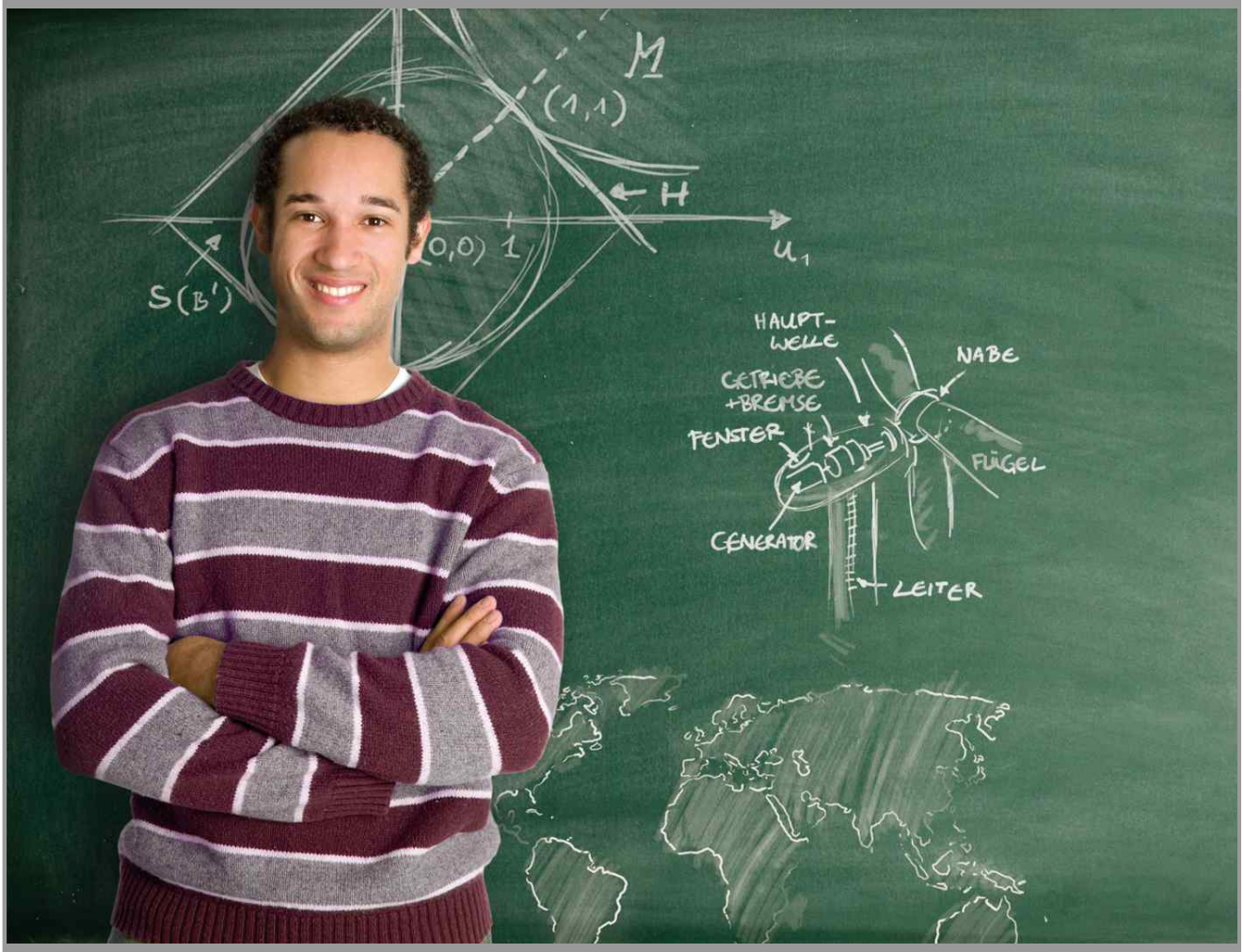
Karlsruher Institut für Technologie

Module Handbook
Economics Engineering (B.Sc.)

SPO 2007/2015
Summer term 2016
Date: 08/01/2016

KIT Department of Economics and Management



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Part I
Structure of the Bachelor's degree program in Economics Engineering SPO 2015

The Bachelor's degree program in Economics Engineering entails a six-semester standard study period. The basic program is structured systematically and provides one with the fundamental knowledge in Economics Engineering. From the fourth semester, a more advanced, specialization program that can be structured depending on one's personal interests and goals is offered.
The following figure 1 shows the course and module structure with the respective credit points as well as an example of a possible distribution of modules and courses in the basic program over the semesters which has proven to be useful.

