successful Transformation Through Innovation | | | Busch |
| ST 2023 | 7900052 | Entrepreneurship Research | | | Terzidis |
| ST 2023 | 7900093 | Seminar in Business Administration A | | | Weinhardt |
| ST 2023 | 7900101 | Seminar Human Resource Management (Master) | | | Nieken |
| ST 2023 | 7900127 | Seminar in Finance (Master) | | | Uhrig-Homburg |
| ST 2023 | 7900165 | Practical Seminar: Data Science for Industrial Applications | | | Satzger |
| ST 2023 | 7900166 | Home Office Design Seminar: Digital Citizen Science | | | Mädche |
| ST 2023 | 7900167 | Design Seminar: Digital Citizen Science | | | Mädche |
| ST 2023 | 7900180 | Seminar in Business Administration | | | Weinhardt |
| ST 2023 | 7900190 | Engineering Seminar: Human-Centered Systems | | | Mädche |
| ST 2023 | 7900214 | Seminar Business Data Analytics | | | Weinhardt |

| | | | |
|---|---|---|---|
| ST 2023 | 7900231 | Seminar Human Resources and Organizations (Master) | Nieken |
| ST 2023 | 7900233 | Seminar in Marketing and Sales (Master) | Klarmann |
| ST 2023 | 7900238 | Technology Assessment | Weissenberger-Eibl |
| ST 2023 | 7900240 | Seminar "The Future of Marketing" (Master) | Kupfer |
| ST 2023 | 7900256 | Seminar Positive Information Systems | Weinhardt |
| ST 2023 | 7900261 | Research Seminar: Human-Centered Systems | Mädche |
| ST 2023 | 7900265 | User-adaptive Systems Seminar | Mädche |
| ST 2023 | 7900284 | Digital Transformation and Business Models | Weissenberger-Eibl |
| ST 2023 | 7900293 | Service Design Thinking | Satzger |
| ST 2023 | 7900301 | Practical Seminar Service Innovation | Satzger |
| ST 2023 | 7900328 | Seminar - Basics and Concepts for Affordable Housing Using the Example of RoofKIT | Lützkendorf |
| ST 2023 | 7900372 | Seminar Digital Citizen Science | Weinhardt |
| ST 2023 | 79-2579909-M | Seminar Management Accounting - Special Topics (Master) | Wouters |
| ST 2023 | 79-2579919-M | Seminar Management Accounting - Sustainability Topics (Master) | Wouters |
| ST 2023 | 792581030 | Seminar Energy Economics IV | Fichtner |
| ST 2023 | 792581031 | Seminar Energy Economics V | Plötz |
| ST 2023 | 7981976 | Seminar in Production and Operations Management I | Schultmann |
| ST 2023 | 7981979 | Seminar Energy Economics I | Fichtner |
| ST 2023 | 7981980 | Seminar Energy Economics II | Fichtner |
| ST 2023 | 7981981 | Seminar Energy Economics III | Fichtner |
| WT 23/24 | 7900069 | Engineering Seminar: Human-Centered Systems | Mädche |
| WT 23/24 | 7900106 | Hospital Management | Hansis |
| WT 23/24 | 7900163 | Seminar Human Resource Management (Master) | Nieken |
| WT 23/24 | 7900164 | Seminar Human Resources and Organizations (Master) | Nieken |
| WT 23/24 | 7900184 | Seminar in Finance (Master) | Ruckes |
| WT 23/24 | 7900203 | Seminar in Finance | Uhrig-Homburg |
| WT 23/24 | 7900233 | Research Seminar: Human-Centered Systems | Mädche |
| WT 23/24 | 7900237 | Case Studies Seminar: Innovation Management | Weissenberger-Eibl |
| WT 23/24 | 79-2579911-M | Seminar Management Accounting - Special Topics (Master) - Porsche | Wouters |
| WT 23/24 | 79-2579919-M | Seminar Management Accounting - Sustainability Topics (Master) | Wouters |
| WT 23/24 | 7981976 | Seminar in Production and Operations Management I | Schultmann |
| WT 23/24 | 7981977 | Seminar in Production and Operations Management II | Schultmann |
| WT 23/24 | 7981978 | Seminar in Production and Operations Management III | Schultmann |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

**Annotation**
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

*Below you will find excerpts from events related to this course:*

### V Interactive Analytics Seminar
2400121, SS 2023, 2 SWS, Language: English, Open in study portal **Online**

**Content**
Providing new and innovative ways for interacting with data is becoming increasingly important. In this seminar, an interdisciplinary team of students engineers a running software prototype of an advanced interactive system leveraging state-of-the-art hardware and software focusing on an analytical use case. The seminar is carried out in cooperation between Teco/Chair of Pervasive Computing Systems (Prof. Beigl) and the Institute of Information Systems and Marketing (Research Group ISSD, Prof. Mädche). This seminar follows an interdisciplinary approach. Students the fields of computer science, information systems and industrial engineering work together in teams.

**Learning Objectives**

- Explore and specify a data-driven interaction challenge
- Suggest and evaluate different design solutions for addressing the identified problem
- Build interactive analytics prototypes using advanced interaction concepts and pervasive computing technologies

**Prerequisites**

Strong analytic abilities and profound skills in SQL as wells as Python and/or R are required.

**Literature**

Further literature will be made available in the seminar.

**Organizational issues**
nach Vereinbarung

### V Successful transformation through innovation
2500018, SS 2023, 2 SWS, Language: German, Open in study portal **Seminar (S) On-Site**

**Content**
This seminar uses strategic innovation management theory and concepts such as organisational ambidexterity, boundary spanning and stakeholder approaches how companies can increase their innovative increase their innovative capacity through innovation. The students will use a core paper to illustrate the steps towards becoming an innovative organisation. The aim is to understand how -with the help of the concepts mentioned above - medium-sized companies, in the context of organisational inertia and path dependency, may become innovation-driven organisations. The seminar will analyse the role of different stakeholders, which role the different stakeholders play and how companies may become part of an innovation ecosystems. Based on the core paper, the students will apply the concepts they have learned to selected companies and present the results in class. In addition to a presentation, the students will submit the results in seminar papers.

**Organizational issues**
Weblink: https://itm.entechnon.kit.edu/192_1281.php

### V Design Seminar: Digital Citizen Science
2500027, SS 2023, 2 SWS, Open in study portal **Seminar (S)**

**Content**
TBA

### V Master Seminar in Data Science and Machine Learning
2540510, SS 2023, 2 SWS, Language: German/English, Open in study portal **Seminar (S)**

### V User-Adaptive Systems Seminar
2540553, SS 2023, 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.

V **Research Seminar: Human-Centered Systems** **Seminar (S)**
2540557, SS 2023, 3 SWS, Language: English, Open in study portal **Blended (On-Site/Online)**

**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

V **Entrepreneurship Research** **Seminar (S)**
2545002, SS 2023, 2 SWS, Language: English, Open in study portal **On-Site**

**Content**
**Content**

The students independently develop a topic from entrepreneurship research in an international setting as a tandem with a partner. At first, there will be an introduction to the methodologies used such as systematic literature review, design science, qualitative and quantitative data analysis and more. As part of a written elaboration, the seminar topic must be presented scientifically on 15-20 pages. The results of the seminar paper will be presented in a block event at the end of the semester (20 min + 10 min open discussion).

**Learning Objectives**

As part of the written elaboration, the basics of independent scientific work (literature research, argumentation + discussion, citing literature sources, application of qualitative, quantitative and simulative methods) are trained. The skills acquired in the seminar are used to prepare for a potential master thesis. The course is therefore particularly aimed at students who want to write their thesis at the Chair for Entrepreneurship and Technology Management.

**Organizational issues**
The dates will be announced.

Registration is via the Wiwi-Portal.

**Literature**
Will be announced in the seminar.

V **Hospital Management** **Block (B)**
2550493, SS 2023, 2 SWS, Language: German, Open in study portal **Online**

**Content**
The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

The assessment consists of attendance and a presentation or a case study.

**Organizational issues**
Das Seminar wird als Blockveranstaltung vom 08.05.-12.05. (jeweils 8-10:30 Uhr) stattfinden mit Eigenstudiumsphasen an den Nachmittagen. Zusätzlich wird eine Vorbesprechung am Freitag, 5. Mai um 16 Uhr stattfinden.

### V Seminar Human Resource Management (Master)

2573012, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

### V Seminar Human Resources and Organizations (Master)

2573013, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

### V Seminar Management Accounting - Special Topics

**Seminar (S)**
**On-Site**

2579909, SS 2023, 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.

### V Seminar Management Accounting - Sustainability Topics

**Seminar (S)**
**On-Site**

2579919, SS 2023, 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.

**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.

V 2530586, WS 23/24, SWS, Language: German, Open in study portal — **Seminar (S) On-Site**

**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

V **Business Data Analytics**
2540473, WS 23/24, 2 SWS, Language: German/English, Open in study portal — **Seminar (S) On-Site**

**Content**
wird auf deutsch und englisch gehalten

**Organizational issues**
Blockveranstaltung, siehe WWW

V **Master Seminar in Data Science and Machine Learning**
2540510, WS 23/24, 2 SWS, Language: German, Open in study portal — **Seminar (S) Blended (On-Site/Online)**

V **Hospital Management**
2550493, WS 23/24, 2 SWS, Language: German, Open in study portal — **Block (B) Online**

V **Seminar Human Resource Management (Master)**
2573012, WS 23/24, 2 SWS, Language: German, Open in study portal — **Seminar (S) On-Site**

**Content**
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**
Blockveranstaltung siehe Homepage

### V Seminar Human Resources and Organizations (Master)

2573013, WS 23/24, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**
Blockveranstaltung siehe Homepage

### V Seminar Management Accounting - Special Topics

2579911, WS 23/24, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**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.

### V Seminar Management Accounting - Sustainability Topics

**Seminar (S)**
**On-Site**

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.

# T 7.207 Course: Seminar in Business Administration B (Master) [T-WIWI-103476]

**Responsible:** Professorenschaft des Fachbereichs Betriebswirtschaftslehre
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500018 | Successful transformation through innovation | 2 SWS | Seminar / | Busch |
| ST 2023 | 2500020 | Digital Democracy - Challenges and opportunities of the digital society | 2 SWS | Seminar / | Fegert |
| ST 2023 | 2500027 | Design Seminar: Digital Citizen Science | 2 SWS | Seminar | Mädche |
| ST 2023 | 2500125 | Engineering Seminar: Human-Centered Systems | 3 SWS | Seminar / | Mädche |
| ST 2023 | 2530580 | Seminar in Finance (Master) | 2 SWS | Seminar / | Uhrig-Homburg, Müller, Thimme |
| ST 2023 | 2540472 | Digital Citizen Science | 2 SWS | Seminar | Weinhardt, Knierim, Mädche |
| ST 2023 | 2540475 | Positive Information Systems | 2 SWS | Seminar | Knierim, del Puppo, Bartholomeyczik |
| ST 2023 | 2540477 | Digital Experience & Participation | 2 SWS | Seminar | Peukert, Fegert |
| ST 2023 | 2540478 | Smart Grid Economics & Energy Markets | 2 SWS | Seminar | Henni, Semmelmann, Bluhm, Golla |
| ST 2023 | 2540510 | Master Seminar in Data Science and Machine Learning | 2 SWS | Seminar | Geyer-Schulz |
| ST 2023 | 2540553 | User-Adaptive Systems Seminar | 2 SWS | Seminar / | Mädche, Beigl |
| ST 2023 | 2540557 | Research Seminar: Human-Centered Systems | 3 SWS | Seminar / | Mädche |
| ST 2023 | 2545002 | Entrepreneurship Research | 2 SWS | Seminar / | Terzidis |
| ST 2023 | 2550493 | Hospital Management | 2 SWS | Block / | Hansis |
| ST 2023 | 2571180 | Seminar in Marketing and Sales (Master) | 2 SWS | Seminar / | Klarmann, Mitarbeiter |
| ST 2023 | 2571182 | Seminar “The Future of Marketing” (Master) | 2 SWS | Seminar / | Kupfer |
| ST 2023 | 2573012 | Seminar Human Resource Management (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter, Gorny |
| ST 2023 | 2573013 | Seminar Human Resources and Organizations (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter, Walther |
| ST 2023 | 2579909 | Seminar Management Accounting - Special Topics | 2 SWS | Seminar / | Wouters, Jaedeke, Kepl |
| ST 2023 | 2579910 | Entrepreneurial Strategy and Financing of Start-Ups | 2 SWS | Seminar / | Burkardt |
| ST 2023 | 2579919 | Seminar Management Accounting - Sustainability Topics | 2 SWS | Seminar / | Letmathe |
| ST 2023 | 2581030 | Seminar Energiewirtschaft IV | 2 SWS | Seminar / | Fichtner |
| ST 2023 | 2581977 | Seminar Produktionswirtschaft und Logistik II | 2 SWS | Seminar / | Volk, Schultmann |
| ST 2023 | 2581980 | Seminar Energiewirtschaft II | 2 SWS | Seminar / | Kraft, Fichtner |

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|---|---|---|---|---|---|
| WT 23/24 | 2500006 | Digital Citizen Science | 2 SWS | Seminar / | Woll, Bachert, Weinhardt, Volkamer, Mädche, Scheibehenne, Nieken, Szech |
| WT 23/24 | 2500125 | Engineering Seminar: Human-Centered Systems | 2 SWS | Seminar / | Mädche |
| WT 23/24 | 2530293 | | 2 SWS | Seminar / | Ruckes, Hoang, Benz, Luedecke, Silbereis, Wiegratz, Kohl |
| WT 23/24 | 2530586 | | | Seminar / | Uhrig-Homburg, Eska, Molnar |
| WT 23/24 | 2540473 | Business Data Analytics | 2 SWS | Seminar / | Badewitz, Grote, Schulz, Motz |
| WT 23/24 | 2540475 | Positive Information Systems | 2 SWS | Seminar / | Knierim, del Puppo |
| WT 23/24 | 2540478 | Smart Grids and Energy Markets | 2 SWS | Seminar / | Weinhardt, Semmelmann, Miskiw |
| WT 23/24 | 2540510 | Master Seminar in Data Science and Machine Learning | 2 SWS | Seminar / | Geyer-Schulz, Nazemi, Schweizer |
| WT 23/24 | 2540557 | Research Seminar: Human-Centered Systems | 2 SWS | Seminar / | Mädche |
| WT 23/24 | 2550493 | Hospital Management | 2 SWS | Block / | Hansis |
| WT 23/24 | 2571181 | Seminar Digital Marketing (Master) | 2 SWS | Seminar / | Kupfer |
| WT 23/24 | 2573012 | Seminar Human Resource Management (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter |
| WT 23/24 | 2573013 | Seminar Human Resources and Organizations (Master) | 2 SWS | Seminar / | Nieken, Mitarbeiter |
| WT 23/24 | 2579911 | Seminar Management Accounting - Special Topics | 2 SWS | Seminar / | Wouters, Dickemann, Letmathe |
| WT 23/24 | 2579919 | Seminar Management Accounting - Sustainability Topics | 2 SWS | Seminar / | Wouters, Dickemann |
| WT 23/24 | 2581030 | Seminar in Energy Economics | 2 SWS | Seminar / | Fichtner, Sloot |
| WT 23/24 | 2581976 | Seminar in Production and Operations Management I | 2 SWS | Seminar / | Schultmann, Rudi |
| WT 23/24 | 2581977 | Seminar in Production and Operations Management II | 2 SWS | Seminar / | Volk, Schultmann |
| WT 23/24 | 2581978 | Seminar Produktionswirtschaft und Logistik III | 2 SWS | Seminar / | Schultmann, Kaiser |
| WT 23/24 | 2581979 | Seminar in Energy Economics | 2 SWS | Seminar / | Fichtner, Kleinebrahm, Finck |
| WT 23/24 | 2581980 | Seminar in Energy Economics | 2 SWS | Seminar / | Fichtner |
| WT 23/24 | 2581981 | Seminar in Energy Economics | 2 SWS | Seminar / | Ardone, Fichtner |
| **Exams** | | | | | |
| ST 2023 | 00018 | Seminar Digital Democracy – Challenges and Opportunities of the Digital Society | | | Weinhardt |
| ST 2023 | 7900008 | Hospital Management | | | Nickel |
| ST 2023 | 7900019 | Master Seminar in Data Science and Machine Learning | | | Geyer-Schulz |
| ST 2023 | 7900025 | Successful Transformation Through Innovation | | | Busch |
| ST 2023 | 7900052 | Entrepreneurship Research | | | Terzidis |
| ST 2023 | 7900093 | Seminar in Business Administration A | | | Weinhardt |
| ST 2023 | 7900101 | Seminar Human Resource Management (Master) | | | Nieken |
| ST 2023 | 7900127 | Seminar in Finance (Master) | | | Uhrig-Homburg |
| ST 2023 | 7900165 | Practical Seminar: Data Science for Industrial Applications | | | Satzger |
| ST 2023 | 7900166 | Home Office Design Seminar: Digital Citizen Science | | | Mädche |
| ST 2023 | 7900167 | Design Seminar: Digital Citizen Science | | | Mädche |
| ST 2023 | 7900180 | Seminar in Business Administration | | | Weinhardt |
| ST 2023 | 7900190 | Engineering Seminar: Human-Centered Systems | | | Mädche |
| ST 2023 | 7900214 | Seminar Business Data Analytics | | | Weinhardt |

| | | | |
|---|---|---|---|
| ST 2023 | 7900231 | Seminar Human Resources and Organizations (Master) | Nieken |
| ST 2023 | 7900233 | Seminar in Marketing and Sales (Master) | Klarmann |
| ST 2023 | 7900238 | Technology Assessment | Weissenberger-Eibl |
| ST 2023 | 7900240 | Seminar "The Future of Marketing" (Master) | Kupfer |
| ST 2023 | 7900256 | Seminar Positive Information Systems | Weinhardt |
| ST 2023 | 7900261 | Research Seminar: Human-Centered Systems | Mädche |
| ST 2023 | 7900265 | User-adaptive Systems Seminar | Mädche |
| ST 2023 | 7900284 | Digital Transformation and Business Models | Weissenberger-Eibl |
| ST 2023 | 7900293 | Service Design Thinking | Satzger |
| ST 2023 | 7900301 | Practical Seminar Service Innovation | Satzger |
| ST 2023 | 7900372 | Seminar Digital Citizen Science | Weinhardt |
| ST 2023 | 79-2579909-M | Seminar Management Accounting - Special Topics (Master) | Wouters |
| ST 2023 | 79-2579919-M | Seminar Management Accounting - Sustainability Topics (Master) | Wouters |
| ST 2023 | 792581030 | Seminar Energy Economics IV | Fichtner |
| ST 2023 | 792581031 | Seminar Energy Economics V | Plötz |
| ST 2023 | 7981976 | Seminar in Production and Operations Management I | Schultmann |
| ST 2023 | 7981979 | Seminar Energy Economics I | Fichtner |
| ST 2023 | 7981980 | Seminar Energy Economics II | Fichtner |
| ST 2023 | 7981981 | Seminar Energy Economics III | Fichtner |
| WT 23/24 | 7900069 | Engineering Seminar: Human-Centered Systems | Mädche |
| WT 23/24 | 7900106 | Hospital Management | Hansis |
| WT 23/24 | 7900163 | Seminar Human Resource Management (Master) | Nieken |
| WT 23/24 | 7900164 | Seminar Human Resources and Organizations (Master) | Nieken |
| WT 23/24 | 7900184 | Seminar in Finance (Master) | Ruckes |
| WT 23/24 | 7900203 | Seminar in Finance | Uhrig-Homburg |
| WT 23/24 | 7900233 | Research Seminar: Human-Centered Systems | Mädche |
| WT 23/24 | 7900237 | Case Studies Seminar: Innovation Management | Weissenberger-Eibl |
| WT 23/24 | 79-2579911-M | Seminar Management Accounting - Special Topics (Master) - Porsche | Wouters |
| WT 23/24 | 79-2579919-M | Seminar Management Accounting - Sustainability Topics (Master) | Wouters |
| WT 23/24 | 7981976 | Seminar in Production and Operations Management I | Schultmann |
| WT 23/24 | 7981977 | Seminar in Production and Operations Management II | Schultmann |
| WT 23/24 | 7981978 | Seminar in Production and Operations Management III | Schultmann |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

**Annotation**
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

*Below you will find excerpts from events related to this course:*

### V Successful transformation through innovation
2500018, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
This seminar uses strategic innovation management theory and concepts such as organisational ambidexterity, boundary spanning and stakeholder approaches how companies can increase their innovative increase their innovative capacity through innovation. The students will use a core paper to illustrate the steps towards becoming an innovative organisation. The aim is to understand how -with the help of the concepts mentioned above - medium-sized companies, in the context of organisational inertia and path dependency, may become innovation-driven organisations. The seminar will analyse the role of different stakeholders, which role the different stakeholders play and how companies may become part of an innovation ecosystems. Based on the core paper, the students will apply the concepts they have learned to selected companies and present the results in class. In addition to a presentation, the students will submit the results in seminar papers.