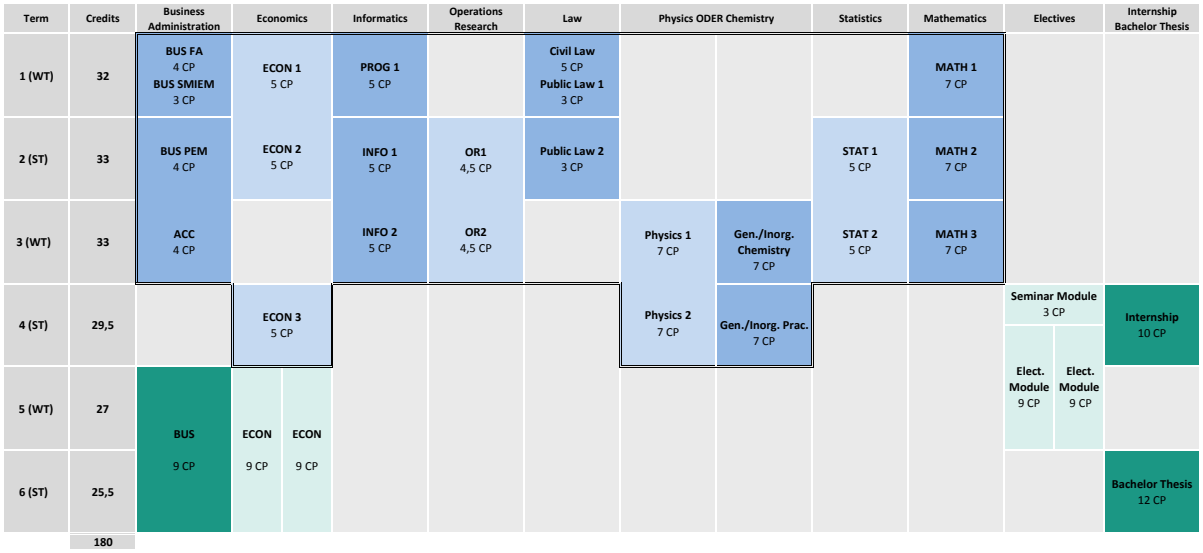

Figure 1: Structure of the Bachelor's degree program in Engineering Economics SPO2015 (recommended)

In the **basic program** (blue), the shown modules under business administration, economics, informatics, law, physics/chemistry, mathematics and statistics are compulsory. One can choose between physics and chemistry.
In the **specialization program** (green), two modules from economics and one module from business administration must be selected. As part of the mandatory courses, one seminar module (independent of the course) and two optional modules must be completed. The two modules can be selected from informatics, operations research, business administration, economics, engineering, science, operations research, engineering, statistics, law or sociology. Basically, both optional modules can also be integrated in one course. Only one module should be omitted from law and sociology.
The **internship** can be completed before or during the Bachelor's program. The performance record of the completed internship is required for registration for the last module examination in the course.
One is free to structure his/her individual course plan as he/she wishes (taking into account the respective provisions of the study and examination regulations as well as applicable module regulations) and choose the semester he/she wishes to start and/or complete the selected modules. It is however strongly recommended to adhere to the proposal for the basic program. The content of the courses is interdisciplinary and coordinated accordingly; the intersection freedom of lectures and examination dates is guaranteed for the recommended study semester.
All modules of the basic and advanced program, including the various alternatives within the module, can be found in this module handbook. Seminars that can be taken up as part of the seminar module are published at the WiWi portal at https://portal.wiwi.kit.edu/Seminare.

Part II
Structure of the Bachelor's degree program in Economics Engineering SPO 2007

The structure of the Bachelor's degree program in Economics Engineering SPO 2007 slightly differs from the structure following SPO 2015. Offered modules and courses are quite similar and equal the presentation in this module handbook. Nevertheless, there are still some specificities, summarized in the following illustration:

SPO 2007	SPO 2015
Terms	
The structure of the Bachelor's degree program in Economics Engineering is subdivided into a **Core Program** and **Specialization Program.**	The structure of the Bachelor's degree program in Economics Engineering is subdivided into a **Basic Program** and **Specialization Program**.
The exams are split into written exams, oral exams and **non exam assessments**.	The exams are split into written exams, oral exams and **alternative exam assessments**. Exams are always graded. Non exam assessments can be repeated several times and are not graded.
Key skills	
Besides the integrated key skills, the **additive acquisition of key skills** within the seminar module is an inherent element of the program. Students may choose freely among the offered courses of HoC and ZAK.	An additive acquisition of key skills,is **not** an inherent element of the program.
Seminar module	
Students have to attend **two seminars** with a minimum of 6 CP (Credit Points) within the seminar module. Furthermore one has to acquire **additional key skills** of at least 3 credits.	The seminar module is part of the Electives within the Specialization Program. Students have to attend **one seminar** with a minimum of 3 CP. An acquirement of additional key skills is not required.
Internship	
The internship has an amount of **8** CP.	The internship has an amount of **10** CP.
Modules of the Core- and Basic Program	
Within the Core Program the module "**Business Administration**" (15 CP) is scheduled.	The module "**Business Administration**" has been divided into two modules: "**Fundamentals of Business Administration 1**" and "**Fundamentals of Business Administration 2**".
Within the Core Program the module "**Mathematics**" (21 CP) is scheduled.	The module "**Mathematics**" has been divided into three modules: "**Mathematics 1**", "**Mathematics 2**" and "**Mathematics 3**".
Within the Core Program the module "**Introduction to Informatics**" (15 CP) is scheduled.	The module "**Introduction to Informatics**" has been divided into two modules: "**Introduction to Programming**" and "**Foundations of Informatics**".
Within the Core Program the modules "**Economics**" (10 CP) and "**Statistics**" (10 Credits) are scheduled.	The modules "**Economics**" and "**Statistics**" have been renamed to "**Introduction** to **Economics**" and "**Introduction to Statistics**".