**Organizational issues**
Weblink: https://itm.entechnon.kit.edu/192_1281.php

### V Design Seminar: Digital Citizen Science
2500027, SS 2023, 2 SWS, Open in study portal

**Seminar (S)**

**Content**
TBA

### V Master Seminar in Data Science and Machine Learning
2540510, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**

### V User-Adaptive Systems Seminar
2540553, SS 2023, 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.

### V Research Seminar: Human-Centered Systems
2540557, SS 2023, 3 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**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

V **Entrepreneurship Research** **Seminar (S)**
2545002, SS 2023, 2 SWS, Language: English, Open in study portal **On-Site**

**Content**
**Content**

The students independently develop a topic from entrepreneurship research in an international setting as a tandem with a partner. At first, there will be an introduction to the methodologies used such as systematic literature review, design science, qualitative and quantitative data analysis and more. As part of a written elaboration, the seminar topic must be presented scientifically on 15-20 pages. The results of the seminar paper will be presented in a block event at the end of the semester (20 min + 10 min open discussion).

**Learning Objectives**

As part of the written elaboration, the basics of independent scientific work (literature research, argumentation + discussion, citing literature sources, application of qualitative, quantitative and simulative methods) are trained. The skills acquired in the seminar are used to prepare for a potential master thesis. The course is therefore particularly aimed at students who want to write their thesis at the Chair for Entrepreneurship and Technology Management.

**Organizational issues**
The dates will be announced.

Registration is via the Wiwi-Portal.

**Literature**
Will be announced in the seminar.

V **Hospital Management** **Block (B)**
2550493, SS 2023, 2 SWS, Language: German, Open in study portal **Online**

**Content**
The seminar 'Hospital Management' presents internal organization structures, work conditions and work environments at the example of hospitals und relates this to common and expected conditions of other service industries.

Covered topics include normative environment, intra-organizational structure, personnel management, quality, external networking and market appearance. The course consists of two full-day sessions.

The assessment consists of attendance and a presentation or a case study.

**Organizational issues**
Das Seminar wird als Blockveranstaltung vom 08.05.-12.05. (jeweils 8-10:30 Uhr) stattfinden mit Eigenstudiumsphasen an den Nachmittagen. Zusätzlich wird eine Vorbesprechung am Freitag, 5. Mai um 16 Uhr stattfinden.

### V Seminar Human Resource Management (Master)

2573012, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

### V Seminar Human Resources and Organizations (Master)

2573013, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

**Aim**

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**
Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

### V Seminar Management Accounting - Special Topics

**Seminar (S)**
**On-Site**

2579909, SS 2023, 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.

### V Seminar Management Accounting - Sustainability Topics

**Seminar (S)**
**On-Site**

2579919, SS 2023, 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.

**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.

V 2530586, WS 23/24, SWS, Language: German, Open in study portal — **Seminar (S) On-Site**

**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

V **Business Data Analytics** — **Seminar (S) On-Site**
2540473, WS 23/24, 2 SWS, Language: German/English, Open in study portal

**Content**
wird auf deutsch und englisch gehalten

**Organizational issues**
Blockveranstaltung, siehe WWW

V **Master Seminar in Data Science and Machine Learning** — **Seminar (S) Blended (On-Site/Online)**
2540510, WS 23/24, 2 SWS, Language: German, Open in study portal

V **Hospital Management** — **Block (B) Online**
2550493, WS 23/24, 2 SWS, Language: German, Open in study portal

V **Seminar Human Resource Management (Master)** — **Seminar (S) On-Site**
2573012, 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

V **Seminar Human Resources and Organizations (Master)** **Seminar (S) On-Site**
2573013, 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 resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

**Workload**

The total workload for this course is: approximately 90 hours.

Lecture: 30h
Preparation of lecture: 45h
Exam preparation: 15h

**Literature**

Selected journal articles and books.

**Organizational issues**
Blockveranstaltung siehe Homepage

V **Seminar Management Accounting - Special Topics** **Seminar (S) On-Site**
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.

### V Seminar Management Accounting - Sustainability Topics

**Seminar (S)**
**On-Site**

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.

# T 7.208 Course: Seminar in Digital Economics Master [T-WIWI-112991]

**Responsible:** Prof. Dr. Nora Szech
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106408 - Digital Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2500032 | Disruption and the Digital Economy: Markets, Strategies, and Society (Master) | 2 SWS | Seminar / 🗣 | Rosar |
| WT 23/24 | 2560142 | Lying and Cheating in Economic Experiments (Master) | 2 SWS | Seminar / 🧩 | Rau |
| WT 23/24 | 2560143 | AI and Digitization for Society (Master) | 2 SWS | Seminar / 🧩 | Zhao |

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of success takes place in the form of an alternative exam assessment (presentation and term paper).

*Below you will find excerpts from events related to this course:*

## V Disruption and the Digital Economy: Markets, Strategies, and Society (Master)

**Seminar (S)**
**On-Site**

2500032, WS 23/24, 2 SWS, Language: English, Open in study portal

**Content**
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering, Economathematics or Digital Economics.

Objective: The student investigates a market that was (or might be) disrupted from a strategic perspective. Students work in groups. For more information, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of 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, KD2Lab (1. OG über Außentreppe), Teamraum

Präsentationen: 15.01.2024 14.00 - 18.00 Uhr, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

## V Lying and Cheating in Economic Experiments (Master)

**Seminar (S)**
**Blended (On-Site/Online)**

2560142, WS 23/24, 2 SWS, Language: English, Open in study portal

**Content**
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 24.10.23, 14.00 - 15.30 h, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

Präsentationen: 08.01.2024, 14.00 - 18.00 h, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

V

## AI and Digitization for Society (Master)

2560143, WS 23/24, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 25.10.2023, 11.00 - 12.00 (online)

Presentations: 12.01.2024, 14.00 - 18.00, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

# T 7.209 Course: Seminar in Economic Policy [T-WIWI-102789]

**Responsible:** Prof. Dr. Ingrid Ott
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101514 - Innovation Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900051 | Seminar in Economic Policy | Ott |
| WT 23/24 | 7900212 | Seminar in Economic Policy | Ott |

**Competence Certificate**
The assessment is carried out through a term paper within the range of 12 to 15 pages, a presentation of the results of the work in a seminar meeting, and active participation in the discussions of the seminar meeting (§ 4 (2), 3 SPO).

The final grade is composed of the weighted scored examinations (Essay 50%, 40% oral presentation, active participation 10%).

**Prerequisites**
None

**Recommendation**
At least one of the lectures "Theory of Endogenous Growth" or "Innovation Theory and Policy" should be attended in advance, if possible.

# T 7.210 Course: Seminar in Economics A (Master) [T-WIWI-103478]

**Responsible:** Professorenschaft des Fachbereichs Volkswirtschaftslehre
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500004 | Predictive Data Analytics - An Introduction to Statistical Machine Learning | 2 SWS | Seminar / | Schienle, Lerch |
| ST 2023 | 2520367 | Strategische Entscheidungen | 2 SWS | Seminar / | Ehrhart |
| ST 2023 | 2520536 | Seminar in Economic Theory II | 2 SWS | Seminar / | Müller, Ammann, Kretz, Puppe |
| ST 2023 | 2520563 | Wirtschaftstheoretisches Seminar III | 2 SWS | Seminar / | Müller, Ammann, Kretz, Puppe |
| ST 2023 | 2521310 | Advanced Topics in Econometrics | 2 SWS | Seminar | Schienle, Krüger, Buse, Rüter, Pavlova, Bracher |
| ST 2023 | 2560282 | Seminar in economic policy | 2 SWS | Seminar / | Ott, Assistenten |
| ST 2023 | 2560552 | Shaping AI and Digitization for Society (Master) | 2 SWS | Seminar / | Zhao |
| ST 2023 | 2560555 | Bounded Rationality - Theory and Experiments (Bachelor) | 2 SWS | Seminar / | Szech, Rau |
| ST 2023 | 2560557 | Law and Economics (Master) | 2 SWS | Seminar / | Okulicz |
| ST 2023 | 2560560 | Co-Opetiton: A practical perspective to game theory in the game of business (Bachelor & Master) | 2 SWS | Seminar / | Rosar |
| WT 23/24 | 2500024 | Wirtschaftstheoretisches Seminar IV (Master) | 2 SWS | Seminar / | Puppe, Kretz, Ammann |
| WT 23/24 | 2500032 | Disruption and the Digital Economy: Markets, Strategies, and Society (Master) | 2 SWS | Seminar / | Rosar |
| WT 23/24 | 2500051 | Die Herausforderungen der Mobilitätswende im urbanen Bereich - welche Beiträge kann das Serious Game "MobileCityGame" liefern? | 2 SWS | Seminar | Szimba |
| WT 23/24 | 2520367 | Strategische Entscheidungen | | Seminar | Ehrhart |
| WT 23/24 | 2520405 | Topics in Experimental Economics | | Seminar / | Reiß, Peters |
| WT 23/24 | 2520500 | Workshop on Economics, Finance and Statistics | 2 SWS | Seminar | Puppe, Brumm, Nieken, Ott, Reiß, Ruckes, Schienle, Szech, Uhrig-Homburg, Wigger, Krüger |
| WT 23/24 | 2520563 | Wirtschaftstheoretisches Seminar III (Master) | 2 SWS | Seminar / | Puppe, Ammann, Kretz |
| WT 23/24 | 2521310 | Topics in Econometrics | 2 SWS | Seminar | Schienle, Rüter |
| WT 23/24 | 2560130 | Seminar Public Finance | 2 SWS | Seminar / | Wigger, Setio, Schmelzer |
| WT 23/24 | 2560142 | Lying and Cheating in Economic Experiments (Master) | 2 SWS | Seminar / | Rau |
| WT 23/24 | 2560143 | AI and Digitization for Society (Master) | 2 SWS | Seminar / | Zhao |

| | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2560282 | Seminar in Economic Policy | 2 SWS | Seminar / 🗣 | Ott, Assistenten |
| WT 23/24 | 2560400 | Seminar in Macroeconomics I | 2 SWS | Seminar / 💏 | Brumm, Krause, Pegorari, Hußmann |
| WT 23/24 | 2560401 | Seminar in Macroeconomics II | 2 SWS | Seminar / 💏 | Brumm, Krause, Pegorari, Hußmann |
| WT 23/24 | 2561208 | Selected aspects of European transport planning and -modelling | 2 SWS | Seminar | Szimba |
| **Exams** | | | | | |
| ST 2023 | 7900051 | Seminar in Economic Policy | | | Ott |
| ST 2023 | 7900059 | Bounded Rationality - Theory and Experiments (Master) | | | Szech |
| ST 2023 | 7900131 | Shaping AI and Digitization for Society (Master) | | | Szech |
| ST 2023 | 7900204 | Predictive Data Analytics - An Introduction to Statistical Machine Learning | | | Lerch |
| ST 2023 | 7900205 | Law and Economics (Master) | | | Szech |
| ST 2023 | 7900222 | Co-Opetition (Bachelor & Master) | | | Szech |
| ST 2023 | 7900226 | What's up Inflation? Recent Advances in Theory and Empirics | | | Brumm |
| ST 2023 | 7900228 | Digitalization, AI, and the Future Economy | | | Brumm |
| ST 2023 | 7900260 | Seminar: Capital in the Twenty-First Century | | | Puppe |
| ST 2023 | 7900266 | Seminar: Market Design | | | Puppe |
| ST 2023 | 7900282 | Digital IT-Solutions and Services Transforming the Field of Public Transportation | | | Mitusch |
| ST 2023 | 7900285 | Strategic Decision (Master) | | | Ehrhart |
| ST 2023 | 79100003 | Seminar Topics in Applied Microeconomics | | | Reiß |
| ST 2023 | 79100005 | Seminar on Topics in Experimental Economics | | | Reiß |
| ST 2023 | 79sefi2 | Seminar Public Finance A (Master) | | | Wigger |
| WT 23/24 | 7900212 | 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:*

V **Predictive Data Analytics - An Introduction to Statistical Machine Learning**
2500004, SS 2023, 2 SWS, Language: German/English, Open in study portal
**Seminar (S)**
**Blended (On-Site/Online)**

**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben

V

## Advanced Topics in Econometrics

2521310, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**

**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben

V

## Shaping AI and Digitization for Society (Master)

2560552, SS 2023, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
Participation will be limited to 12 students.

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with different lenghts (20%). 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**
Blockveranstaltung:

Introductory Meeting April 19, 11.00 - 12.00 Uhr (online)

Seminar Presentations June 7, 2023, 14.00 - 18.30 Uhr (in person)

V

## Bounded Rationality - Theory and Experiments (Bachelor)

2560555, SS 2023, 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.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper + individual abstract (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**
Blockveranstaltung:

Introductory Meeting April 18 at 2pm (in person)

Seminar Presentations June 5 (in person)

V

## Law and Economics (Master)

2560557, SS 2023, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
Participation will be limited to 12 students.

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with different lenghts (20%). 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**
Blockveranstaltung

Kick-off 19.04.2023, 10.45 - 11.30 (online)

Presentations 26.05.2023, 14.00 - 18.30 Uhr

V

### Co-Opetiton: A practical perspective to game theory in the game of business (Bachelor & Master)

**Seminar (S)**
**On-Site**

2560560, SS 2023, 2 SWS, Language: English, Open in study portal

**Content**
Participation will be limited to 12 students.

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with different lenghts (20%). 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**
Blockseminar:

Kick-off 19.04.2023

Präsentation 22.05.2023, 14.00 - 18.30 Uhr, Geb. 10.50, Raum 604

V

### Disruption and the Digital Economy: Markets, Strategies, and Society (Master)

**Seminar (S)**
**On-Site**

2500032, WS 23/24, 2 SWS, Language: English, Open in study portal

**Content**
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering, Economathematics or Digital Economics.

Objective: The student investigates a market that was (or might be) disrupted from a strategic perspective. Students work in groups. For more information, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of 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, KD2Lab (1. OG über Außentreppe), Teamraum

Präsentationen: 15.01.2024 14.00 - 18.00 Uhr, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

### V Topics in Experimental Economics
2520405, WS 23/24, SWS, Language: English, Open in study portal

**Seminar (S)**
**Online**

**Organizational issues**
(im WS2021/22 online; sonst Blockseminar; Blücherstraße 17); Termine werden separat bekannt gegeben

**Literature**
Als Pflichtliteratur dienen ausgewählte Paper.

### V Topics in Econometrics
2521310, WS 23/24, 2 SWS, Language: German, Open in study portal

**Seminar (S)**

**Organizational issues**
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

### V Lying and Cheating in Economic Experiments (Master)
2560142, WS 23/24, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 24.10.23, 14.00 - 15.30 h, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

Präsentationen: 08.01.2024, 14.00 - 18.00 h, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

### V AI and Digitization for Society (Master)
2560143, WS 23/24, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**
Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 25.10.2023, 11.00 - 12.00 (online)

Presentations: 12.01.2024, 14.00 - 18.00, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