Figure 2: Differences between SPO 2007 and SPO 2015

The differing modules of the Bachelor's degree program in Economics Engineering SPO 2007 are listed in chapter VII. Illustration 3 shows the structure of fields and modules and their correlated credit points following SPO 2007.
The Study- and Examination Regulation SPO 2007 is part of the appendix.

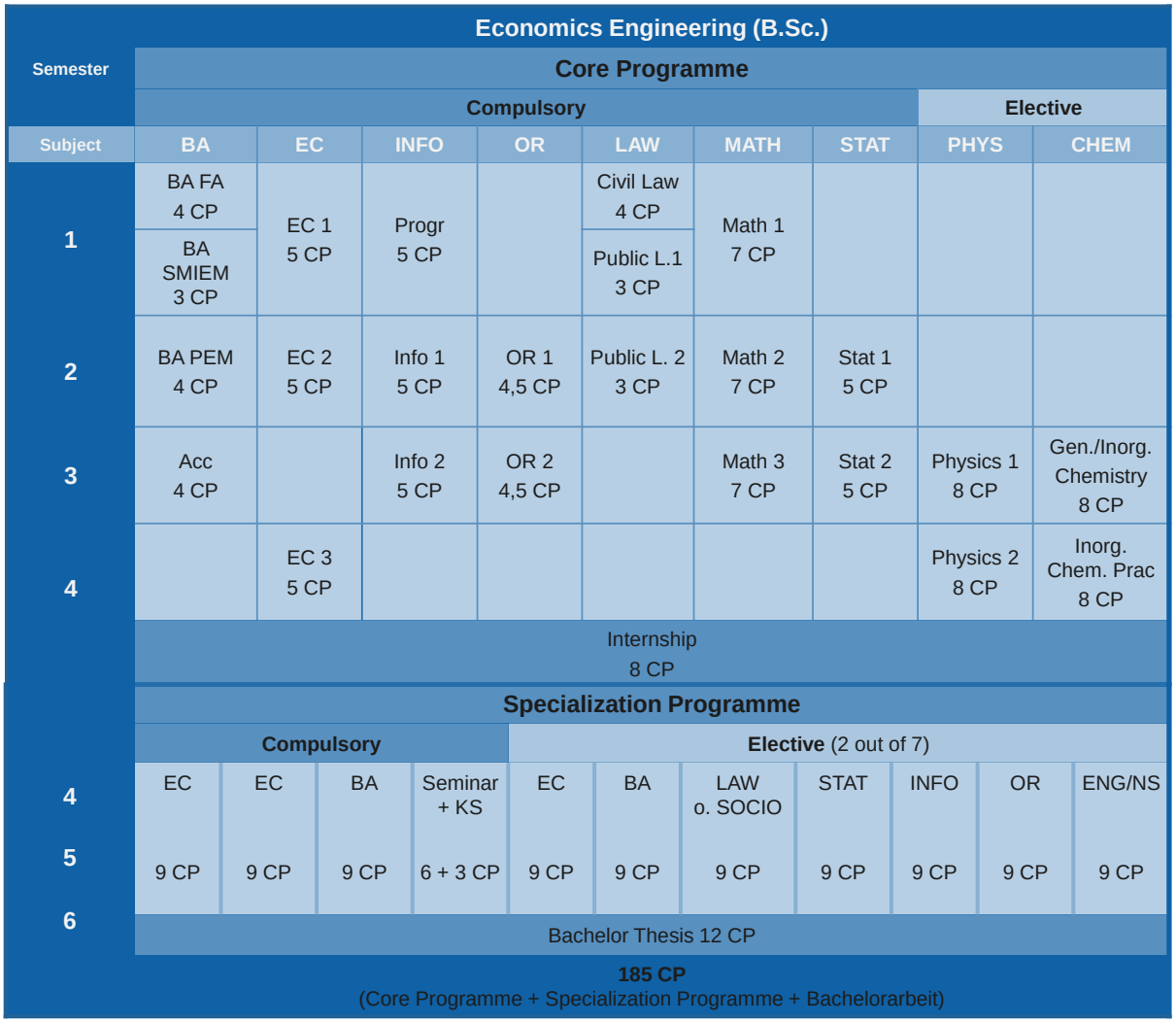

Figure 3: Structure of the Bachelor's degree program in Economics Engineering SPO 2007 (recommended)

Part III
Key Skills

The bachelor programme *Economics Engineering (B.Sc.)* at the Department of Economics and Management distinguishes itself by an exceptionally high level of interdisciplinarity. With the combination of business science, economics, informatics, operations research, mathematics as well as engineering and natural science, 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, tutor programs with more than 20 semester periods per week contribute significantly to the development of key skills in the bachelor programme. The integrative taught key skills, which are acquired throughout the entire programme, can be classified into the following fields:

Soft skills

1. Team work, social communication and creativity techniques
2. Presentations and presentation techniques
3. Logical and systematical arguing and writing
4. Structured problem solving and communication

Enabling skills

1. Decision making in business context
2. Project management competences
3. Fundamentals of business science
4. English as a foreign language

Orientational knowledge

1. Acquisition of interdisciplinary knowledge
2. Institutional knowledge about economic and legal systems
3. Knowledge about international organisations
4. Media, technology and innovation

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

1. Basic program in economics and business science
2. Seminar module
3. Mentoring of the bachelor thesis
4. Internship
5. Business science, economics and informatics modules

In **SPO 2007**, 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.