# T 7.211 Course: Seminar in Economics B (Master) [T-WIWI-103477]

**Responsible:** Professorenschaft des Fachbereichs Volkswirtschaftslehre
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500004 | Predictive Data Analytics - An Introduction to Statistical Machine Learning | 2 SWS | Seminar / | Schienle, Lerch |
| ST 2023 | 2520367 | Strategische Entscheidungen | 2 SWS | Seminar / | Ehrhart |
| ST 2023 | 2520536 | Seminar in Economic Theory II | 2 SWS | Seminar / | Müller, Ammann, Kretz, Puppe |
| ST 2023 | 2520563 | Wirtschaftstheoretisches Seminar III | 2 SWS | Seminar / | Müller, Ammann, Kretz, Puppe |
| ST 2023 | 2521310 | Advanced Topics in Econometrics | 2 SWS | Seminar | Schienle, Krüger, Buse, Rüter, Pavlova, Bracher |
| ST 2023 | 2560259 | Organisation and Management of Development Projects | 2 SWS | Seminar / | Sieber |
| ST 2023 | 2560282 | Seminar in economic policy | 2 SWS | Seminar / | Ott, Assistenten |
| ST 2023 | 2560552 | Shaping AI and Digitization for Society (Master) | 2 SWS | Seminar / | Zhao |
| ST 2023 | 2560555 | Bounded Rationality - Theory and Experiments (Bachelor) | 2 SWS | Seminar / | Szech, Rau |
| ST 2023 | 2560557 | Law and Economics (Master) | 2 SWS | Seminar / | Okulicz |
| ST 2023 | 2560560 | Co-Opetiton: A practical perspective to game theory in the game of business (Bachelor & Master) | 2 SWS | Seminar / | Rosar |
| WT 23/24 | 2500024 | Wirtschaftstheoretisches Seminar IV (Master) | 2 SWS | Seminar / | Puppe, Kretz, Ammann |
| WT 23/24 | 2500051 | Die Herausforderungen der Mobilitätswende im urbanen Bereich - welche Beiträge kann das Serious Game "MobileCityGame" liefern? | 2 SWS | Seminar | Szimba |
| WT 23/24 | 2520367 | Strategische Entscheidungen | | Seminar | Ehrhart |
| WT 23/24 | 2520405 | Topics in Experimental Economics | | Seminar / | Reiß, Peters |
| WT 23/24 | 2520500 | Workshop on Economics, Finance and Statistics | 2 SWS | Seminar | Puppe, Brumm, Nieken, Ott, Reiß, Ruckes, Schienle, Szech, Uhrig-Homburg, Wigger, Krüger |
| WT 23/24 | 2520563 | Wirtschaftstheoretisches Seminar III (Master) | 2 SWS | Seminar / | Puppe, Ammann, Kretz |
| WT 23/24 | 2521310 | Topics in Econometrics | 2 SWS | Seminar | Schienle, Rüter |
| WT 23/24 | 2560130 | Seminar Public Finance | 2 SWS | Seminar / | Wigger, Setio, Schmelzer |
| WT 23/24 | 2560142 | Lying and Cheating in Economic Experiments (Master) | 2 SWS | Seminar / | Rau |
| WT 23/24 | 2560282 | Seminar in Economic Policy | 2 SWS | Seminar / | Ott, Assistenten |
| WT 23/24 | 2560400 | Seminar in Macroeconomics I | 2 SWS | Seminar / | Brumm, Krause, Pegorari, Hußmann |

| | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2560401 | Seminar in Macroeconomics II | 2 SWS | Seminar / 🔀 | Brumm, Krause, Pegorari, Hußmann |
| WT 23/24 | 2561208 | Selected aspects of European transport planning and -modelling | 2 SWS | Seminar | Szimba |
| **Exams** | | | | | |
| ST 2023 | 7900051 | Seminar in Economic Policy | | | Ott |
| ST 2023 | 7900059 | Bounded Rationality - Theory and Experiments (Master) | | | Szech |
| ST 2023 | 7900131 | Shaping AI and Digitization for Society (Master) | | | Szech |
| ST 2023 | 7900164 | Seminar in Economics (Bachelor) | | | Mitusch |
| ST 2023 | 7900204 | Predictive Data Analytics - An Introduction to Statistical Machine Learning | | | Lerch |
| ST 2023 | 7900205 | Law and Economics (Master) | | | Szech |
| ST 2023 | 7900222 | Co-Opetition (Bachelor & Master) | | | Szech |
| ST 2023 | 7900226 | What's up Inflation? Recent Advances in Theory and Empirics | | | Brumm |
| ST 2023 | 7900228 | Digitalization, AI, and the Future Economy | | | Brumm |
| ST 2023 | 7900260 | Seminar: Capital in the Twenty-First Century | | | Puppe |
| ST 2023 | 7900266 | Seminar: Market Design | | | Puppe |
| ST 2023 | 7900291 | Strategic Decisions (Master) | | | Ehrhart |
| ST 2023 | 79100003 | Seminar Topics in Applied Microeconomics | | | Reiß |
| ST 2023 | 79100005 | Seminar on Topics in Experimental Economics | | | Reiß |
| ST 2023 | 79sefi3 | Seminar Public Finance B (Master) | | | Wigger |
| WT 23/24 | 7900212 | 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:*

V **Predictive Data Analytics - An Introduction to Statistical Machine Learning** — **Seminar (S) Blended (On-Site/Online)**
2500004, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben

V **Advanced Topics in Econometrics** — **Seminar (S)**
2521310, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben

### V Shaping AI and Digitization for Society (Master)

2560552, SS 2023, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
Participation will be limited to 12 students.

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with different lenghts (20%). 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**
Blockveranstaltung:

Introductory Meeting April 19, 11.00 - 12.00 Uhr (online)

Seminar Presentations June 7, 2023, 14.00 - 18.30 Uhr (in person)

### V Bounded Rationality - Theory and Experiments (Bachelor)

2560555, SS 2023, 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.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper + individual abstract (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**
Blockveranstaltung:

Introductory Meeting April 18 at 2pm (in person)

Seminar Presentations June 5 (in person)

### V Law and Economics (Master)

2560557, SS 2023, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
Participation will be limited to 12 students.

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with different lenghts (20%). 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**
Blockveranstaltung

Kick-off 19.04.2023, 10.45 - 11.30 (online)

Presentations 26.05.2023, 14.00 - 18.30 Uhr

V

### Co-Opetiton: A practical perspective to game theory in the game of business (Bachelor & Master)

2560560, SS 2023, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
Participation will be limited to 12 students.

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

Students' grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with different lenghts (20%). 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**
Blockseminar:

Kick-off 19.04.2023

Präsentation 22.05.2023, 14.00 - 18.30 Uhr, Geb. 10.50, Raum 604

V

### Topics in Experimental Economics

2520405, WS 23/24, SWS, Language: English, Open in study portal

**Seminar (S)**
**Online**

**Organizational issues**
(im WS2021/22 online; sonst Blockseminar; Blücherstraße 17); Termine werden separat bekannt gegeben

**Literature**
Als Pflichtliteratur dienen ausgewählte Paper.

V

### Topics in Econometrics

2521310, WS 23/24, 2 SWS, Language: German, Open in study portal

**Seminar (S)**

**Organizational issues**
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

V

## Lying and Cheating in Economic Experiments (Master)

2560142, WS 23/24, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see http://polit.econ.kit.edu or https://portal.wiwi.kit.edu/Seminare

Seminar Papers of 8–10 pages are to be handed in.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Organizational issues**

Application is possible via https://portal.wiwi.kit.edu/Seminare

Kick-off: 24.10.23, 14.00 - 15.30 h, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

Präsentationen: 08.01.2024, 14.00 - 18.00 h, Geb. 01.85, KD2Lab (1. OG über Außentreppe), Teamraum

# T 7.212 Course: Seminar in Engineering Science Master (approval) [T-WIWI-108763]

**Responsible:** Fachvertreter ingenieurwissenschaftlicher Fakultäten
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

**Competence Certificate**
See German version.

**Prerequisites**
See module description.

**Recommendation**
None

# T 7.213 Course: Seminar in Informatics A (Master) [T-WIWI-103479]

**Responsible:** Professorenschaft des Instituts AIFB
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2513211 | Seminar Business Information Systems (Master) | 2 SWS | Seminar / | Oberweis, Forell, Frister, Fritsch, Rybinski, Schreiber, Schüler, Ullrich, Schiefer |
| ST 2023 | 2513309 | Seminar Knowledge Discovery and Data Mining (Master) | 3 SWS | Seminar / | Färber, Noullet, Saier, Popovic, Qu |
| ST 2023 | 2513311 | Seminar Data Science & Real-time Big Data Analytics (Master) | 2 SWS | Seminar / | Färber, Käfer, Kulbach, Thoma |
| ST 2023 | 2513317 | Seminar Anwendungen von Semantic MediaWiki (Master) | 3 SWS | Seminar / | Färber, Saier |
| ST 2023 | 2513319 | Seminar Graph Representation Learning (Master) | 3 SWS | Seminar / | Färber, Shao |
| ST 2023 | 2513403 | Seminar Emerging Trends in Internet Technologies (Master) | 2 SWS | Seminar / | Sunyaev, Toussaint, Brecker, Danylak |
| ST 2023 | 2513405 | Seminar Emerging Trends in Digital Health (Master) | 2 SWS | Seminar / | Sunyaev, Toussaint, Brecker, Danylak |
| ST 2023 | 2513500 | Cognitive Automobiles and Robots | 2 SWS | Seminar / | Zöllner |
| WT 23/24 | 2400125 | Security and Privacy Awareness | 2 SWS | Seminar / | Seidel-Saul, Volkamer, Boehm, Aldag, Veit |
| WT 23/24 | 2500044 | Machine Learning on Graphs (Master) | | Seminar / | Shao, Färber |
| WT 23/24 | 2513100 | Seminar Data-driven Simulation for Industrial Systems (Master) | 2 SWS | Seminar / | Lazarova-Molnar, Götz, Khodadadi |
| WT 23/24 | 2513313 | Seminar Linked Data and the Semantic Web (Master) | 3 SWS | Seminar / | Färber, Käfer, Braun |
| WT 23/24 | 2513314 | Seminar Real-World Challenges in Data Science and Analytics (Bachelor) | 3 SWS | / | Färber, Höllig, Thoma |
| WT 23/24 | 2513315 | Seminar Real-World Challenges in Data Science and Analytics (Master) | 3 SWS | / | Färber, Höllig, Thoma |
| WT 23/24 | 2513451 | Seminar Cooperative Autonomous Vehicles (Master) | 2 SWS | Seminar / | Vinel |
| WT 23/24 | 2513500 | Seminar Cognitive Automobiles and Robots (Master) | 2 SWS | Seminar / | Zöllner, Daaboul |
| **Exams** | | | | | |
| ST 2023 | 7900031 | Seminar Selected Issues in Critical Information Infrastructures (Master) | | | Sunyaev |
| ST 2023 | 7900088 | Seminar Business Information Systems (Master) | | | Oberweis |
| ST 2023 | 7900128 | Seminar Emerging Trends in Internet Technologies (Master) | | | Sunyaev |
| ST 2023 | 7900146 | Seminar Emerging Trends in Digital Health (Master) | | | Sunyaev |
| ST 2023 | 7900147 | Cognitive Automobiles and Robots | | | Zöllner |
| ST 2023 | 7900190 | Engineering Seminar: Human-Centered Systems | | | Mädche |
| ST 2023 | 7900191 | Seminar Applications of Semantic MediaWiki (Master) | | | Färber |
| ST 2023 | 7900198 | Seminar Data Science & Real-time Big Data Analytics (Master) | | | Färber |

| | | | |
|---|---|---|---|
| ST 2023 | 7900202 | Seminar Knowledge Discovery and Data Mining (Master) | Färber |
| ST 2023 | 7900203 | Seminar Graph Representation Learning (Master) | Färber |
| ST 2023 | 7900261 | Research Seminar: Human-Centered Systems | Mädche |
| ST 2023 | 7900330 | Generative Language Models | Färber |
| WT 23/24 | 7900069 | Engineering Seminar: Human-Centered Systems | Mädche |
| WT 23/24 | 7900233 | Research Seminar: Human-Centered Systems | Mädche |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

**Annotation**
Placeholder for seminars offered by the Institute AIFB.

Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

*Below you will find excerpts from events related to this course:*

V **Seminar Knowledge Discovery and Data Mining (Master)** **Seminar (S) On-Site**
2513309, SS 2023, 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

The exact dates and information for registration will be announced at the event page.

**Organizational issues**
Die Anmeldung erfolgt über das WiWi Portal https://portal.wiwi.kit.edu/.

Für weitere Fragen bezüglich des Seminar und der behandelten Themen wenden Sie sich bitte an die entsprechenden Verantwortlichen.

**Literature**
Detaillierte Referenzen werden zusammen mit den jeweiligenThemen angegeben. Allgemeine Hintergrundinformationen ergeben sich z.B.aus den folgenden Lehrbüchern:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

## V Seminar Data Science & Real-time Big Data Analytics (Master)

2513311, SS 2023, 2 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
In this seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the practical seminar is given under the following Link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

**Organizational issues**
Further information as well as the registration form can be found under the following link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

## V Seminar Graph Representation Learning (Master)

2513319, SS 2023, 3 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
Graphs are a natural way to represent the information of objects and the topological relationship between them. They are the basis for various applications ranging from recommender systems, finance, social networks, and personal assistants (e.g., Alexa).

In this seminar, students will read, discuss, and work on graph algorithms based on scientific literature, including most recent methods for analyzing and creating large graphs (e.g., link prediction on knowledge graphs using graph neural networks), and methods for making the behavior of neural networks based on graphs explainable (e.g., generating text based on a subgraph).

## V Cognitive Automobiles and Robots

2513500, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**
**Online**

**Content**
The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

**Learning objectives:**

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

**Recommendations:**

Attendance of the lecture machine learning

**Workload:**

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

**Organizational issues**
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

## V Security and Privacy Awareness

2400125, WS 23/24, 2 SWS, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

**Note: The link to enrol is for every student, regardless of the study background!**

Dates:

- Kick-Off : 23.10.23 14:00 o'clock, Room 1C-03, building 5.20
- First version: 07.01.24
- Final version: 17.02.24
- Presentation: CW 12

Topics will be assigned after the kick-off.

**Consider that legal-focused topics require you to speak and understand German legal texts.**

Topics:

**1: Literature review on reporting obligations / information security incidents (literature - seminar**

**2: Privacy Awareness with electronic patient file**

**4: Ethical analysis of so-called attacker studies that gather security awareness data in public space.**

**5: Collecting data: The boundaries of consent**

**Further Topics TBA!**

ATTENTION: The seminar is only for MASTER students!

V **Machine Learning on Graphs (Master)** **Seminar (S)**
2500044, WS 23/24, SWS, Language: English, Open in study portal **On-Site**

**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.

V **Seminar Linked Data and the Semantic Web (Master)** **Seminar (S)**
2513313, WS 23/24, 3 SWS, Language: German/English, Open in study portal **On-Site**

**Content**
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

## V Seminar Real-World Challenges in Data Science and Analytics (Bachelor)

2513314, WS 23/24, 3 SWS, Language: German/English, Open in study portal

**On-Site**

**Content**

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

## V Seminar Real-World Challenges in Data Science and Analytics (Master)

2513315, WS 23/24, 3 SWS, Language: German/English, Open in study portal

**On-Site**

**Content**

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

## V Seminar Cognitive Automobiles and Robots (Master)

2513500, WS 23/24, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

**Learning objectives:**

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

**Recommendations:**

Attendance of the lecture machine learning

**Workload:**

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

**Organizational issues**

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

# T 7.214 Course: Seminar in Informatics B (Master) [T-WIWI-103480]

**Responsible:** Professorenschaft des Instituts AIFB
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2513211 | Seminar Business Information Systems (Master) | 2 SWS | Seminar / | Oberweis, Forell, Frister, Fritsch, Rybinski, Schreiber, Schüler, Ullrich, Schiefer |
| ST 2023 | 2513309 | Seminar Knowledge Discovery and Data Mining (Master) | 3 SWS | Seminar / | Färber, Noullet, Saier, Popovic, Qu |
| ST 2023 | 2513311 | Seminar Data Science & Real-time Big Data Analytics (Master) | 2 SWS | Seminar / | Färber, Käfer, Kulbach, Thoma |
| ST 2023 | 2513317 | Seminar Anwendungen von Semantic MediaWiki (Master) | 3 SWS | Seminar / | Färber, Saier |
| ST 2023 | 2513319 | Seminar Graph Representation Learning (Master) | 3 SWS | Seminar / | Färber, Shao |
| ST 2023 | 2513403 | Seminar Emerging Trends in Internet Technologies (Master) | 2 SWS | Seminar / | Sunyaev, Toussaint, Brecker, Danylak |
| ST 2023 | 2513405 | Seminar Emerging Trends in Digital Health (Master) | 2 SWS | Seminar / | Sunyaev, Toussaint, Brecker, Danylak |
| ST 2023 | 2513500 | Cognitive Automobiles and Robots | 2 SWS | Seminar / | Zöllner |
| WT 23/24 | 2400125 | Security and Privacy Awareness | 2 SWS | Seminar / | Seidel-Saul, Volkamer, Boehm, Aldag, Veit |
| WT 23/24 | 2500044 | Machine Learning on Graphs (Master) | | Seminar / | Shao, Färber |
| WT 23/24 | 2513100 | Seminar Data-driven Simulation for Industrial Systems (Master) | 2 SWS | Seminar / | Lazarova-Molnar, Götz, Khodadadi |
| WT 23/24 | 2513313 | Seminar Linked Data and the Semantic Web (Master) | 3 SWS | Seminar / | Färber, Käfer, Braun |
| WT 23/24 | 2513314 | Seminar Real-World Challenges in Data Science and Analytics (Bachelor) | 3 SWS | / | Färber, Höllig, Thoma |
| WT 23/24 | 2513315 | Seminar Real-World Challenges in Data Science and Analytics (Master) | 3 SWS | / | Färber, Höllig, Thoma |
| WT 23/24 | 2513451 | Seminar Cooperative Autonomous Vehicles (Master) | 2 SWS | Seminar / | Vinel |
| WT 23/24 | 2513500 | Seminar Cognitive Automobiles and Robots (Master) | 2 SWS | Seminar / | Zöllner, Daaboul |
| **Exams** | | | | | |
| ST 2023 | 7900031 | Seminar Selected Issues in Critical Information Infrastructures (Master) | | | Sunyaev |
| ST 2023 | 7900088 | Seminar Business Information Systems (Master) | | | Oberweis |
| ST 2023 | 7900128 | Seminar Emerging Trends in Internet Technologies (Master) | | | Sunyaev |
| ST 2023 | 7900146 | Seminar Emerging Trends in Digital Health (Master) | | | Sunyaev |
| ST 2023 | 7900147 | Cognitive Automobiles and Robots | | | Zöllner |
| ST 2023 | 7900191 | Seminar Applications of Semantic MediaWiki (Master) | | | Färber |
| ST 2023 | 7900198 | Seminar Data Science & Real-time Big Data Analytics (Master) | | | Färber |
| ST 2023 | 7900202 | Seminar Knowledge Discovery and Data Mining (Master) | | | Färber |

| | | | |
|---|---|---|---|
| ST 2023 | 7900203 | Seminar Graph Representation Learning (Master) | Färber |
| ST 2023 | 7900330 | Generative Language Models | Färber |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

**Annotation**
Placeholder for seminars offered by the Institute AIFB.

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

*Below you will find excerpts from events related to this course:*

V **Seminar Knowledge Discovery and Data Mining (Master)** **Seminar (S) On-Site**
2513309, SS 2023, 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

The exact dates and information for registration will be announced at the event page.

**Organizational issues**
Die Anmeldung erfolgt über das WiWi Portal https://portal.wiwi.kit.edu/.

Für weitere Fragen bezüglich des Seminar und der behandelten Themen wenden Sie sich bitte an die entsprechenden Verantwortlichen.

**Literature**
Detaillierte Referenzen werden zusammen mit den jeweiligenThemen angegeben. Allgemeine Hintergrundinformationen ergeben sich z.B.aus den folgenden Lehrbüchern:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

V **Seminar Data Science & Real-time Big Data Analytics (Master)** **Seminar (S) On-Site**
2513311, SS 2023, 2 SWS, Language: English, 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 practical seminar is given under the following Link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

**Organizational issues**
Further information as well as the registration form can be found under the following link:
http://seminar-cep.fzi.de

Questions are answered via the e-mail address sem-ep@fzi.de.

### V Seminar Graph Representation Learning (Master)

2513319, SS 2023, 3 SWS, Language: English, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
Graphs are a natural way to represent the information of objects and the topological relationship between them. They are the basis for various applications ranging from recommender systems, finance, social networks, and personal assistants (e.g., Alexa).

In this seminar, students will read, discuss, and work on graph algorithms based on scientific literature, including most recent methods for analyzing and creating large graphs (e.g., link prediction on knowledge graphs using graph neural networks), and methods for making the behavior of neural networks based on graphs explainable (e.g., generating text based on a subgraph).

### V Cognitive Automobiles and Robots

2513500, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**
**Online**

**Content**
The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

**Learning objectives:**

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

**Recommendations:**

Attendance of the lecture machine learning

**Workload:**

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

**Organizational issues**
Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

### V Security and Privacy Awareness

2400125, WS 23/24, 2 SWS, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

**Note: The link to enrol is for every student, regardless of the study background!**

Dates:

- Kick-Off : 23.10.23 14:00 o'clock, Room 1C-03, building 5.20
- First version: 07.01.24
- Final version: 17.02.24
- Presentation: CW 12

Topics will be assigned after the kick-off.

**Consider that legal-focused topics require you to speak and understand German legal texts.**

Topics:

**1: Literature review on reporting obligations / information security incidents (literature - seminar**

**2: Privacy Awareness with electronic patient file**

**4: Ethical analysis of so-called attacker studies that gather security awareness data in public space.**

**5: Collecting data: The boundaries of consent**

**Further Topics TBA!**

ATTENTION: The seminar is only for MASTER students!

V **Machine Learning on Graphs (Master)** **Seminar (S)**
2500044, WS 23/24, SWS, Language: English, Open in study portal **On-Site**

**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.

V **Seminar Linked Data and the Semantic Web (Master)** **Seminar (S)**
2513313, WS 23/24, 3 SWS, Language: German/English, Open in study portal **On-Site**

**Content**
Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

## V Seminar Real-World Challenges in Data Science and Analytics (Bachelor)

2513314, WS 23/24, 3 SWS, Language: German/English, Open in study portal

**On-Site**

**Content**

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

## V Seminar Real-World Challenges in Data Science and Analytics (Master)

2513315, WS 23/24, 3 SWS, Language: German/English, Open in study portal

**On-Site**

**Content**

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

## V Seminar Cognitive Automobiles and Robots (Master)

2513500, WS 23/24, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

**Learning objectives:**

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

**Recommendations:**

Attendance of the lecture machine learning

**Workload:**

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

**Organizational issues**

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

# T 7.215 Course: Seminar in Operations Research A (Master) [T-WIWI-103481]

**Responsible:** Prof. Dr. Stefan Nickel
Prof. Dr. Steffen Rebennack
Prof. Dr. Oliver Stein

**Organisation:** KIT Department of Economics and Management

**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550131 | Seminar on Methodical Foundations of Operations Research (B) | 2 SWS | Seminar / 🗣 | Stein, Beck, Schwarze |
| ST 2023 | 2550132 | Seminar on Mathematical Optimization (MA) | 2 SWS | Seminar / 🗣 | Stein, Beck, Schwarze |
| ST 2023 | 2550462 | Seminar: Trending Topics in Machine Learning and Optimization (Master) | 2 SWS | Seminar / 🧩 | Rebennack, Warwicker |
| ST 2023 | 2550473 | Seminar: Energy and Power Systems Optimization (Master) | 2 SWS | Seminar / 🧩 | Rebennack, Warwicker |
| ST 2023 | 2550491 | Seminar: Modern OR and Innovative Logistics | 2 SWS | Seminar / 🧩 | Nickel, Mitarbeiter |
| WT 23/24 | 2550131 | Seminar on Methodical Foundations of Operations Research (B) | 2 SWS | Seminar / 🗣 | Stein, Beck, Schwarze |
| WT 23/24 | 2550132 | Seminar zur Mathematischen Optimierung (MA) | 2 SWS | Seminar / 🗣 | Stein, Beck, Schwarze |
| WT 23/24 | 2550462 | Seminar on Trending Topics in Optimization and Machine Learning (Master) | 2 SWS | Seminar / 🧩 | Rebennack, Warwicker |
| WT 23/24 | 2550473 | Seminar on Energy and Power Systems Optimization (Master) | 2 SWS | Seminar / 🧩 | Rebennack, Warwicker |
| WT 23/24 | 2550491 | Seminar: Modern OR and Innovative Logistics | 2 SWS | Seminar / 🧩 | Nickel, Mitarbeiter |
| **Exams** | | | | | |
| ST 2023 | 7900026 | Seminar Modern OR and Innovative Logistics | | | Nickel |
| ST 2023 | 7900200_SS2023 | Seminar in Operations Research A (Master) | | | Stein |
| ST 2023 | 7900201_SS2023 | Seminar in Operations Research (Bachelor) | | | Stein |
| ST 2023 | 7900267 | Digitalization in the Steel Industry | | | Nickel |
| ST 2023 | 7900295 | Seminar Trending Topics in Machine Learning and Opt. - Operations Research A (Master) | | | Rebennack |
| ST 2023 | 7900349 | Seminar on Power Systems Optimization (Master) | | | Rebennack |
| WT 23/24 | 7900342 | Seminar Modern OR and Innovative Logistics | | | Nickel |

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

**Annotation**
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

*Below you will find excerpts from events related to this course:*

V **Seminar on Methodical Foundations of Operations Research (B)** **Seminar (S) On-Site**
2550131, SS 2023, 2 SWS, Language: German, Open in study portal

**Content**
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

**Remarks:**

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

**Assessment:**

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

**Workload:**

The total workload for this course is approximately 90 hours. For further information see German version.

**Literature**
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V **Seminar: Modern OR and Innovative Logistics** **Seminar (S) Blended (On-Site/Online)**
2550491, SS 2023, 2 SWS, Language: German, Open in study portal

**Content**
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

The topics of the seminar will be announced at the beginning of the term in a preliminary meeting. Attendance is compulsory for the preliminary meeting as well for all seminar presentations.

**Exam:**

The assessment consists of a written seminar thesis of 20-25 pages and a presentation of 35-40 minutes (according to §4(2), 3 of the examination regulation).

The final mark for the seminar consists of the seminar thesis, the seminar presentation, the handout, and if applicable further material such as programming code.

The seminar can be attended both by Bachelor and Master students. A differentiation will be achieved by different valuation standards for the seminar thesis and presentation.

**Requirements:**

If possible, at least one module of the institute should be taken before attending the seminar.

**Objectives:**

The student

- illustrates and evaluates classic and current research questions in discrete optimization,
- applies optimization models and algorithms in discrete optimization, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management),
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

**Organizational issues**
wird auf der Homepage dol.ior.kit.edu bzw. auf dem WiWi-Portal bekannt gegeben

**Literature**
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

## V Seminar on Methodical Foundations of Operations Research (B)

**Seminar (S)**
**On-Site**

2550131, WS 23/24, 2 SWS, Language: German, Open in study portal

**Content**
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

**Remarks:**

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

**Assessment:**

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

**Workload:**

The total workload for this course is approximately 90 hours. For further information see German version.

**Literature**
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V

### Seminar: Modern OR and Innovative Logistics

2550491, WS 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 rhetoric 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.

# T 7.216 Course: Seminar in Operations Research B (Master) [T-WIWI-103482]

**Responsible:** Prof. Dr. Stefan Nickel
Prof. Dr. Steffen Rebennack
Prof. Dr. Oliver Stein

**Organisation:** KIT Department of Economics and Management

**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2550131 | Seminar on Methodical Foundations of Operations Research (B) | 2 SWS | Seminar / 🗣 | Stein, Beck, Schwarze |
| ST 2023 | 2550132 | Seminar on Mathematical Optimization (MA) | 2 SWS | Seminar / 🗣 | Stein, Beck, Schwarze |
| ST 2023 | 2550462 | Seminar: Trending Topics in Machine Learning and Optimization (Master) | 2 SWS | Seminar / 🧩 | Rebennack, Warwicker |
| ST 2023 | 2550473 | Seminar: Energy and Power Systems Optimization (Master) | 2 SWS | Seminar / 🧩 | Rebennack, Warwicker |
| ST 2023 | 2550491 | Seminar: Modern OR and Innovative Logistics | 2 SWS | Seminar / 🧩 | Nickel, Mitarbeiter |
| WT 23/24 | 2550131 | Seminar on Methodical Foundations of Operations Research (B) | 2 SWS | Seminar / 🗣 | Stein, Beck, Schwarze |
| WT 23/24 | 2550132 | Seminar zur Mathematischen Optimierung (MA) | 2 SWS | Seminar / 🗣 | Stein, Beck, Schwarze |
| WT 23/24 | 2550462 | Seminar on Trending Topics in Optimization and Machine Learning (Master) | 2 SWS | Seminar / 🧩 | Rebennack, Warwicker |
| WT 23/24 | 2550473 | Seminar on Energy and Power Systems Optimization (Master) | 2 SWS | Seminar / 🧩 | Rebennack, Warwicker |
| WT 23/24 | 2550491 | Seminar: Modern OR and Innovative Logistics | 2 SWS | Seminar / 🧩 | Nickel, Mitarbeiter |
| **Exams** | | | | | |
| ST 2023 | 7900026 | Seminar Modern OR and Innovative Logistics | | | Nickel |
| ST 2023 | 7900200_SS2023 | Seminar in Operations Research A (Master) | | | Stein |
| ST 2023 | 7900201_SS2023 | Seminar in Operations Research (Bachelor) | | | Stein |
| ST 2023 | 7900267 | Digitalization in the Steel Industry | | | Nickel |
| ST 2023 | 7900296 | Seminar in Operations Research B (Master) | | | Rebennack |
| WT 23/24 | 7900342 | Seminar Modern OR and Innovative Logistics | | | Nickel |

Legend: 🖥 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

**Annotation**
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

*Below you will find excerpts from events related to this course:*

V **Seminar on Methodical Foundations of Operations Research (B)** **Seminar (S) On-Site**
2550131, SS 2023, 2 SWS, Language: German, Open in study portal

**Content**
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

**Remarks:**

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

**Assessment:**

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

**Workload:**

The total workload for this course is approximately 90 hours. For further information see German version.

**Literature**
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V **Seminar: Modern OR and Innovative Logistics** **Seminar (S) Blended (On-Site/Online)**
2550491, SS 2023, 2 SWS, Language: German, Open in study portal

**Content**
The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

The topics of the seminar will be announced at the beginning of the term in a preliminary meeting. Attendance is compulsory for the preliminary meeting as well for all seminar presentations.

**Exam:**

The assessment consists of a written seminar thesis of 20-25 pages and a presentation of 35-40 minutes (according to §4(2), 3 of the examination regulation).

The final mark for the seminar consists of the seminar thesis, the seminar presentation, the handout, and if applicable further material such as programming code.

The seminar can be attended both by Bachelor and Master students. A differentiation will be achieved by different valuation standards for the seminar thesis and presentation.

**Requirements:**

If possible, at least one module of the institute should be taken before attending the seminar.

**Objectives:**

The student

- illustrates and evaluates classic and current research questions in discrete optimization,
- applies optimization models and algorithms in discrete optimization, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management),
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

**Organizational issues**
wird auf der Homepage dol.ior.kit.edu bzw. auf dem WiWi-Portal bekannt gegeben

**Literature**
Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

## V Seminar on Methodical Foundations of Operations Research (B)

**Seminar (S)**
**On-Site**

2550131, WS 23/24, 2 SWS, Language: German, Open in study portal

**Content**
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor studenst are introduced to the style of scientific work. By focussed treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

**Remarks:**

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

**Assessment:**

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation.The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

**Workload:**

The total workload for this course is approximately 90 hours. For further information see German version.

**Literature**
Die Literaur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbesprechung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a prepatory meeting.

V

### Seminar: Modern OR and Innovative Logistics

2550491, WS 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 rhetoric 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.

# T 7.217 Course: Seminar in Statistics A (Master) [T-WIWI-103483]

**Responsible:** Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500004 | Predictive Data Analytics - An Introduction to Statistical Machine Learning | 2 SWS | Seminar / | Schienle, Lerch |
| ST 2023 | 2521310 | Advanced Topics in Econometrics | 2 SWS | Seminar | Schienle, Krüger, Buse, Rüter, Pavlova, Bracher |
| ST 2023 | 2550561 | Spezielle fortgeschrittene Themen der Datenanalyse und Statistik | 2 SWS | Seminar / | Grothe, Kaplan, Kächele |
| WT 23/24 | 2521310 | Topics in Econometrics | 2 SWS | Seminar | Schienle, Rüter |
| **Exams** | | | | | |
| ST 2023 | 00010 | Seminar in Statistics A (Master) | | | Grothe |
| ST 2023 | 7900204 | Predictive Data Analytics - An Introduction to Statistical Machine Learning | | | Lerch |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

**Annotation**
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

*Below you will find excerpts from events related to this course:*

## V Predictive Data Analytics - An Introduction to Statistical Machine Learning

2500004, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben

## V Advanced Topics in Econometrics

2521310, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**

**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben

V **Topics in Econometrics** **Seminar (S)**
2521310, WS 23/24, 2 SWS, Language: German, Open in study portal

**Organizational issues**
Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

# T 7.218 Course: Seminar in Statistics B (Master) [T-WIWI-103484]

**Responsible:** Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500004 | Predictive Data Analytics - An Introduction to Statistical Machine Learning | 2 SWS | Seminar / | Schienle, Lerch |
| ST 2023 | 2521310 | Advanced Topics in Econometrics | 2 SWS | Seminar | Schienle, Krüger, Buse, Rüter, Pavlova, Bracher |
| ST 2023 | 2550561 | Spezielle fortgeschrittene Themen der Datenanalyse und Statistik | 2 SWS | Seminar / | Grothe, Kaplan, Kächele |
| **Exams** | | | | | |
| ST 2023 | 7900204 | Predictive Data Analytics - An Introduction to Statistical Machine Learning | | | Lerch |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

**Prerequisites**
None.

**Recommendation**
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

**Annotation**
The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: https://portal.wiwi.kit.edu.

*Below you will find excerpts from events related to this course:*

## V Predictive Data Analytics - An Introduction to Statistical Machine Learning

2500004, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben

## V Advanced Topics in Econometrics

2521310, SS 2023, 2 SWS, Language: German/English, Open in study portal

**Seminar (S)**

**Organizational issues**
Blockveranstaltung, Termine werden bekannt gegeben

# T 7.219 Course: Seminar Production Technology [T-MACH-109062]

**Responsible:** Prof. Dr.-Ing. Jürgen Fleischer
Prof. Dr.-Ing. Gisela Lanza
Prof. Dr.-Ing. Volker Schulze

**Organisation:** KIT Department of Mechanical Engineering

**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2149665 | Seminar Production Technology | 1 SWS | Seminar / | Fleischer, Lanza, Schulze, Zanger |
| **Exams** | | | | | |
| ST 2023 | 76-T-MACH-109062 | Seminar Production Technology | | | Fleischer, Lanza, Schulze |
| WT 23/24 | 76-T-MACH-109062 | Seminar Production Technology | | | Fleischer, Lanza, Schulze |

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**
Alternative test achievement (graded):

- written elaboration (workload of at least 80 h)
- oral presentation (approx. 30 min)

**Prerequisites**
none

**Annotation**
The specific topics are published on the homepage of the wbk Institute of Production Science.

*Below you will find excerpts from events related to this course:*

## V Seminar Production Technology

2149665, SS 2023, 1 SWS, Language: German, Open in study portal

**Seminar (S)**
**Blended (On-Site/Online)**

**Content**
In course of the seminar Production Technology current issues of the wbk main fields of research "Manufacturing and Materials Technology", "Machines, Equipment and Process Automation" as well as "Production Systems" are discussed.

The specific topics are published on the homepage of the wbk Institute of Production Science.

**Learning Outcomes:**

The students …

- are in a position to independently handle current, research-based tasks according to scientific criteria.
- are able to research, analyze, abstract and critically review the information.
- can draw own conclusions using their interdisciplinary knowledge from the less structured information and selectively develop current research results.
- can logically and systematically present the obtained results both orally and in written form in accordance with scientific guidelines (structuring, technical terminology, referencing). They can argue and defend the results professionally in the discussion.