Part IV
Module Handbook - a helpful guide throughout the studies

The program exists of several **subjects** (e.g. business administration, economics, operations research). Every subject is split into **modules** and every module itself exists of one or more interrelated **courses**. 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 catalogue**, which provides important information concerning each semester and variable course details (e.g. time and location of the course).

Begin and completion of a module

Every module and every course is allowed to be credited only once. The decision whether the course is assigned to one module or the other (e.g. if a course is selectable in two or more modules) is made by the student at the time of signing in for the corresponding exam. The module is **succeeded**, if the general exam of the module and/or if all of its relevant partial exams have been passed (grade min 4.0). In order to that the minimum requirement of credits of this module have been met.

General exams and partial exams

The module exam can be taken in a general exam or several partial exams. If the module exam is offered as a general exam, the entire content of the module will be reviewed in a single exam. If the module exam exists of partial exams, the content of each course will be reviewed in corresponding partial exams. The registration for the examinations takes place online via the self-service function for students. The following functions can be accessed on https://campus.studium.kit.edu/exams/index.php:

- Sign in and sign off exams
- Retrieve examination results
- Print transcript of records

For further and more detailed information also see https://studium.kit.edu/Seiten/FAQ.aspx.

Types of exams

Following **SPO 2015** exams are split into written exams, oral exams and alternative exam assessments. Exams are always graded. Non exam assessments can be repeated several times and are not graded. According to **SPO 2007** exams are split into written exams, oral exams and non exam assessments. Non exam assessments are graded or not.

Repeating exams

Principally, a failed written exam, oral exam or alternative exam assessment can repeated only once. If the repeat examination (including an eventually provided verbal repeat examination) will be failed as well, the examination claim is lost. A request for a second repetition has to be made in written form to the examination comitee two months after loosing the examination claim. A counseling interview is mandatory.
For further information see http://www.wiwi.kit.edu/hinweiseZweitwdh.php.

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.

Further information

More detailed information about the legal and general conditions of the program can be found in the examination regulation of the program (in the appendix).

Used abbreviations

LP/CP	Credit Points/ECTS	Leistungspunkte/ECTS
LV	course	Lehrveranstaltung
RÜ	computing lab	Rechnerübung
S	summer term	Sommersemester
Sem.	semester/term	Semester
ER/SPO	examination regulations	Studien- und Prüfungsordnung
KS/SQ	key skills	Schlüsselqualifikationen
SWS	contact hour	Semesterwochenstunde
Ü	excercise course	Übung
V	lecture	Vorlesung
W	winter term	Wintersemester

Part V
Modules

Part VI
Modules

1 Requirements

M Module: Preliminary Exam [M-WIWI-101726]

Responsibility:

Organisation: Universität gesamt
Curricular Anchorage: Compulsory
Contained in: Requirements

ECTS	Language
	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102737	Statistics I (S. 560)	5	Melanie Schienle
T-WIWI-102708	Economics I: Microeconomics (S. 368)	5	Clemens Puppe, Johannes Philipp Reiß

Conditions
none

2 Bachelor Thesis

M Module: Module Bachelor Thesis [M-WIWI-101612]

Responsibility: Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Bachelor Thesis

ECTS	Recurrence	Language	Level
12	Once	Deutsch	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-103096	Bachelor Thesis (S. 328)	12	Martin Ruckes

Learning Control / Examinations
The Bachelor Thesis is a written exam which shows that the student can autonomously investigate a scientific problem in Economics Enginieering. The Bachelor Thesis is described in detail in § 11 of 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 faculty. The examiner has to be involved in the degree programme. Involved in the degree programme are the persons that coordinate a module or a lecture of the degree programme.
The regular processing time takes three months. On a reasoned request of the student, the examination board can extend the processing time of a maximum of on month. If the Bachelor Thesis is not completed in time, this exam is "failed", unless the student is not being responsible (eg maternity leave).
With consent of the examinor 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 Bachelor 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 overall grade of the module is the grade of the Bachelor Thesis.

Conditions
Prerequisite for admission to the Bachelor thesis is that the student is usually in the 3rd Academic year (5th and 6th semester) and has at most one of the exams of the core program (according to § 17 paragraph 2 examination regulation) not been completed.

It is recommended to begin the Bachelor Thesis in the 5th or 6th Semester.
A written confirmation of the examinor about supervising the Bachelor's Thesis is required.
Please pay regard to the institute specific rules for supervising a Bachelor Thesis.

The Bachelor Thesis has to contain the following declaration: "I hereby declare that I produced this thesis without external assistance, and that no other than the listed references have been used as sources of information. Passages taken literally or analogously from published or non published sources is marked as this." If this declaration is not given, the Bachelor Thesis will not be accepted.