**Workload:**

regular attendance: 10 hours
self-study: 80 hours

**Organizational issues**
siehe http://www.wbk.kit.edu/seminare.php

# T 7.220 Course: Seminar: Commercial and Corporate Law in the IT Industry [T-INFO-111405]

**Responsible:** Dr. Georg Nolte
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101216 - Private Business Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each winter term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2400165 | Seminar Commercial and Corporate Law in Information Technology | 2 SWS | Seminar / 🖳 | Nolte |
| **Exams** | | | | | |
| WT 23/24 | 7500182 | Seminar: Legal Studies II | | | Boehm, Raabe |
| WT 23/24 | 7500310 | Seminar: Commercial and Corporate Law in the IT Industry | | | Matz |

Legend: 🖳 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, × Cancelled

# T 7.221 Course: Seminar: IT- Security Law [T-INFO-111404]

**Responsible:** Martin Schallbruch
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101217 - Public Business Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each winter term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 24389 | Seminar "IT-Sicherheitsrecht" | 2 SWS | Seminar | Schallbruch |
| **Exams** | | | | | |
| WT 23/24 | 7500249 | Seminar: IT- Security Law | | | Zufall |

# T 7.222 Course: Seminar: Legal Studies I [T-INFO-101997]

**Responsible:** N.N.
**Organisation:** KIT Department of Informatics
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2400005 | Governance, Risk & Compliance | 2 SWS | Seminar / 🗣 | Herzig, Siddiq |
| ST 2023 | 2400061 | Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung | 2 SWS | Seminar / 🗣 | Bless, Boehm, Hartenstein, Mädche, Volkamer, Zitterbart |
| ST 2023 | 2400078 | Intelligente Chatbots und Recht | 2 SWS | Seminar / 🗣 | Raabe |
| ST 2023 | 2400149 | „Vom Original zur Kopie und vom Analogen zum Digitalen“ | 2 SWS | Seminar / 🗣 | Dreier |
| ST 2023 | 24820 | Current Issues in Patent Law | 2 SWS | Seminar / 🗣 | Melullis |
| WT 23/24 | 2400060 | Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection | 2 SWS | Seminar / 🗣 | Reussner, Raabe, Werner, Müller-Quade |
| WT 23/24 | 2400184 | EU Digital Regulatory Framework | 2 SWS | Seminar / 🗣 | Zufall |
| WT 23/24 | 2400203 | (Smart) City in and as a Network | 2 SWS | Seminar / 🗣 | Kasper |
| WT 23/24 | 2513214 | Seminar Information security and Data protection (Bachelor) | 2 SWS | Seminar / 🧩 | Oberweis, Volkamer, Raabe, Schiefer, Hennig, Sterz, Veit, Ballreich, Mossano |
| **Exams** | | | | | |
| ST 2023 | 7500106 | Title not available | | | Bless, Hartenstein, Mädche, Zitterbart, Boehm, Sunyaev |
| ST 2023 | 7500140 | Seminar: Legal Studies I | | | Dreier, Melullis, Matz |
| WT 23/24 | 7500035 | Seminar: Legal Studies II | | | Zufall |
| WT 23/24 | 7500182 | Seminar: Legal Studies II | | | Boehm, Raabe |
| WT 23/24 | 7500232 | Seminar Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection | | | Reussner |

Legend: 💻 Online, 🧩 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

*Below you will find excerpts from events related to this course:*

## V Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung

**Seminar (S)**
**On-Site**

2400061, SS 2023, 2 SWS, Open in study portal

**Content**

- Registration via https://portal.wiwi.kit.edu/ys/5877

**Organizational issues**
nach Vereinbarung

## V EU Digital Regulatory Framework

**Seminar (S)**
**On-Site**

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 one-page report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 60 %, one-page report: 20 %, discussion: 20 %).

**Organizational issues**
**WS 2023/24**

# T 7.223 Course: Seminar: Legal Studies II [T-INFO-105945]

**Responsible:** N.N.
**Organisation:** KIT Department of Informatics
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Version |
|---|---|---|---|
| Examination of another type | 3 | Grade to a third | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2400061 | Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung | 2 SWS | Seminar / 🗣 | Bless, Boehm, Hartenstein, Mädche, Volkamer, Zitterbart |
| ST 2023 | 2400078 | Intelligente Chatbots und Recht | 2 SWS | Seminar / 🗣 | Raabe |
| ST 2023 | 2400149 | „Vom Original zur Kopie und vom Analogen zum Digitalen“ | 2 SWS | Seminar / 🗣 | Dreier |
| WT 23/24 | 2400014 | Current Issues in Patent Law | 2 SWS | Seminar / 🗣 | Melullis |
| WT 23/24 | 2400060 | Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection | 2 SWS | Seminar / 🗣 | Reussner, Raabe, Werner, Müller-Quade |
| WT 23/24 | 2400125 | Security and Privacy Awareness | 2 SWS | Seminar / 🖧 | Seidel-Saul, Volkamer, Boehm, Aldag, Veit |
| WT 23/24 | 2400184 | EU Digital Regulatory Framework | 2 SWS | Seminar / 🗣 | Zufall |
| WT 23/24 | 2400203 | (Smart) City in and as a Network | 2 SWS | Seminar / 🗣 | Kasper |
| WT 23/24 | 2400209 | Immaterialgüterrechtliche Herausforderungen durch KI und das neue EU-Datengesetz | 2 SWS | Seminar / 🗣 | Sattler |
| WT 23/24 | 2513214 | Seminar Information security and Data protection (Bachelor) | 2 SWS | Seminar / 🖧 | Oberweis, Volkamer, Raabe, Schiefer, Hennig, Sterz, Veit, Ballreich, Mossano |
| **Exams** | | | | | |
| ST 2023 | 7500106 | Title not available | | | Bless, Hartenstein, Mädche, Zitterbart, Boehm, Sunyaev |
| WT 23/24 | 7500035 | Seminar: Legal Studies II | | | Zufall |
| WT 23/24 | 7500182 | Seminar: Legal Studies II | | | Boehm, Raabe |
| WT 23/24 | 7500232 | Seminar Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection | | | Reussner |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

*Below you will find excerpts from events related to this course:*

## V Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung

**Seminar (S)**
**On-Site**

2400061, SS 2023, 2 SWS, Open in study portal

**Content**

- Registration via https://portal.wiwi.kit.edu/ys/5877

**Organizational issues**
nach Vereinbarung

## V Security and Privacy Awareness

**Seminar (S)**
**Blended (On-Site/Online)**

2400125, WS 23/24, 2 SWS, Open in study portal

**Content**
Within the framework of this interdisciplinary seminar, the topics security awareness and privacy awareness are to be considered from different perspectives. It deals with legal, information technology, psychological, social as well as philosophical aspects.

**Note: The link to enrol is for every student, regardless of the study background!**

Dates:

- Kick-Off : 23.10.23 14:00 o'clock, Room 1C-03, building 5.20
- First version: 07.01.24
- Final version: 17.02.24
- Presentation: CW 12

Topics will be assigned after the kick-off.

**Consider that legal-focused topics require you to speak and understand German legal texts.**

Topics:

**1: Literature review on reporting obligations / information security incidents (literature - seminar**

**2: Privacy Awareness with electronic patient file**

**4: Ethical analysis of so-called attacker studies that gather security awareness data in public space.**

**5: Collecting data: The boundaries of consent**

**Further Topics TBA!**

ATTENTION: The seminar is only for MASTER students!

V **EU Digital Regulatory Framework** **Seminar (S)**
2400184, WS 23/24, 2 SWS, Language: English, Open in study portal **On-Site**

**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 one-page report.

Grades will be assigned based on the quality of these presentations and the report, as well as participation in the discussion (presentation: 60 %, one-page report: 20 %, discussion: 20 %).

**Organizational issues**
**WS 2023/24**

# T 7.224 Course: Service Design Thinking [T-WIWI-102849]

**Responsible:** Prof. Dr. Gerhard Satzger
Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101503 - Service Design Thinking

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 12 | Grade to a third | Irregular | 4 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2595600 | Service Design Thinking | 2 SWS | Lecture / 🗣 | Satzger, Feldmann |
| WT 23/24 | 2595600 | Service Design Thinking | 2 SWS | Lecture / 🗣 | Satzger, Feldmann |
| **Exams** | | | | | |
| ST 2023 | 7900293 | Service Design Thinking | | | Satzger |
| ST 2023 | 7900301 | Practical Seminar Service Innovation | | | Satzger |

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment.

**Prerequisites**
None

**Recommendation**
This course is held in English – proficiency in writing and communication is required.

Our past students recommend to take this course at the beginning of the masters program.

**Annotation**
Due to practical project work as a component of the program, access is limited.
The module (as well as the module component) spans two semesters. It starts in September every year and runs until end of June in the subsequent year. Entering the program is only possible at its beginning - after prior application in May/June.
For more information on the application process and the program itself are provided in the module component description and the program's website (http://sdt-karlsruhe.de).
Furthermore, the KSRI conducts an information event for applicants every year in May.
This module is part of the KSRI Teaching Program „Digital Service Systems“. For more information see the KSRI Teaching website: www.ksri.kit.edu/teaching.

*Below you will find excerpts from events related to this course:*

## V Service Design Thinking

2595600, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The Service Design Thinking course is more than a usual lecture. You will learn what it really takes to be an innovator. You will receive education in the human-centric innovation approach Design Thinking, work in small but interdisciplinary and international teams on real business challenges over the course of nine months (September to June). You will collaborate directly with mentors from a partner company as well as with fellow students from renowned universities from the SUGAR network, e.g. the University of St. Gallen, the Trinity College Dublin or the University of Science and Technology of China (USTC). Along the way, you will visit international destinations known for being innovation hotspots and will be on stage at innovation events that draw an audience of several hundred participants.

**What students will learn:**

- Deep knowledge of the innovation method "Design Thinking", as introduced and promoted by Stanford University.
- Development of new, creative solutions through extensive observation of oneself and one's environment, in particular with regard to the relevant service users.
- Know-how to use prototyping and experimentation to visualize one's ideas, to test and iteratively develop them, and to converge on a solution.
- Learn to apply the method to real innovation projects issued by industry partners.
- Communicate, work and present in an interdisciplinary and international project setting.

**Course phases (roughly 4 weeks each):**

- **Paper Bike**:
  Learning about the basic method elements by building a paper bike that has to fulfill a given set of challenges. The bikes will be tested in a race during an international Kick-Off event with other universities of the SUGAR network (internally known as Design Thinking network).
- **Design Space Exploration**:
  Exploring the problem space through customer and user observation as well as desk research.
- Critical Function Prototype:
  Identification of critical features from the customer's perspective that can contribute to the solution of the overarching problem. Building and testing prototypes that integrate these functionalities.
- **Dark Horse Prototype**:
  Inverting earlier assumptions and experiences, which leads to the inclusion of new features and solutions. Developing radically new ideas are the focus of this phase.
- **Funky Prototype**:
  Integration of the individually tested and successful functions to a complete solution, which is further tested and developed.
- **Functional Prototype**:
  Selection of successful scenarios from the previous phase and building a higher resolution prototype. The final solution to the challenge is laid out in detail and tested with users.
- **Final Prototype**:
  Implementing the functional prototype and presenting it to the customer as well as the SUGAR network.

**Literature**

- Design Thinking: Das Handbuch; Falk Uebernickel, Walter Brenner, Therese Naef, Britta Pukall, Bernhard Schindlholzer
- The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems; Michael Lewrick, Patrick Link, Larry Leifer
- The Design Thinking Toolbox: A Guide to Mastering the Most Popular and Valuable Innovation Methods; Michael Lewrick, Patrick Link, Larry Leifer
- Frame Innovation: Create New Thinking by Design (Design Thinking, Design Theory); Kees Dorst

V **Service Design Thinking** **Lecture (V)**
2595600, WS 23/24, 2 SWS, Language: English, Open in study portal **On-Site**

**Content**
The Service Design Thinking course is more than a usual lecture. You will learn what it really takes to be an innovator. You will receive education in the human-centric innovation approach Design Thinking, work in small but interdisciplinary and international teams on real business challenges over the course of nine months (September to June). You will collaborate directly with mentors from a partner company as well as with fellow students from renowned universities from the SUGAR network, e.g. the University of St. Gallen, the Trinity College Dublin or the University of Science and Technology of China (USTC). Along the way, you will visit international destinations known for being innovation hotspots and will be on stage at innovation events that draw an audience of several hundred participants.

**What students will learn:**

- Deep knowledge of the innovation method "Design Thinking", as introduced and promoted by Stanford University.
- Development of new, creative solutions through extensive observation of oneself and one's environment, in particular with regard to the relevant service users.
- Know-how to use prototyping and experimentation to visualize one's ideas, to test and iteratively develop them, and to converge on a solution.
- Learn to apply the method to real innovation projects issued by industry partners.
- Communicate, work and present in an interdisciplinary and international project setting.

**Course phases (roughly 4 weeks each):**

- **Paper Bike**:
  Learning about the basic method elements by building a paper bike that has to fulfill a given set of challenges. The bikes will be tested in a race during an international Kick-Off event with other universities of the SUGAR network (internally known as Design Thinking network).
- **Design Space Exploration**:
  Exploring the problem space through customer and user observation as well as desk research.
- Critical Function Prototype:
  Identification of critical features from the customer's perspective that can contribute to the solution of the overarching problem. Building and testing prototypes that integrate these functionalities.
- **Dark Horse Prototype**:
  Inverting earlier assumptions and experiences, which leads to the inclusion of new features and solutions. Developing radically new ideas are the focus of this phase.
- **Funky Prototype**:
  Integration of the individually tested and successful functions to a complete solution, which is further tested and developed.
- **Functional Prototype**:
  Selection of successful scenarios from the previous phase and building a higher resolution prototype. The final solution to the challenge is laid out in detail and tested with users.
- **Final Prototype**:
  Implementing the functional prototype and presenting it to the customer as well as the SUGAR network.

**Organizational issues**
Bei der Vorlesung handelt es sich um eine zweisemestrige Veranstaltung, die jährlich im September startet.

**Literature**

- Design Thinking: Das Handbuch; Falk Uebernickel, Walter Brenner, Therese Naef, Britta Pukall, Bernhard Schindlholzer
- The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems; Michael Lewrick, Patrick Link, Larry Leifer
- The Design Thinking Toolbox: A Guide to Mastering the Most Popular and Valuable Innovation Methods; Michael Lewrick, Patrick Link, Larry Leifer
- Frame Innovation: Create New Thinking by Design (Design Thinking, Design Theory); Kees Dorst

# T 7.225 Course: Service Innovation [T-WIWI-102641]

**Responsible:** Prof. Dr. Gerhard Satzger
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-102808 - Digital Service Systems in Industry

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2595468 | Digital Services: Innovation & Business Models | 1.5 SWS | Lecture / | Satzger, Benz, Schüritz |
| **Exams** | | | | | |
| ST 2023 | 7900113 | Digital Services: Innovation & Business Models | | | Satzger |
| ST 2023 | 7900249 | Service Innovation - oral exam | | | Satzger |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Note: From summer semester 2023, the course Service Innovation will be offered with a revised course concept and content. The focus will be on the closer integration of the topics of service innovation and digitalization. Current foundational content (e.g., on service innovation challenges or human-centered innovation methods) will remain. New content will cover topics such as digital platforms and ecosystems, IoT and smart service innovation, and business models.

The assessment consists of a written exam (60 min.). A bonus can be acquired through successful participation in the exercise. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by one grade (0.3 or 0.4). Details will be announced in the lecture.

**Prerequisites**
None

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-112757 - Digital Services: Innovation & Business Models must not have been started.

**Recommendation**
None

**Annotation**
Starting with the summer semester 2023, the course Service Innovation will be called "Digital Services: Innovation & Business Models".

*Below you will find excerpts from events related to this course:*

## V Digital Services: Innovation & Business Models

2595468, SS 2023, 1.5 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
Leveraging data and digital technologies for business success is a key challenge for organizations as they need to

- get aware of the newly arising potential
- develop suitable digital services that are user-centric and individualized
- “servitize” their offering portfolio and business model
- transform their organizations

This course will equip students with concepts and methods to tackle this challenge along two dimensions: First, we will cover innovation as a concept as well as apply contemporary innovation methods (like Design Thinking, Open Innovation) to the services space. Second, we deal with leveraging innovation to develop new business models (including multi-partner concepts in platforms or ecosystems), to servitize existing business models (e.g., via product-service-systems), and to accordingly transform the organization.

The course links innovation and business model theories with practical examples and exercises. Students are asked to actively engage in the discussion.

**Organizational issues**
The course will be offered in the form of a flipped classroom concept starting in summer semester 2023. The lecture will be recorded in advance and made available online. During the “in presence” sessions, the contents of the lecture will be applied and expanded on.

**Literature**


- Böhmann, T./ Leimeister, J.M./ Möslein, K. (2014), Service Systems Engineering, Business & Information Systems Engineering, Vol. 6, No.2, 73-79.
- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.) (2015). Fundamentals of service systems (Vol. 12). Heidelberg: Springer.
- Chesbrough, H. (2011). Open services innovation: Rethinking your business to grow and compete in a new era. John Wiley & Sons.
- Rogers, S. (2003). Diffusion of Innovations. 5. ed. New York: Free Press.
- Satzger, G., Benz, C., Böhmann, T., Roth, A. (2022). Servitization and Digitalization as Siamese Twins – Concepts and Research Agenda. Edvardsson/Tronvoll (eds.): The Palgrave Handbook of Service Management, 967-989.
- Uebernickel, F., Brenner, W., Pukall, B., Naef, T., & Schindlholzer, B. (2015). Design Thinking: Das Handbuch. Frankfurt am Main: Frankfurter Allgemeine Buch.
- Vargo, S.L., Lusch, R.F. (2017). Service-dominant logic 2025. Int. J. Res. Mark. 34, 46–67.
- Weill, P.; Woerner, S.L. (2018): “What‘s your Digital Business Model? – Six Questions to Help you Build the Next-Generation Enterprise“. Boston, Massachusetts: Harvard Business Review Press.

# T 7.226 Course: SIL Entrepreneurship Emphasis [T-WIWI-110287]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105010 - Student Innovation Lab (SIL) 1

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each winter term | 1 |

**Competence Certificate**
Alternative exam assessment (§4(2), 3 SPO). The final grade is a result from both, the grade of the term paper and its presentation, as well as active participation during the seminar. In addition, smaller, ungraded tasks are provided in the course to monitor progress.

**Prerequisites**
None

**Recommendation**
None

# T 7.227 Course: SIL Entrepreneurship Project [T-WIWI-110166]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-105010 - Student Innovation Lab (SIL) 1

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each winter term | 1 |

**Competence Certificate**
Alternative exam assessment (§4(2), 3 SPO). The final grade is a result from both, the grade of the term paper and its presentation, as well as active participation during the seminar. In addition, smaller, ungraded tasks are provided in the course to monitor progress.

**Prerequisites**
None

**Recommendation**
None

# T 7.228 Course: Simulation Game in Energy Economics [T-WIWI-108016]

**Responsible:** Dr. Massimo Genoese
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101451 - Energy Economics and Energy Markets

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2581025 | Simulation Game in Energy Economics | 3 SWS | Lecture / Practice / | Genoese, Zimmermann |
| **Exams** | | | | | |
| ST 2023 | 7981025 | Simulation Game in Energy Economics | | | Fichtner |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Examination as written assignment and oral presentation (§4 (2), 1 SPO).

**Prerequisites**
None

**Recommendation**
Visiting the course "Introduction to Energy Economics"

**Annotation**
The number of participants is limited.
There is a registration procedure via CAS followed by a selection of the participants.

*Below you will find excerpts from events related to this course:*

## V Simulation Game in Energy Economics

2581025, SS 2023, 3 SWS, Language: German, Open in study portal

**Lecture / Practice (VÜ)**
**On-Site**

**Content**

- Introduction
- Agents and market places in the electricity industry
- Selected planning tasks of energy service companies
- Methods of modelling in the energy sector
- Agent-based simulation: The PowerACE model
- Simulation game: Simulation in energy economics (electricity and emission trading, investment decisions)

The lecture is structured in a theoretical and a practical part. In the theoretical part, the students are taught the basics to carry out simulations themselves in the practical part which comprises amongst others the simulation of the power exchange. The participants of the simulation game take a role as a power trader in the power market. Based on various sources of information (e.g. prognosis of power prices, available power plants, fuel prices), they can launch bids in the power exchange.

Assessment: presentation and written summary

Prerequisites: Basics in Energy economics ad markets are advantageous.

**Organizational issues**
CIP-Pool West, Raum 102, Geb. 06.41 - siehe Institutsaushang

**Literature**
**Weiterführende Literatur:**

Möst, D. und Genoese, M. (2009): Market power in the German wholesale electricity market. The Journal of Energy Markets (47–74). Volume 2/Number 2, Summer 2009

# T 7.229 Course: Smart Energy Infrastructure [T-WIWI-107464]

**Responsible:** Dr. Armin Ardone
Dr. Dr. Andrej Marko Pustisek
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101452 - Energy Economics and Technology
M-WIWI-106410 - Economics & Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 5,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2581023 | (Smart) Energy Infrastructure | 4 SWS | Lecture / 🗣 | Ardone, Pustisek |
| **Exams** | | | | | |
| ST 2023 | 7981023 | Smart Energy Infrastructure | | | Fichtner |
| WT 23/24 | 7900178 | Smart Energy Infrastructure NEW | | | Fichtner |
| WT 23/24 | 7981023 | Smart Energy Infrastructure | | | Fichtner |

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. Re-examinations are offered at every ordinary examination date.

*Below you will find excerpts from events related to this course:*

## V (Smart) Energy Infrastructure

2581023, WS 23/24, 4 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The lecture provides a techno-economic overview of different infrastructures of the energy system and their importance regarding the future energy system (“Energiewende”) – in particular

- for electricity:
  - the supply side (e.g. power plants)
  - the demand side (e.g. load structures of appliances, flexibilities) as well as
  - transport infrastructures (electricity grids)
- for fuel transportation:
  - pipeline infrastructures (focus on natural gas)
  - shipping of LNG
  - crude oil and oil product transportation
  - hydrogen transportation
  - comparison of potential energy carriers for global trade of renewable energy (e.g., hydrogen and its derivates, e-fuels, reactive metals)
- storage systems (e.g. batteries)

Additionally, the lecture provides a toolbox for energy system analysis such as an overview and classification of energy systems modelling approaches as well as the usage of scenario techniques for energy systems analysis.

The lecture also provides practical examples for the relevant methods presented.

**Organizational issues**
Blockveranstaltung
16.11., 17.11., 30.11., 01.12., 07.12., 08.12., 14.12., 15.12.

# T 7.230 Course: Smart Grid Applications [T-WIWI-107504]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101446 - Market Engineering
M-WIWI-103720 - eEnergy: Markets, Services and Systems

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | see Annotations | 2 |

**Competence Certificate**
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulations). By successful completion of the exercises (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The lecture will no longer be offered from the coming winter semester 2023/24. It is only possible to take part in the main exam (first-time writer) and follow-up exam (repeater).

# T 7.231 Course: Social Choice Theory [T-WIWI-102859]

**Responsible:** Prof. Dr. Clemens Puppe
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101500 - Microeconomic Theory
M-WIWI-101504 - Collective Decision Making
M-WIWI-106408 - Digital Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2520537 | Social Choice Theory | 2 SWS | Lecture / 🗣 | Puppe |
| ST 2023 | 2520539 | Übung zu Social Choice Theory | 1 SWS | Practice / 🗣 | Müller, Puppe |
| **Exams** | | | | | |
| ST 2023 | 7900039 | Social Choice Theory | | | Puppe |
| ST 2023 | 7900045 | Social Choice Theory | | | Puppe |

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of an alternative exam assessment (open book exam). The exam takes place in every summer semester.

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Social Choice Theory

2520537, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
How should (political) candidates be elected? What are good ways of merging individual judgments into collective judgments? Social Choice Theory is the systematic study and comparison of how groups and societies can come to collective decisions.

The course offers a rigorous and comprehensive treatment of judgment and preference aggregation as well as voting theory. It is divided into two parts. The first part deals with (general binary) aggregation theory and builds towards a general impossibility result that has the famous Arrow theorem as a corollary. The second part treats voting theory. Among other things, it includes prooving the Gibbard-Satterthwaite theorem.

**Literature**
Main texts:

- Hervé Moulin: Axioms of Cooperative Decision Making, Cambridge University Press, 1988
- Christian List and Clemens Puppe: Judgement Aggregation. A survey, in: Handbook of rational & social choice, P.Anand,P.Pattanaik, C.Puppe (Eds.), Oxford University Press 2009.

Secondary texts:

- Amartya Sen: Collective Choice and Social Welfare, Holden-Day, 1970
- Wulf Gaertner: A Primer in Social Choice Theory, revised edition, Oxford University Press, 2009
- Wulf Gaertner: Domain Conditions in Social Choice Theory, Oxford University Press, 2001

# T 7.232 Course: Sociotechnical Information Systems Development [T-WIWI-109249]

**Responsible:** Prof. Dr. Ali Sunyaev
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2512400 | Advanced Lab Development of Sociotechnical Information Systems (Bachelor) | 3 SWS | Practical course / 🖳 | Sunyaev, Pandl, Goram, Leiser |
| ST 2023 | 2512401 | Advanced Lab Development of Sociotechnical Information Systems (Master) | 3 SWS | Practical course / 🖳 | Sunyaev, Pandl, Goram, Leiser |
| **Exams** | | | | | |
| ST 2023 | 7900173 | Advanced Lab Development of Sociotechnical Information Systems (Master) | | | Sunyaev |

Legend: 🖳 Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The alternative exam assessment consists of an implementation and a final thesis documenting the development and use of the application.

**Prerequisites**
None.

*Below you will find excerpts from events related to this course:*

## V Advanced Lab Development of Sociotechnical Information Systems (Bachelor)

**Practical course (P)**
**Online**

2512400, SS 2023, 3 SWS, Language: German/English, Open in study portal

**Content**
The aim of the lab is to get to know the development of socio-technical information systems in different application areas. In the event framework, you should develop a suitable solution strategy for your problem alone or in group work, collect requirements, and implement a software artifact based on it (for example, web platform, mobile apps, desktop application). Another focus of the lab is on the subsequent quality assurance and documentation of the implemented software artifact.

Registration information will be announced on the course page.

## V Advanced Lab Development of Sociotechnical Information Systems (Master)

**Practical course (P)**
**Online**

2512401, SS 2023, 3 SWS, Language: German/English, Open in study portal

**Content**
The aim of the lab is to get to know the development of socio-technical information systems in different application areas. In the event framework, you should develop a suitable solution strategy for your problem alone or in group work, collect requirements, and implement a software artifact based on it (for example, web platform, mobile apps, desktop application). Another focus of the lab is on the subsequent quality assurance and documentation of the implemented software artifact.

Registration information will be announced on the course page.

# T 7.233 Course: Software Quality Management [T-WIWI-102895]

**Responsible:** Prof. Dr. Andreas Oberweis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2511208 | Software Quality Management | 2 SWS | Lecture / 🗣 | Alpers |
| ST 2023 | 2511209 | Übungen zu Software-Qualitätsmanagement | 1 SWS | Practice / 🗣 | Frister, Forell |
| **Exams** | | | | | |
| ST 2023 | 79AIFB_STQM_A5 | Software Quality Management (Registration until 17 July 2023) | | | Oberweis |
| WT 23/24 | 79AIFB_STQM_C1 | Software Quality Management | | | Oberweis |

Legend: 💻 Online, 🌐 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

**Prerequisites**
None

*Below you will find excerpts from events related to this course:*

## V Software Quality Management

2511208, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
This lecture imparts fundamentals of active software quality management (quality planning, quality testing, quality control, quality assurance) and illustrates them with concrete examples, as currently applied in industrial software development. Keywords of the lecture content are: software and software quality, process models, software process quality, ISO 9000-3, CMM(I), BOOTSTRAP, SPICE, software tests.

**Learning objectives:**

Students

- explain the relevant quality models,
- apply methods to evaluate the software quality and evaluate the results,
- know the mail models of sofware certification, compare and evaluate these models,
- write scientific theses in the area of software quality management and find own solutions for given problems.

**Recommendations**:

Programming knowledge in Java and basic knowledge of computer science are expected.

**Workload**:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

**Literature**


- Helmut Balzert: Lehrbuch der Software-Technik. Spektrum-Verlag 2008
- Peter Liggesmeyer: Software-Qualität, Testen, Analysieren und Verifizieren von Software. Spektrum Akademischer Verlag 2002
- Mauro Pezzè, Michal Young: Software testen und analysieren. Oldenbourg Verlag 2009


Weitere Literatur wird in der Vorlesung bekanntgegeben.

# T 7.234 Course: Spatial Economics [T-WIWI-103107]

**Responsible:** Prof. Dr. Ingrid Ott
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101485 - Transport Infrastructure Policy and Regional Development
M-WIWI-101496 - Growth and Agglomeration
M-WIWI-101497 - Agglomeration and Innovation

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2561260 | Spatial Economics | 2 SWS | Lecture / 🗣 | Ott |
| WT 23/24 | 2561261 | Exercise for Spatial Economics | 1 SWS | Practice / 🗣 | Ott, Mirzoyan |
| **Exams** | | | | | |
| ST 2023 | 7900103 | Spatial Economics | | | Ott |
| WT 23/24 | 7900075 | Spatial Economics | | | Ott |
| WT 23/24 | 7900276 | Spatial Economics | | | Ott |

Legend: 💻 Online, 🎭 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Depending on further pandemic developments, the examination will be offered either as an open-book examination, or as a 60-minute written examination.

**Prerequisites**
None

**Recommendation**
Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses "Economics I" [2600012], and "Economics II" [2600014]. In addition, an interest in quantitative-mathematical modeling is required. The attendance of the course "Introduction to economic policy" [2560280] is recommended.

**Annotation**
Due to the research semester of Prof. Dr. Ingrid Ott, the course will not be offered in the winter semester 2021/22. The exam will take place. Preparation materials can be found in ILIAS.

*Below you will find excerpts from events related to this course:*

## V Spatial Economics

2561260, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
The course covers the following topics:

- Geography, trade and development
- Geography and economic theory
- Core models of economic geography and empirical evidence
- Agglomeration, home market effect, and spatial wages
- Applications and extensions

**Learning objectives:**

The student

- analyses how spatial distribution of economic activity is determined.
- uses quantitative methods within the context of economic models.
- has basic knowledge of formal-analytic methods.
- understands the link between economic theory and its empirical applications.
- understands to what extent concentration processes result from agglomeration and dispersion forces.
- is able to determine theory based policy recommendations.

**Recommendations:**

Basic knowledge of micro- and macroeconomics is assumed, as taught in the courses Economics I [2600012], and Economics II [2600014]. An interest in mathematical modeling is advantageous.

**Workload:**

The total workload for this course is approximately 135 hours.

- Classes: ca. 30 h
- Self-study: ca. 45 h
- Exam and exam preparation: ca. 60 h

**Assessment:**

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

**Literature**
Steven Brakman, Harry Garretsen, Charles van Marrewijk (2009): The New Introduction to Geographical Economics, 2nd ed, Cambridge University Press.

Weitere Literatur wird in der Vorlesung bekanntgegeben.
(Further literature will be announced in the lecture.)

# T 7.235 Course: Special Topics in Information Systems [T-WIWI-109940]

**Responsible:** Prof. Dr. Christof Weinhardt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101410 - Business & Service Engineering
M-WIWI-101411 - Information Engineering
M-WIWI-101506 - Service Analytics
M-WIWI-103720 - eEnergy: Markets, Services and Systems

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each term | 2 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 00019 | Implementation of a classification of Digital Involvement Projects (DIP) in a web-based application | Weinhardt |
| ST 2023 | 00032 | Practical Seminar: Visualizing AI Predictions Using Metaverse Technology | Weinhardt |
| ST 2023 | 7900326 | Special Topics in Information Systems | Weinhardt |

**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.

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.

# T 7.236 Course: Startup Experience [T-WIWI-111561]

**Responsible:** Prof. Dr. Orestis Terzidis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101488 - Entrepreneurship (EnTechnon)

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 6 | Grade to a third | Each term | 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Events** | | | | | |
| ST 2023 | 2545004 | Startup Experience | 4 SWS | Seminar / 🗣 | Finner, Manthey, Weimar, Terzidis |
| WT 23/24 | 2545004 | Startup Experience | 4 SWS | Seminar / 🗣 | Weimar, Martjan, Terzidis |
| **Exams** | | | | | |
| ST 2023 | 7900186 | Startup Experience | | | Terzidis |
| WT 23/24 | 7900186 | Startup Experience | | | Terzidis |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessment. Details on the design of the examination performance of other types will be announced in the course.The grade is composed of a presentation and a written paper (plus any specified documentation, e.g. work results, experience diary, reflection).

**Recommendation**
Lecture Entrepreneurship already completed

**Annotation**
The language in the seminar is English. The seminar contents will be published on the chair homepage.

*Below you will find excerpts from events related to this course:*

V **Startup Experience** — **Seminar (S) On-Site**
2545004, SS 2023, 4 SWS, Language: English, Open in study portal

**Content**
**Content**

In the Startup Experience course, you develop entrepreneurial competences that enable you to develop a new venture. In an entrepreneurial project, you have three main goals:

1. Identify and develop an opportunity. Who is your target customer and what problem or task does he or she have? How attractive and how big is this market?

2. How will you provide value for them? How can you use specific resources, including technology to develop a solution?

3. How can you conceive and set up a viable organization? Which business model do you suggest to create, deliver, and capture value?

After the teams are formed, a teambuilding session follows so that the team members get to know each other better and establish the cornerstones for working together. In this way, they create a basis for their joint project.

The focus of the seminar is on technology-based venturing. In this context, we will use the TAS (Technology-Application-Selection) approach developed at the EnTechnon. By default, we start from KIT patents (but you can also 'bring with you' other new technologies). We analyze the technology and use creativity techniques to find potential applications. Among other approaches, we will systematically explore applications around the UN sustainable development goals. Prototyping, business model development, and pitching are part of the seminar.

**Learning Objectives**

You will be able to explore deep technology venturing opportunities and create new products and services. The pedagogical approach is that of action learning. In a team, you will experience typical challenges and processes related to setting up a new business and develop the corresponding entrepreneurial competences.

After completing this course, the course participants will be able to:

- Characterize the core process of Deep Tech Venturing,
- Work effectively in a cohesive team,
- Use a technology characterization canvas to extract the core characteristics of a technology,
- Apply creativity techniques to ideate potential applications,
- Use utility analysis approaches to select a promising technology application,
- Develop a value proposition based on techniques like the value proposition canvas or the jobs-to-be-done method,
- Use approaches of technology impact assessment to implement responsible innovation processes,
- Apply advanced business modeling methods to develop a sound business concept,
- Develop and deliver a concise presentation ("pitch") to communicate you project.

**Additional information:**

Alternative exam assessment. The grade consists of the presentation and the written elaboration. Potentially, a 'project diary' of the seminar progress may be part of the deliverables (depends on tutor and will be communicated at the kick-off).

For a successful course completion, we expect you to submit a Business Plan with the following features:

- Scope: 9000 words,
- Sound and clear structure,
- Expression and spelling are correct
- Complete and correct references, quotations, etc.
- Visual elements are chosen appropriately
- Documentation and traceability of data acquisition, analysis and evaluation,
- Content is developed according to the course instructions.

Furthermore, we expect you to deliver a team Pitch.

- Duration: will be communicated (typically 5-10 minutes)
- Content: Introduction/Purpose; Problem; Solution; Business Model; Prototype; Competition; Management Team; Current Status and next steps,
- Layout and form: appropriate choice,
- Appearance: appropriate amount of visual elements,
- Data: well researched and organized visually
- Story Line: is sound; clear and convincing.

**Organizational issues**
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. The seminars will be held in English.

V **Startup Experience** **Seminar (S)**
2545004, WS 23/24, 4 SWS, Language: English, Open in study portal **On-Site**

**Content**
**Content**

In the Startup Experience seminar you will develop entrepreneurial competences that will enable you to build a new business. In an entrepreneurial project, you have three main objectives:

1. Identify and develop an opportunity. Who is your target customer and what problem or task does he or she have? How attractive and how big is this market?
2. How will you add value to it? How can you use specific resources, including technology, to develop a solution?
3. How can you design and set up a viable organisation? What business model do you propose to create, deliver and capture value?

Our primary focus is on digital healthcare ventures, granting you the opportunity to delve into the realm of entrepreneurship within the healthcare system. After 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.

**Learning Objectives**

After completing this course, the course participants will be able to:

- Work effectively in a cohesive team
- Understand the role of digital entrepreneurship in healthcare
- Apply creativity techniques to ideate
- Use utility analysis approaches to select promising solutions
- Develop a value proposition based on techniques like the value proposition canvas or the jobs-to-be-done method
- Apply advanced business modeling methods to develop a sound business concept
- Develop and deliver a concise presentation (“pitch”) to communicate your project
- Gain basic knowledge of healthcare regulations and reimbursement ways

**Additional information:**

Alternative exam assessment. The grade consists of the presentation and the written elaboration. Potentially, a ‘project diary’ of the seminar progress may be part of the deliverables (depends on tutor and will be communicated at the kick-off).

For a successful course completion, we expect you to submit a Business Plan with the following features:

- Scope: 9000 words,
- Sound and clear structure,
- Expression and spelling are correct
- Complete and correct references, quotations, etc.
- Visual elements are chosen appropriately
- Documentation and traceability of data acquisition, analysis and evaluation,
- Content is developed according to the course instructions.

Furthermore, we expect you to deliver a team Pitch.

- Duration: will be communicated (typically 5-10 minutes)
- Content: Introduction/Purpose; Problem; Solution; Business Model; Prototype; Competition; Management Team; Current Status and next steps,
- Layout and form: appropriate choice,
- Appearance: appropriate amount of visual elements,
- Data: well researched and organized visually
- Story Line: is sound; clear and convincing.