Modeled Conditions
The following conditions must be met:

1. Successful completion of field *Basic program* is required before taking this module.
2. Successful completion of field *Basic program* is required before taking this module.
3. Successful completion of field *Informatics* is required before taking this module.
4. Successful completion of field *Operations Research* is required before taking this module.
5. Successful completion of field *Law* is required before taking this module.
6. Successful completion of field *Physics or Chemistry* is required before taking this module.
7. Successful completion of field *Statistics* is required before taking this module.
8. Successful completion of field *Mathematics* is required before taking this module.

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

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

Recommendations
None

Workload
See German version.

3 Internship

M Module: Internship [M-WIWI-101610]

Responsibility: Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Internship

ECTS	Recurrence	Language	Level
10	Once	Deutsch	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102756	Internship (S. 431)	10	Martin Ruckes

Learning Control / Examinations
The assessment is carried out by the evidence of completed full-time internships of at least 12 weeks with at least 20 working hours per week and a presentation of the internship in the form of a written report on the activities.

1. Information on evidence of completed full-time internships:

The internship is proofed by the certificate of the intern's office. The certificate has to be formally correct with official corporate letterhead and handwritten countersigned by a responsible employee of the company.

The certificate must at least contain the following information:

* Company / Location
Duration: from . . . to . . .
Hours of work (weakly)
Working interruption, indicating the vacation and sick days
Department
Headwords to the activitis

2. Information on to the presentation:

The internship report should be at least one page (typewritten, not handwritten) for each Location. It must be countersigned by a representative of the intern's office.

Conditions
None

Qualification Objectives
The student

- has general insight into the essential processes in a company,
- is in a position to identify operation correlations and has the knowledge and skills to facilitate a fast understanding of the processes in the company,
- in addition to practical professional experience and competences, also has key competences such as own initiative, ability to work in a team and communication skills as well as ability to integrate into corporate hierarchies and procedures,

- has the experience to accomplish complex IT and business tasks under realistic conditions within the framework of the relevant legal aspects and while applying the total acquired knowledge (interlaced thinking),
- has an idea of the professional development potential in the economy through pursuit of study-related activities,
- knows the technical and professional requirements in the individually targeted future occupation and can take this knowledge into account for the future planning of his/her studies and career,
- can assess and estimate own technical and professional strengths and weaknesses through his/her evaluation of the company.

Content
Primarily the internship should be done to gain economic and business work experiences. Certainly, the interns are free to integrate technical activities as well. A commercial internship provides an insight into business or administrative processes of business transactions. Therefor departments such as controlling, organizing, marketing and planning appear particularly suitable. It remains the companies and interns left, which stations and areas the intern will eventually go through. But the focus should always be in accordance with operational realities of the company.

Regarding the election of the company, in which the internship is absolved, there are no specific rules. Beside of banks, public administration or international organizations even large industrial companies be considered, because of the technical profile of the Bachelor Programme.

Recommendations
None

Remarks
Internships, that were completed even before studying may be recognized, if the criteria for recognition are met. After recognition of the compulsory internship, there can be taken a semester off for a voluntary, student-related internship. The possibility is particularly interesting in view of the master programme, which requires internships of at least 12 weeks.
Regarding to the election of the company, in which the internship is completed, there are no specific rules. Beside of banks, public administration or international organizations even large industrial companies be considered, because of the technical profile of the Bachelor Programme.
With a view to the future professional career, it is recommended to absolve the internship in a larger, possibly international company.
Vacation days are not figured into the internship.
Only three sick leave days may incurred at all. Any additional sick days are not figured into the internship.
A relevant vocational education of at least two years is accepted as a performance equivalent to the internship.

Workload
The total workload for this module is approximately 300 hours.

4 Business Administration

4.1 Basic program

M Module: Fundamentals of Business Administration 1 [M-WIWI-101494]

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Business Administration/Basic program

ECTS	Recurrence	Duration	Level
7	Each term	3 semester	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102817	Business Administration: Strategic Management and Information Engineering and Management (S. 339)	3	Petra Nieken, Martin Ruckes
T-WIWI-102819	Business Administration: Finance and Accounting (S. 337)	4	Marliese Uhrig-Homburg, Martin Ruckes

Learning Control / Examinations
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the individual courses of this module. The examinations take place at the beginning of the recess period. Re-examinations are offered at every ordinary examination date. The assessment procedure of each course of this module is defined for each course 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.

Conditions
None

Qualification Objectives
The student

- has core skills in business administration in particular with respect to decision making and the model based view of business corporations
- masters the fundamentals of business and information management as well as the fundamentals business finance and the principles of business accounting
- is able to analyze and assess central tasks, functions and decisions in modern corporations

The knowledge of the two fundamentals modules in business administration forms the basis for the successful completion of advanced courses in the field of business administration and management.

Content
This module provides the fundamentals of business administration and management. Further, the module focuses on the fields of management and organization, information engineering and management, investment and financing as well as of the principles of management and financial accounting.

Recommendations
It is strongly recommended to take the courses in the first semester of study.

Workload
The total workload of the module is about 210 hours. The workload is proportional to the credit points of the individual courses.