**Organizational issues**
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.

# T 7.237 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-101638 - Econometrics and Statistics I
M-WIWI-101639 - Econometrics and Statistics II
M-WIWI-106411 - Statistics & Econometrics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2521350 | Statistical Modeling of Generalized Regression Models | 2 SWS | Lecture | Heller |
| **Exams** | | | | | |
| ST 2023 | 7900146 (SS23) | Statistical Modeling of generalized regression models | | | Heller |
| WT 23/24 | 7900146 (WS23/24) | Statistical Modeling of generalized regression models | | | Heller |

**Competence Certificate**
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

**Prerequisites**
None

**Recommendation**
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

*Below you will find excerpts from events related to this course:*

## V Statistical Modeling of Generalized Regression Models

2521350, WS 23/24, 2 SWS, Open in study portal **Lecture (V)**

**Content**
**Learning objectives:**

The student has profound knowledge of generalized regression models.

**Requirements:**

Knowledge of the contents covered by the course *Economics III: Introduction in Econometrics" [2520016].*

**Workload:**

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

# T 7.238 Course: Stochastic Calculus and Finance [T-WIWI-103129]

**Responsible:** Dr. Mher Safarian
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101639 - Econometrics and Statistics II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2521331 | Stochastic Calculus and Finance | 2 SWS | Lecture | Safarian |
| WT 23/24 | 2521332 | Übungen zu Stochastic Calculus and Finance | 2 SWS | Practice | Safarian |
| **Exams** | | | | | |
| WT 23/24 | 7900225 | Stochastic Calculus and Finance | | | Safarian |

**Competence Certificate**
The assessment of this course consists of a written examination (§4(2), 1 SPOs, 180 min.).

**Prerequisites**
None

**Annotation**
For more information see http://statistik.econ.kit.edu/

*Below you will find excerpts from events related to this course:*

## V Stochastic Calculus and Finance

2521331, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**

**Content**
**Learning objectives:**

After successful completion of the course students will be familiar with many common methods of pricing and portfolio models in finance. Emphasis we be put on both finance and the theory behind it**.**

**Content:**

The course will provide rigorous yet focused training in stochastic calculus and mathematical finance. Topics to be covered:

1. Stochastic Calculus: Stochastic Processes, Brownian Motion and Martingales, Entropy, Stopping Times, Local martingales, Doob-Meyer Decomposition, Quadratic Variation, Stochastic Integration, Ito Formula, Girsanov Theorem, Jump-diffusion Processes, Stable and Levy processes.
2. Mathematical Finance: Pricing Models, The Black-Scholes Model, State prices and Equivalent Martingale Measure, Complete Markets and Redundant Security Prices, Arbitrage Pricing with Dividends, Term-Structure Models (One Factor Models, Cox-Ingersoll-Ross Model, Affine Models), Term-Structure Derivatives and Hedging, Mortgage-Backed Securities, Derivative Assets (Forward Prices, Future Contracts, American Options, Look-back Options), Incomplete Markets, Markets with Transaction Costs, Optimal Portfolio and Consumption Choice (Stochastic Control and Merton continuous time optimization problem, CAPM), Equilibrium models, Numerical Methods.

**Workload:**

Total workload for 4.5 CP: approx. 135 hours
Attendance: 30 hours
Preparation and follow-up: 65 hours

**Organizational issues**
Blockveranstaltung, Termine werden über Ilias bekannt gegeben

**Literature**


- Dynamic Asset Pricing Theory, Third Edition by D. Duffie, Princeton University Press, 1996
- Stochastic Calculus for Finance II: Continuous-Time Models by S. E. Shreve, Springer, 2003
- Stochastic Finance: An Introduction in Discrete Time by H. Föllmer, A. Schied, de Gruyter, 2011
- Methods of Mathematical Finance by I. Karatzas, S. E. Shreve, Springer, 1998
- Markets with Transaction Costs by Yu. Kabanov, M. Safarian, Springer, 2010
- Introduction to Stochastic Calculus Applied to Finance by D.Lamberton, B. Lapeyre, Chapman&Hall,1996

# T 7.239 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-101480 - Finance 3
M-WIWI-101483 - Finance 2

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 1,5 | Grade to a third | Each summer term | 1 |

| Exams | | | |
|---|---|---|---|
| ST 2023 | 7900268 | Strategic Finance and Technoloy Change | Ruckes |
| 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.

# T 7.240 Course: Strategy and Management Theory: Developments and “Classics” [T-WIWI-106190]

**Responsible:** Prof. Dr. Hagen Lindstädt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-103119 - Advanced Topics in Strategy and Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2577921 | Strategy and Management Theory: Developments and "Classics" (Master) | 2 SWS | Seminar / 🗣 | Lindstädt |
| **Exams** | | | | | |
| ST 2023 | 7900278 | Strategy and Management Theory: Developments and “Classics” | | | Lindstädt |

Legend: 📱 Online, 🎲 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The control of success according to § 4(2), 3 SPO takes place by writing a scientific work and a presentation of the results of the work in the context of a conclusion meeting. Details on the design of the performance review will be announced during the lecture.

**Prerequisites**
None

**Recommendation**
Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

**Annotation**
This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the winter term 2017/18.

*Below you will find excerpts from events related to this course:*

## V Strategy and Management Theory: Developments and "Classics" (Master)

2577921, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
This course covers highly topical issues of great relevance to the management of organizations. Students will be enabled to take strategic management positions. By applying appropriate models from the fields of strategy and management - or models developed in-house - participants will learn to evaluate the strategic starting position of an organization and derive precise and well-founded recommendations for action based on this.

This course offers students the opportunity to explore current management issues and sharpen their skills in strategic analysis and evaluation. Through intensive collaboration and practical application of the knowledge learned, students are optimally prepared for the demands and challenges of modern business management.

**Structure**

The course begins with an overarching theme, based on which students are divided into groups of two. The core of the course consists of the preparation of a written paper as well as the presentation and discussion of the results.

**Learning Objectives**

Upon completion of the course, students will be able to,

- analyze complex business situations, think strategically and derive sound management decisions.
- compose clear and convincing written papers that accurately present the analyses and recommendations developed.
- present results in an engaging manner and actively participate in substantive discussions.

**Recommendations**:

Prior attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

**Workload**:

Total effort approx. 90 hours

Attendance time: 15 hours

Preparation and follow-up: 75 hours

Examination and preparation: not applicable

**Verification:**

The success control according to § 4(2), 3 SPO is done by writing a scientific paper and a presentation of the results of the paper in the context of a final event. Details on the design of the performance review will be announced during the lecture.

**Annotation:**

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

**Organizational issues**
siehe Homepage

# T 7.241 Course: Successful Transformation Through Innovation [T-WIWI-111823]

**Responsible:** Malte Busch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101507 - Innovation Management
M-WIWI-101507 - Innovation Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500018 | Successful transformation through innovation | 2 SWS | Seminar / 🗣 | Busch |
| **Exams** | | | | | |
| ST 2023 | 7900025 | Successful Transformation Through Innovation | | | Busch |

Legend: 💻 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Alternative exam assessments. The grade consists of an presentation of the results (50%) and a seminar paper (50%).

**Recommendation**
Prior attendance of the course Innovation Management [2545015] is recommended.

*Below you will find excerpts from events related to this course:*

## V Successful transformation through innovation

2500018, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
This seminar uses strategic innovation management theory and concepts such as organisational ambidexterity, boundary spanning and stakeholder approaches how companies can increase their innovative increase their innovative capacity through innovation. The students will use a core paper to illustrate the steps towards becoming an innovative organisation. The aim is to understand how -with the help of the concepts mentioned above - medium-sized companies, in the context of organisational inertia and path dependency, may become innovation-driven organisations. The seminar will analyse the role of different stakeholders, which role the different stakeholders play and how companies may become part of an innovation ecosystems. Based on the core paper, the students will apply the concepts they have learned to selected companies and present the results in class. In addition to a presentation, the students will submit the results in seminar papers.

**Organizational issues**
Weblink: https://itm.entechnon.kit.edu/192_1281.php

# T 7.242 Course: Supplement Enterprise Information Systems [T-WIWI-110346]

**Responsible:** Prof. Dr. Andreas Oberweis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each term | 1 |

**Competence Certificate**
The assessment of this course is a written or (if necessary) oral examination.

**Prerequisites**
None

**Annotation**
This course can be used in particular for the acceptance of external courses whose content is in the broader area of applied informatics, but is not equivalent to another course of this topic.

# T 7.243 Course: Supplement Software- and Systemsengineering [T-WIWI-110372]

**Responsible:** Prof. Dr. Andreas Oberweis
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each term | 1 |

**Competence Certificate**
The assessment of this course is a written or (if necessary) oral examination.

**Prerequisites**
None

**Annotation**
This course can be used in particular for the acceptance of external courses whose content is in the broader area of software and systems engineering, but cannot assigned to another course of this topic.

# T 7.244 Course: Supply Chain Management in the Automotive Industry [T-WIWI-102828]

**Responsible:** Tilman Heupel
Hendrik Lang
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101412 - Industrial Production III
M-WIWI-101471 - Industrial Production II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2581957 | Supply Chain Management in the automotive industry | 2 SWS | Lecture / | Heupel, Lang |
| **Exams** | | | | | |
| ST 2023 | 7981957 | Supply Chain Management in the Automotive Industry | | | Schultmann |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (examination of another type, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

**Annotation**
The lecture will be offered for the next time in the summer semester 2023.

*Below you will find excerpts from events related to this course:*

## V Supply Chain Management in the automotive industry

**Lecture (V)**
**Online**

2581957, SS 2023, 2 SWS, Language: German, Open in study portal

**Content**

- Automotive industry significance
- The automotive supply chain
- Adding value structures of the automotive supply chain and mastering of the production systems as factors of success in the SCM
- Strategic procurement logistics
- Risk management
- Quality engineering and management in the automotive supply chain
- Cost engineering and management in the automotive supply chain
- Purchasing (Supplier selection, contract management)
- Performance measurement of the supply chain
- Organization

**Organizational issues**
Blockveranstaltung, siehe Homepage

**Literature**
Wird in der Veranstaltung bekannt gegeben.

# T 7.245 Course: Supply Chain Management with Advanced Planning Systems [T-WIWI-102763]

**Responsible:** Claus J. Bosch
Dr. Mathias Göbelt

**Organisation:** KIT Department of Economics and Management

**Part of:** M-WIWI-101412 - Industrial Production III
M-WIWI-101471 - Industrial Production II

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2581961 | Supply Chain Management with Advanced Planning Systems | 2 SWS | Lecture / 🗣 | Göbelt, Bosch |
| **Exams** | | | | | |
| ST 2023 | 7981961 | Supply Chain Management with Advanced Planning Systems | | | Schultmann |

Legend: 🖥 Online, 🖧 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Supply Chain Management with Advanced Planning Systems

2581961, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Content**
This lecture deals with supply chain management from a practitioner's perspective with a special emphasis Advanced Planning Systems (APS) and the planning domain. The software solution SAP SCM, one of the most widely used Advanced Planning Systems, is used as an example to show functionality and application of an APS in practice.

First, the term supply chain management is defined and its scope is determined. Methods to analyze supply chains as well as indicators to measure supply chains are derived. Second, the structure of an APS (advanced planning system) is discussed in a generic way. Later in the lecture, the software solution SAP SCM is mapped to this generic structure. The individual planning tasks and software modules (demand planning, supply network planning / sales & operations planning, production planning / detailed scheduling, deployment, transportation planning, global available-to-promise) are presented by discussing the relevant business processes, providing academic background, describing typical planning processes and showing the user interface and user-related processes in the software solution. At the end of the lecture, implementation methodologies and project management approaches for SAP SCM are covered.

**Contents**

**1. Introduction to Supply Chain Management**

1.1. Supply Chain Management Fundamentals

1.2. Supply Chain Management Analytics

**2. Structure of Advanced Planning Systems**

**3. SAP SCM**

3.1. Introduction / SCM Solution Map

3.2. Demand Planning

3.3. Supply Network Planning / Sales & Operations Planning

3.4. Production Planning and Detailed Scheduling

3.5. Deployment

3.6. Transportation Planning / Global Available to Promise

3.7. Cloud-based Supply Chain Planning

**4. SAP SCM in Practice**

4.1. Project Management and Implementation

4.2. SAP Implementation Methodology

**Literature**
will be announced in the course

# T 7.246 Course: Tax Law [T-INFO-111437]

**Responsible:** Detlef Dietrich
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101216 - Private Business Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 24646 | Tax Law | 2 SWS | Lecture / 🗣 | Dietrich |
| **Exams** | | | | | |
| ST 2023 | 7500120 | Tax Law | | | Dreier, Matz |
| WT 23/24 | 7500062 | Tax Law | | | Matz |

Legend: 🖥 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

# T 7.247 Course: Technologies for Innovation Management [T-WIWI-102854]

**Responsible:** Dr. Daniel Jeffrey Koch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101507 - Innovation Management
M-WIWI-101507 - Innovation Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Each winter term | 2 |

**Competence Certificate**
Presentation and individual paper (ca. 15 pages) as alternative exam assessment.

**Prerequisites**
None

**Recommendation**
Prior attendance of the course Innovationsmanagement: Konzepte, Strategien und Methoden is recommended.

# T 7.248 Course: Technology Assessment [T-WIWI-102858]

**Responsible:** Dr. Daniel Jeffrey Koch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101507 - Innovation Management
M-WIWI-101507 - Innovation Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | see Annotations | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2545101 | Technology Assessment | 2 SWS | Seminar / | Koch |
| **Exams** | | | | | |
| ST 2023 | 7900238 | Technology Assessment | | | Weissenberger-Eibl |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment.

**Prerequisites**
None

**Recommendation**
Prior attendance of the course Innovation Management
is recommended.

**Annotation**
See German version.

*Below you will find excerpts from events related to this course:*

## V Technology Assessment

2545101, SS 2023, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
Technology assessment can play a role at different points in the innovation process and can be considered as a decision support for or against certain technological options. The seminar Technology Assessment will focus on the early phase "fuzzy front end" in innovation management. Here, technology assessment takes place under a high degree of uncertainty regarding future technological developments. The evaluation of technologies can be carried out using methods such as technology readiness, technology lifecycle analysis, portfolio analysis, etc. The early evaluation of technologies is of particular importance before the "fuzzy front end" in innovation management. The early evaluation of technologies is of great importance, especially against the background of limited resources in companies and uncertainty about future developments.

Translated with www.DeepL.com/Translator (free version)

**Organizational issues**
Weblink: https://itm.entechnon.kit.edu/192_1284.php

# T 7.249 Course: Telecommunication and Internet Economics [T-WIWI-102713]

**Responsible:** Prof. Dr. Kay Mitusch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106408 - Digital Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 2 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2561232 | Telecommunication and Internet - Economics and Policy | 2 SWS | Lecture / | Mitusch |
| WT 23/24 | 2561233 | Excercises to Telecommunication and Internet - Economics and Policy | 1 SWS | Practice / | Mitusch, Wisotzky, Corbo |
| **Exams** | | | | | |
| ST 2023 | 7900276 | Telecommunication and Internet Economics | | | Mitusch |

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

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-113147 - Telecommunications and Internet – Economics and Policy must not have been started.

**Recommendation**
Basic knowledge and skills of microeconomics from undergraduate studies (bachelor's degree) are expected.

Particularly helpful but not necessary: Industrial Economics. Prior attendance of the lecture „Competition in Networks" [26240] or "Industrial Organisation" is helpful in any case but not considered a formal precondition. The english taught course "Communications Economics" is complementary and recommendet for anyone interested in the sector.

**Annotation**
Due to the research semester of Prof. Mitusch the course for partial performance will not be offered in the winter semester 2020/2021. An examination will be offered in each semester.

*Below you will find excerpts from events related to this course:*

## V Telecommunication and Internet - Economics and Policy

2561232, WS 23/24, 2 SWS, Language: German/English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
Description:

The course provides students with a comprehensive understanding of the economic principles, dynamics, and policies that govern the telecommunication and internet industries and markets. It focuses on the infrastructure of the internet, both physical and logical.

Course Objectives:

**Understand the telecommunication and internet landscape:** Students will be introduced to the historical development, evolution, and current state of the telecommunication and internet industries. This includes technology, industrial organization, regulation, and other policies. Students will explore the emergence of modern telecommunication networks, the birth of the internet, and key milestones that have shaped the global communication landscape.

**Examine network economics:** Students will explore the unique economic characteristics of telecommunications networks, including network effects, economies of scale, the implications for investment decisions and market entry barriers, and regulatory responses.

**Analyse market structures and competition policies:** Students will dive into the various market structures that exist within the telecommunication and internet industries, including: access to the internet by users, access to the infrastructure by firms, economic interactions between the autonomous systems (i.e. sub-networks) and other players (like internet exchange points) of the internet, implications for quality of services and network neutrality. Emphasis will be placed on competitiveness of markets, resp. market power, on the role of regulation, and how they impact market dynamics.

**Investigate infrastructure investment and policy:** The course will address the significant role of infrastructure investment in the telecommunication and internet sectors. Students will analyse the economic drivers behind infrastructure construction, government policies, and regulatory frameworks that influence investment decisions.

**Address emerging trends:** The course will address the latest trends and technologies in telecommunication and the internet, such as 5G, Internet of Things (IoT), and cloud computing, content delivery networks, and their economic implications.

**Assess platform economics:** The role of digital platforms in the telecommunication and internet industries will be addressed. Students will understand platform business models and the economics of multisided markets. In this context, the "hypergiants" of the internet get into the focus as well as the challenges and opportunities they present.

Teaching Methodology:

The course will adopt a combination of lectures, case studies, and guest lectures from (industry) experts. Real-world examples will be used to illustrate economic principles in action within the telecommunication and internet sectors. A few economic models will be analysed, but most of the issues will be addressed verbally.

# T 7.250 Course: Telecommunications and Internet – Economics and Policy [T-WIWI-113147]

**Responsible:** Prof. Dr. Kay Mitusch
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101406 - Network Economics
M-WIWI-101409 - Electronic Markets

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2561232 | Telecommunication and Internet - Economics and Policy | 2 SWS | Lecture / | Mitusch |
| WT 23/24 | 2561233 | Excercises to Telecommunication and Internet - Economics and Policy | 1 SWS | Practice / | Mitusch, Wisotzky, Corbo |
| **Exams** | | | | | |
| ST 2023 | 7900276 | Telecommunication and Internet Economics | | | Mitusch |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Students' understanding and knowledge will be assessed through either an oral or a written exam. The actual method used will be announced during the course. The course takes place every winter term, and exams are offered two times a year, in March and in September.

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-102713 - Telecommunication and Internet Economics must not have been started.

**Recommendation**
Basic knowledge of microeconomics is a precondition. Further knowledge of industrial economics or networks economics is useful, but not necessary. No prior knowledge of telecommunications or internet technologies is required.

**Annotation**
Disclaimer:
German wording is sometimes provided in parallel. Some German original literature is used (especially official and legislative texts) where we will try to provide English translations in parallel.