M Module: Fundamentals of Business Administration 2 [M-WIWI-101578]

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Business Administration/Basic program

ECTS	Duration	Language	Level
8	2 Semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102818	Business Administration: Production Economics and Marketing (S. 338)	4	Martin Klarmann, Thomas Lützkendorf, Wolf Fichtner, Frank Schultmann, Martin Ruckes
T-WIWI-102816	Financial Accounting and Cost Accounting (S. 396)	4	Jan-Oliver Strych

Learning Control / Examinations
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. The examinations take place at the beginning of the recess period. Re-examinations are offered at every ordinary examination date. The assessment procedures of each course of this module is defined for each course 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.

Conditions
None

Qualification Objectives
The student

- has core skills in business administration in particular with respect to decision making and the model based view of business corporations
- masters the fundamentals of production and operations management and marketing as well as the fundamentals of management and financial accounting
- is able to analyze and assess central tasks, functions and decisions in modern corporations

The knowledge of the two fundamentals modules in business administration forms the basis for the successful completion of advanced courses in the field of business administration and management.

Recommendations
It is strongly recommended to take the courses in the second semester (Betriebswirtschaftslehre: Produktionswirtschaft und Marketing) and third semester (Rechnungswesen) of study.

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

4.2 Specialisation program

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

Responsibility: Andreas Geyer-Schulz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 2, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 321)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 484)	4,5	Andreas Geyer-Schulz
T-WIWI-102595	Customer Relationship Management (S. 356)	4,5	Andreas Geyer-Schulz

Learning Control / Examinations
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. Therby every leture is examined by a written exam (according to Section 4(2), 1 of the examination regulation) and by succcessful completion of exercises (according to Section 4 (2), 3 of the examination regulation).
The grades of the individual lectures consists of the grade of the written exam (approximately 90 percent resp. 100 of 112 points) and of the exercise performance (approximately 10 percent resp. 12 of 112 points). In the case of passing the written exam (50 points) the points of the exercise performance will be added to the points of the written exam. 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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
In the module *CRM and Service Management* we teach the principles of modern customer-oriented management and its support by system architectures and CRM software packages. Choosing customer relationship management as a company's strategy requires service management and a strict implmentation of service management in all parts of the company.
For operative CRM we present the design of customer-oriented, IT-supported business processes based on business process modelling and we explain these processes in concrete application scenarios (e.g. marketing campaign management, call center management, sales force management, field services, ...).
Analytic CRM is dedicated to improve the use of knowledge about customers in the broadest sense for decision-making (e.g. product-mix decisions, bonus programs based on customer loyality, ...) and for the improvement of services. A requirement for this is the tight integration of operative systems with a data warehouse, the development of customer-oriented and flexible reporting systems, and – last but not least – the application of statistical methods (clustering, regression, stochastic models, ...).

Remarks
The lecture *Customer Relationship Management* [2540508] is given in English.
The courses *Analytical CRM* and *Operative CRM* will take place in an alternating way from winter term 14/15. Analytical CRM is offered for a last time in the summer term 14. Details on the cycle and on the exams can be found on http://www.em.uni-karlsruhe.de/studies/.

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

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

Responsibility: Thomas Lützkendorf

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102742	Design, Construction and Sustainability Assessment of Buildings I (S. 364)	4,5	Thomas Lützkendorf
T-WIWI-102743	Design, Construction and Sustainability Assessment of Buildings II (S. 365)	4,5	Thomas Lützkendorf

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Sustainable design, construction and operation of buildings currently are predominant topics of the real estate sector, as well as "green buildings". Not only designers and civil engineers, but also other actors who are concerned with project development, financing and insurance of buildings or portfolio management are interested in these topics.
On the one hand the courses included in this module cover the basics of energy-efficient, resource-saving and health-supporting design and construction of buildings. On the other hand fundamental assessment procedures for analysing and communicating the ecological advantageousness of technical solutions are discussed. With the basics of green building certification systems the lectures provide presently strongly demanded knowledge.
Additionally, videos and simulation tools are used for providing a better understanding of the content of teaching.

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

Furthermore a combination with courses in the area of

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

is recommended.

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

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

Responsibility: Christof Weinhardt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger
T-WIWI-102598	Management of Business Networks (S. 455)	4,5	Christof Weinhardt
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102706	Special Topics in Information Engineering & Management (S. 552)	4,5	Christof Weinhardt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
This module gives an overview of the mutual dependencies of strategic management and information systems. The central role of information is exemplified by the structuring concept of the *information life cycle*. The single phases of this life cycle from generation over allocation until dissemination and use of the information are analyzed from a business and microeconomic perspective, applying classical and new theories. The state of the art of economic theory on aspects of the information life cycle are presented. The lecture is complemented by exercise courses.
The courses "Management of Business Networks", "eFinance: Information engineering and management in finance" and ""eServices" constitute three different application domains in which the basic principles of the Internet Economy are deepened. In the course

“Management of Business Networks” the focus is set on the strategic aspects of management and information systems. It is held in English and teaches parts of the syllabus with the support of a case study elaborated with Lecturers from Concordia University, Montreal, or if applicable, Rotterdam School of Management. Thus the matter of strategic enterprise networks, a.k.a. smart business networks is also analysed by employing an international perspective.
The course "eFinance: information engineering and management for securities tradingprovides theoretically profound and also practical-oriented background about the functioning of international financial markets. The focus is placed on the economic and technical design of markets as information processing systems.
In “eServices” the increasing impact of electronic services compared to the traditional services is outlined. The Information- und Communication Technologies enable the provision of services, which are mainly characterized by interactivity and individuality. This course provides basic knowledge about the development and management of ICT-based servies.
The theortic fundamentals of Information Engineering and Management can be enriched by a practical experience in Special Topics in Information Engineering and Management. Any practical Seminar at the IM can be chosen for the course Special Topics in Information Engineering and Management.

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

M Module: eFinance [M-WIWI-101402]

Responsibility: Christof Weinhardt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course *eFinance: Information Engineering and Management for Securities Trading* [2540454] is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
The module "eFinance: Information engineering and management in finance" addresses current problems in the finance sector. It is investigated the role of information and knowledge in the finance sector and how information systems can solve or extenuate them.

Speakers from practice will contribute to lectures with their broad knowledge. Core courses of the module deal with the background of banks and insurance companies and the electronic commerce of stocks in global finance markets. In addtion the course Derivatives offers an insight into future and forward contracts as well as the assesment of options. Exchanges and International Finance are also alternatives which provide a suplementary understanding for capital markets.
Information management topics are in the focus of the lecture "eFinance: information engineering and management for securities trading". For the functioning of the international finance markets, it is necessary that there is an efficient information flow. Also, the regulatory frameworks play an important role. In this context, the role and the functioning of (electronic) stock markets, online brokers and other finance intermediaries and their platforms are presented. Not only IT concepts of German finance intermediaries are presented, but also international system approaches will be compared. The lecture is supplemented by speakers from the practice (and excursions, if possible) coming from the Deutsche Börse and the Stuttgart Stock Exchange.

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

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

Responsibility: Wolf Fichtner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration
9	Each term	1 semester

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102746	Introduction to Energy Economics (S. 432)	5,5	Wolf Fichtner

Ergänzungsangebot
Non-Compulsory Block; min. 3,5, max. 3,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics (S. 523)	3,5	Russell McKenna
T-WIWI-102607	Energy Policy (S. 382)	3,5	Martin Wietschel

Learning Control / Examinations
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) about the lecture*Introduction into Energy Economics*[2581010] and one optional lecture of the module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
The lecture *Introduction into Energy Economics* [2581010] has to be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Introduction to Energy Economics: Characterisation (reserves, suppliers, cost, technologies) of different energy carriers (coal, gas, oil, electricity, heat etc.)
Renewable Energy - Resources, Technology and Economics: Characterisation of different renewable energy carriers (wind, solar, hydro, geothermal etc.)

Corporate Governance in Energy Economics: Challenges of the management of a large company in energy economics (superior leadership role, structures, processes and projects from a leadership perspective etc.)
Energy Policy: Management of energy flows, energy-political targets and instruments (emission trading etc.)

Recommendations
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.

Remarks
Upon request, the authorisation for taking the examinations for modules of specialisation can be granted by the examination committee even if the mentioned conditions are not fulfilled. The approving statement of the coordinator of the module of specialisation claimed on the application form is not required for the module Energy Economics [TVWLIIP2]. The application form has to be submitted to the examination committee of the faculty along with a current transcript of records (e.g. via letterbox).
Upon request at the institute, additional recognition of studies (e.g. from other universities) is possible in the module.

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

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102604	Investments (S. 441)	4,5	Marliese Uhrig-Homburg
T-WIWI-102605	Financial Management (S. 399)	4,5	Martin Ruckes

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

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

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

Responsibility: Martin Klarmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102805	Managing the Marketing Mix (S. 460)	4,5	Martin Klarmann

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102798	Brand Management (S. 335)	4,5	Bruno Neibecker
T-WIWI-102806	Services Marketing and B2B Marketing (S. 542)	3	Martin Klarmann, Ju-Young Kim
T-WIWI-102807	International Marketing (S. 429)	1,5	Martin Klarmann

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course *Marketing Mix* is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
Ziel dieses Moduls ist es, Studierende auf eine Tätigkeit in Marketing oder Vertrieb vorzubereiten. Gerade in technisch orientierten Unternehmen werden hierfür gerne Mitarbeiter eingesetzt, die als Wirtschaftsingenieure oder Informationswirte auch selbst einen gewissen technischen Hintergrund haben.
Studierende

- kennen die wichtigsten Konzepte, Verfahren und Theorien der vier Instrumente des Marketing Mix (Produktmanagement,Preismanagement, Kommunikationsmanagement und Vertriebsmanagement)
- verfügen über das Wissen, Entscheidungen bezüglich der gegenwärtigen und zukünftigen Produkte (Produktinnovationen) zu treffen (z.B. mittels Conjoint-Analyse)
- wissen, wie Kunden Marken wahrnehmen und wie diese Wahrnehmung durch das Unternehmen beeinflusst werden kann