*Below you will find excerpts from events related to this course:*

## V Telecommunication and Internet - Economics and Policy

2561232, WS 23/24, 2 SWS, Language: German/English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
Description:

The course provides students with a comprehensive understanding of the economic principles, dynamics, and policies that govern the telecommunication and internet industries and markets. It focuses on the infrastructure of the internet, both physical and logical.

Course Objectives:

**Understand the telecommunication and internet landscape:** Students will be introduced to the historical development, evolution, and current state of the telecommunication and internet industries. This includes technology, industrial organization, regulation, and other policies. Students will explore the emergence of modern telecommunication networks, the birth of the internet, and key milestones that have shaped the global communication landscape.

**Examine network economics:** Students will explore the unique economic characteristics of telecommunications networks, including network effects, economies of scale, the implications for investment decisions and market entry barriers, and regulatory responses.

**Analyse market structures and competition policies:** Students will dive into the various market structures that exist within the telecommunication and internet industries, including: access to the internet by users, access to the infrastructure by firms, economic interactions between the autonomous systems (i.e. sub-networks) and other players (like internet exchange points) of the internet, implications for quality of services and network neutrality. Emphasis will be placed on competitiveness of markets, resp. market power, on the role of regulation, and how they impact market dynamics.

**Investigate infrastructure investment and policy:** The course will address the significant role of infrastructure investment in the telecommunication and internet sectors. Students will analyse the economic drivers behind infrastructure construction, government policies, and regulatory frameworks that influence investment decisions.

**Address emerging trends:** The course will address the latest trends and technologies in telecommunication and the internet, such as 5G, Internet of Things (IoT), and cloud computing, content delivery networks, and their economic implications.

**Assess platform economics:** The role of digital platforms in the telecommunication and internet industries will be addressed. Students will understand platform business models and the economics of multisided markets. In this context, the "hypergiants" of the internet get into the focus as well as the challenges and opportunities they present.

Teaching Methodology:

The course will adopt a combination of lectures, case studies, and guest lectures from (industry) experts. Real-world examples will be used to illustrate economic principles in action within the telecommunication and internet sectors. A few economic models will be analysed, but most of the issues will be addressed verbally.

# T 7.251 Course: Telecommunications Law [T-INFO-101309]

**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101217 - Public Business Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each summer term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 24632 | Telekommunikationsrecht | 2 SWS | Lecture / 🗣 | Döveling |
| **Exams** | | | | | |
| ST 2023 | 7500085 | Telecommunications Law | | | Dreier |
| WT 23/24 | 7500049 | Telecommunications Law | | | Zufall |

Legend: 🖳 Online, 🖳🗣 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

# T 7.252 Course: The Future of Work [T-WIWI-112993]

**Responsible:** Prof. Dr. Petra Nieken
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106413 - Digitalization & Society

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | see Annotations | 1 |

**Competence Certificate**
Alternative exam assessment (presentation). Details will be announced at the beginning of the course.

**Annotation**
The course will begin in the summer semester of 2025 and will be offered each summer semester.

# T 7.253 Course: Topics in Experimental Economics [T-WIWI-102863]

**Responsible:** Prof. Dr. Johannes Philipp Reiß
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101505 - Experimental Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Irregular | 1 |

**Competence Certificate**
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).

**Prerequisites**
None

**Recommendation**
Basic knowledge of Experimental Economics is assumed. Therefore, it is strongly recommended to attend the course Experimental Economics beforehand.

**Annotation**
The course is offered in summer 2020 for the next time, not in summer 2018.

# T 7.254 Course: Topics in Stochastic Optimization [T-WIWI-112109]

**Responsible:** Prof. Dr. Steffen Rebennack
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101473 - Mathematical Programming
M-WIWI-101637 - Analytics and Statistics
M-WIWI-102832 - Operations Research in Supply Chain Management
M-WIWI-103289 - Stochastic Optimization

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2500024 | Übungen zu Topics in Stochastic Optimization | 1 SWS | Practice / 🏵 | Rebennack, Gabl |
| ST 2023 | 2500026 | Topics in Stochastic Optimization | 2 SWS | Lecture / 🏵 | Rebennack, Gabl |
| **Exams** | | | | | |
| ST 2023 | 7900341 | Topics in Stochastic Optimization | | | Rebennack |

Legend: 🖥 Online, 🏵 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
Students will be given problem sets on which they work in groups. The problem sets will involve the implementation of the models presented in the course, and exploring features of these models. The groups will present their findings in front of the class. The grading will be based on the presentation.

**Recommendation**
A solid understanding of Stochastic Optimization and/or Optimization under Uncertainty as well as optimization in general is highly recommended, since we will heavily build upon basics of these areas.

*Below you will find excerpts from events related to this course:*

## V Topics in Stochastic Optimization

2500026, SS 2023, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**Blended (On-Site/Online)**

**Content**
Content:

While Stochastic Optimization is a long established, powerful paradigm for dealing with optimization problems under uncertainty, it is also a field that is continuously evolving, in an effort to expand the applicability of the respective techniques, but also to challenge frontiers to other paradigms such as robust optimization. In this course we will closely examine more recent developments in the field, and introduce, and train the usage of the computational techniques, that act as a workhorse for solution strategies.

Prerequisites:

None.

# T 7.255 Course: Trademark and Unfair Competition Law [T-INFO-101313]

**Responsible:** Dr. Yvonne Matz
**Organisation:** KIT Department of Informatics
**Part of:** M-INFO-101215 - Intellectual Property Law

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 3 | Grade to a third | Each term | 1 |

| **Events** | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 24609 | Trademark and Unfair Competition Law | 2 SWS | Lecture / 🗣 | Matz |
| WT 23/24 | 24136 | Trademark and Unfair Competition Law | 2 SWS | Lecture / 🗣 | Matz |
| **Exams** | | | | | |
| ST 2023 | 7500051 | Trademark and Unfair Competition Law | | | Dreier, Matz |
| WT 23/24 | 7500061 | Trademark and Unfair Competition Law | | | Matz |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

# T 7.256 Course: Transport Economics [T-WIWI-100007]

**Responsible:** Prof. Dr. Kay Mitusch
Dr. Eckhard Szimba

**Organisation:** KIT Department of Economics and Management

**Part of:** M-WIWI-101406 - Network Economics
M-WIWI-101468 - Environmental Economics
M-WIWI-101485 - Transport Infrastructure Policy and Regional Development

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2560230 | Transport Economics | 2 SWS | Lecture | Mitusch, Szimba |
| ST 2023 | 2560231 | Übung zu Transportökonomie | 1 SWS | Practice | Mitusch, Szimba, Wisotzky |
| **Exams** | | | | | |
| ST 2023 | 7900275 | Transport Economics | | | Mitusch |

**Competence Certificate**
The assessment is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

*Below you will find excerpts from events related to this course:*

## V Transport Economics

2560230, SS 2023, 2 SWS, Language: German, Open in study portal

**Lecture (V)**

**Content**
The course shall provide an overview of transport economics. It will be demonstrated, using new microeconomic models, which impacts regulation and pricing in transport have on the economic actions of individuals and logisticans and which benefits and costs apply. The following topics will be discussed:

- demand and supply in transport
- empirical analysis of transport demand
- assessment of transport infrastructure projects
- external effects in transport
- transport policy
- cost structures of transport infrastructure
- Project evaluation from the perspective of the public sector

**Literature**
**Literatur:**

Aberle, G: Transportwirtschaft: einzelwirtschaftliche und gesamtwirtschaftliche Grundlagen München; Wien: Oldenbourg, 2003.

Blauwens, G., De Baere, P. and Van der Voorde, E. (2006): Transport Economics.

Frerich, J; Müller, G: Europäische Verkehrspolitik, Landverkehrspolitik München; Wien: Oldenbourg, 2004.

Dasgupta, A, Pearce, D (1972): Cost-Benefit Analysis, MacMillan, London.

Europäische Kommission (2008): Guide to Cost Benefit Analysis of Investment Projects, online unter http://ec.europa.eu/regional_policy/sources/Ben-Akiva, M., Meerseman, H., and Van de Voorde, E. (2008): Recent developments in transport modelling: Lessons for the freight sector.

Ortúzar, J. d. D. and Willumsen, L. (1990): Modelling Transport.

# T 7.257 Course: Trustworthy Emerging Technologies [T-WIWI-113026]

**Responsible:** Prof. Dr. Ali Sunyaev
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101628 - Emphasis in Informatics
M-WIWI-101630 - Electives in Informatics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 4,5 | Grade to a third | Each summer term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2511404 | Trustworthy Emerging Technologies | | Lecture / | Sunyaev, Lins |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
Alternative exam assessment (§ 4(2), 3 SPO). Details will be announced in the respective course.

**Modeled Conditions**
The following conditions have to be fulfilled:

1. The course T-WIWI-109251 - Selected Issues in Critical Information Infrastructures must not have been started.

# T 7.258 Course: Tutoring: Training and Practice [T-WIWI-112967]

**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-106425 - Seminar Module

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Completed coursework | 2 | pass/fail | Each term | 1 |

**Competence Certificate**

- Successful participation in the KIT-PEBA tutor training course "Start in die Lehre": 2 credit points.
- Successful participation in the tutor training course "Start in die Lehre" and supplementary tutoring activity over at least two semesters: 3 credit points.

**Annotation**
The successful participation in the tutor training "Start in die Lehre" of KIT-PEBA can be credited in the seminar module WIng/ TVWL M.Sc. as interdisciplinary qualification with two or three credit points.

The online application with further information can be found at https://portal.wiwi.kit.edu/forms/form/AnerkennungTutorent%C3%A4tigkeit.

# T 7.259 Course: Valuation [T-WIWI-102621]

**Responsible:** Prof. Dr. Martin Ruckes
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101480 - Finance 3
M-WIWI-101482 - Finance 1
M-WIWI-101483 - Finance 2
M-WIWI-101510 - Cross-Functional Management Accounting
M-WIWI-106409 - Digital Financial Economics

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Each winter term | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2530212 | Valuation | 2 SWS | Lecture / | Ruckes |
| WT 23/24 | 2530213 | Übungen zu Valuation | 1 SWS | Practice / | Ruckes, Luedecke |
| **Exams** | | | | | |
| ST 2023 | 7900072 | Valuation | | | Ruckes |
| WT 23/24 | 7900057 | Valuation | | | Ruckes |

Legend: Online, Blended (On-Site/Online), On-Site, × Cancelled

**Competence Certificate**
See German version.

**Prerequisites**
None

**Recommendation**
None

*Below you will find excerpts from events related to this course:*

## V Valuation

2530212, WS 23/24, 2 SWS, Language: English, Open in study portal

**Lecture (V)**
**On-Site**

**Literature**
**Weiterführende Literatur**

Titman/Martin (2013): *Valuation - The Art and Science of Corporate Investment Decisions*, 2nd. ed. Pearson International.

# T 7.260 Course: Web App Programming for Finance [T-WIWI-110933]

**Responsible:** TT-Prof. Dr. Julian Thimme
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-101480 - Finance 3

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Written examination | 4,5 | Grade to a third | Once | 1 |

**Competence Certificate**
Non exam assessment according to § 4 paragraph 3 of the examination regulation. (Anmerkung: gilt nur für SPO 2015). The grade is made up as follows: 50% result of the project (R-code), 50% presentation of the project.

**Prerequisites**
None

**Recommendation**
The content of the bachelor course Investments is assumed to be known and necessary to follow the course.

# T 7.261 Course: Workshop Business Wargaming – Analyzing Strategic Interactions [T-WIWI-106189]

**Responsible:** Prof. Dr. Hagen Lindstädt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-103119 - Advanced Topics in Strategy and Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| ST 2023 | 2577922 | Workshop Business Wargaming - Analyse strategischer Interaktionen (Master) | 2 SWS | Seminar / 🗣 | Lindstädt |
| WT 23/24 | 2577922 | Workshop Business Wargaming - Analyse strategischer Interaktionen (Master) | 2 SWS | Seminar / 🗣 | Lindstädt |
| **Exams** | | | | | |
| ST 2023 | 7900071 | Workshop Business Wargaming – Analyzing Strategic Interactions | | | Lindstädt |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
In this course, real conflict situations are simulated and analyzed using various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

**Prerequisites**
None

**Recommendation**
Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

**Annotation**
This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the summer term 2018.

*Below you will find excerpts from events related to this course:*

## V Workshop Business Wargaming - Analyse strategischer Interaktionen (Master) Seminar (S) On-Site

2577922, SS 2023, 2 SWS, Language: German, Open in study portal

**Content**
This course enables the simulation of strategic conflicts in which the participants assume the roles of selected actors. With the help of specially programmed wargaming software, strategic conflicts are simulated interactively and then reflected upon and discussed.

The course focuses on the simulation and analysis of real conflict situations with strategic interaction. Students gain a better understanding of the structural characteristics of strategic conflicts in the fields of economics and politics as well as the ability to derive their own strategies for action.

Through a combination of group work, simulation, and reflection, the seminar provides a learning experience that both strengthens team skills and develops analytical skills in strategic conflict. Join this seminar to gain sound insights into conflict dynamics and develop effective action strategies for complex situations.

**Learning Objectives**

Upon completion of the course, students will be able to,

- learn the basic methodologies, characteristics and benefits of business wargaming
- improve their understanding of conflict dynamics by reflecting on strategic conflicts
- Strengthen analytical skills by processing a variety of courses of action and deriving strategies for action

**Recommendations:**

Previous attendance of the bachelor module "Strategy and Organization" or another module with comparable content at another university is recommended.

**Workload:**

- Total workload: approx. 90 hours
- Attendance time: 15 hours
- Preparation and follow-up: 75 hours
- Examination and preparation: not applicable

**Evidence:**

In this course, real conflict situations are simulated and analyzed with the help of various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

**Annotation:**

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

V **Workshop Business Wargaming - Analyse strategischer Interaktionen (Master)** **Seminar (S) On-Site**
2577922, WS 23/24, 2 SWS, Language: German, Open in study portal

**Content**
This course enables the simulation of strategic conflicts in which the participants assume the roles of selected actors. With the help of specially programmed wargaming software, strategic conflicts are simulated interactively and then reflected upon and discussed.

The course focuses on the simulation and analysis of real conflict situations with strategic interaction. Students gain a better understanding of the structural characteristics of strategic conflicts in the fields of economics and politics as well as the ability to derive their own strategies for action.

Through a combination of group work, simulation, and reflection, the seminar provides a learning experience that both strengthens team skills and develops analytical skills in strategic conflict. Join this seminar to gain sound insights into conflict dynamics and develop effective action strategies for complex situations.

**Learning Objectives**

Upon completion of the course, students will be able to,

- learn the basic methodologies, features and benefits of business wargaming
- improve their understanding of conflict dynamics by reflecting on strategic conflicts
- Strengthen analytical skills by processing a variety of courses of action and deriving strategies for action

**Recommendations:**

Prior attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

**Workload:**

- Total workload: approx. 90 hours
- Attendance time: 15 hours
- Preparation and follow-up: 75 hours
- Examination and preparation: not applicable

**Evidence:**

In this course, real conflict situations are simulated and analyzed with the help of various methods from business wargaming. Details on the design of the performance review will be announced during the lecture.

**Annotation:**

The course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics" [M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester, so the entire module can be completed in two semesters.

# T 7.262 Course: Workshop Current Topics in Strategy and Management [T-WIWI-106188]

**Responsible:** Prof. Dr. Hagen Lindstädt
**Organisation:** KIT Department of Economics and Management
**Part of:** M-WIWI-103119 - Advanced Topics in Strategy and Management

| Type | Credits | Grading scale | Recurrence | Version |
|---|---|---|---|---|
| Examination of another type | 3 | Grade to a third | Irregular | 1 |

| Events | | | | | |
|---|---|---|---|---|---|
| WT 23/24 | 2577923 | Workshop aktuelle Themen Strategie und Management (Master) | 2 SWS | Seminar / 🗣 | Lindstädt |

Legend: 💻 Online, 🔀 Blended (On-Site/Online), 🗣 On-Site, ✕ Cancelled

**Competence Certificate**
The evaluation of the performance takes place through the active participation in the discussion rounds; an appropriate preparation is expressed here and a clear understanding of the topic and framework becomes recognizable. Further details on the design of the performance review will be announced during the lecture.

**Prerequisites**
None

**Recommendation**
Basic knowledge as conveyed in the bachelor module „Strategy and Organization“ is recommended.

**Annotation**
This course is admission restricted. If you were already admitted to another course in the module “Advanced Topics in Strategy and Management” the participation at this course will be guaranteed.

The course is planned to be held for the first time in the winter term 2017/18.

*Below you will find excerpts from events related to this course:*

## V Workshop aktuelle Themen Strategie und Management (Master)

2577923, WS 23/24, 2 SWS, Language: German, Open in study portal

**Seminar (S)**
**On-Site**

**Content**
Aspects of strategic management can be found in a variety of daily events. In this course, current strategic and industrial policy issues are discussed and the exchange of ideas on current management topics is promoted.

For this purpose, practice-relevant case studies and dedicated questions are communicated to the students in advance so that they can prepare themselves individually for the discussion. The chair team actively moderates the discussion and creates typical discussion situations such as pro/con discussions and conflicting interests of different groups in order to bring opposing opinions into an exchange and to promote the power of argumentation. In this way, the discussion not only imparts knowledge about the content, but also strengthens the participants' skills by simulating real discussion situations in a management team.

In addition, company representatives and managers participate in individual case studies to strengthen the context of the content and experience the daily dynamics of discussion in strategic business areas.

**Learning Objectives:**

Students will

- are able to evaluate strategic decisions using appropriate models of strategic business management,
- are able to present and critically evaluate theoretical approaches and models in the field of strategic business management and illustrate them using practical examples, and
- have the ability to present their position convincingly through a reasoned argumentation in structured discussions.

**Recommendations:**

Previous attendance of the Bachelor's module "Strategy and Organization" or another module with comparable content at another university is recommended.

**Workload:**

Total effort approx. 90 hours

Attendance time: 15 hours

Preparation and follow-up: 75 hours

Examination and preparation: not applicable

**Evidence**:

Performance will be assessed through active discussion participation in the discussion rounds; here, adequate preparation will be expressed and a clear understanding of the topic and framework will be evident. Further details on the design of the performance assessment will be announced during the lecture.

**Annotation:**

This course is admission restricted. In case of prior admission to another course in the module "Strategy and Management: Advanced Topics"[M-WIWI-103119], participation in this course is guaranteed. For more information on the application process, see the IBU website.

Exams are offered at least every other semester so that the entire module can be completed in two semesters.