- verstehen, wie Kunden auf Preise reagieren (z.B. mittels Preis-Absatz-Funktionen)
- können Preise auf Basis konzeptioneller und quantitativer Überlegungen bestimmen
- kennen die Grundlagen der Preisdifferenzierung
- sind mit verschiedenen Instrumenten der Kommunikation vertraut (z.B. TV-Werbung) und können diese treffsicher gestalten
- treffen Kommunikationsentscheidungen systematisch (z.B. mittels Mediaplanung)
- können den Markt segmentieren und das Produkt positionieren
- wissen, wie die Wichtigkeit und Zufriedenheit von Kunden beurteilt werden können
- können die Beziehung zu Kunden und Vertriebspartnern gestalten
- wissen um Besonderheiten des Marketing im Dienstleistungs- und B2B-Bereich
- kennen die Besonderheiten des Marketing im internationalen Kontext

Content
The core course of the module is "Marketing Mix". This course is compulsory and must be examined. "Marketing Mix" contains instruments and methods that enable you to goal-oriented decisions in the operative marketing management (product management, pricing, promotion and sales management).
To deepen the marketing knowledge students can complete the module in two ways:

- by choosing the course "Brand Management".
- by choosing the combination of the courses "Services- and B2B-Marketing" and "International Marketing".

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

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

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

Responsibility: Christof Weinhardt, Gerhard Satzger

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger
T-WIWI-105775	Foundations of Digital Services B (S. 402)	4,5	Stefan Nickel, Stefan Morana, Alexander Mädche
T-WIWI-105711	Practical Seminar Digital Services (S. 496)	4,5	Christof Weinhardt, Rudi Studer, Stefan Nickel, Wolf Fichtner, Alexander Mädche, York Sure-Vetter, Gerhard Satzger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
Students

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

Content
Global economy is increasingly determined by services: in industrialized countries nearly 70% of gross value added is achieved in the tertiary sector. Unfortunately, for the design, development and the management of services traditional concepts focused on goods

are often insufficient or inappropriate. Besides, the rapid technical advance in the information and communication technology sector pushesthe economic importance of digital services even further thus changing the competition environment. ICT-based interaction and individualization open up completely new dimensions of shared value between clients and providers, dynamic and scalable "service value networks" replace established value chains, digital services are provided globally crossing geographical boundaries. This module establishes a basis for further specialization in service innovation, service economics, service design, service modelling, service analytics as well as the transformation and coordination of service networks.

Recommendations
None

Remarks
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.
The course Foundations of Digital Services B [new] is first offered in WS 2016/17.

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

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

Responsibility: Petra Nieken

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 Semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102909	Human Resource Management (S. 416)	4,5	Petra Nieken

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 5,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102908	Personnel Policies and Labor Market Institutions (S. 489)	4,5	Petra Nieken
T-WIWI-102630	Managing Organizations (S. 459)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 504)	2	Hagen Lindstädt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course Personalmanagement (Human Resource Management) is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Students acquire basic knowledge in the field of human resource and organizational management. Strategic as well as operative

aspects of human resource management practices are analyzed. The module offers an up-to-date overview over basic concepts and models. It also shows the strengths and weaknesses of rational concepts in human resources and organizational management.
The students learn to apply methods and instruments to plan, select, and manage staff. Current issues of organizational management or selected aspects of personnel politics are examined and evaluated.
The focus lies on the strategic analysis of decisions and the use microeconomic or behavioral approaches. Empirical results of field or lab studies are discussed critically.

Recommendations
Completion of module Business Administration is recommended.
Basic knowledge of microeconomics, game theory and statistics is recommended.

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

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

Responsibility: Frank Schultmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102606	Fundamentals of Production Management (S. 408)	5,5	Frank Schultmann

Ergänzungsangebot
Non-Compulsory Block; min. 3,5, max. 3,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102820	Production Economics and Sustainability (S. 510)	3,5	Magnus Fröhling
T-WIWI-102870	Logistics and Supply Chain Management (S. 449)	3,5	Marcus Wiens

Learning Control / Examinations
The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course "Fundamentals of Production Management" [2581950] and one further single course of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
The course "Fundamentals of Production Management" [2581950] and one additional activity have to be chosen.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives

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

Content
This module is designed to introduce students into the wide area of industrial production and logistics management. It focuses on strategic production management under the aspect of sustainability. The courses use interdisciplinary approaches of systems, also

theory to describe the central tasks of industrial production management and logistics. Herein, attention is drawn upon strategic corporate planning, research and development as well as site selection. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

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

M Module: Machine Learning for Finance and Data Science [M-WIWI-102753]

Responsibility: Maxim Ulrich

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Englisch	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-105712	Probabilistic Machine Learning for Finance and Data Science (S. 503)	4,5	Maxim Ulrich
T-WIWI-105714	Solving Finance Problems using Machine Learning (S. 550)	4,5	Maxim Ulrich

Learning Control / Examinations
The assessment is carried out as a module wide exam which itself consists of several partial exams (according to Section 4 (2), 1-3 SPO). A written exam at the end of the semester (120 min) (§4(2), 1 SPO) accounts for 50% of the module-wide grade. Students who have failed the first exam are allowed to retake the exam (during the 4th lecture free week in the same summer term).
Another 25% of the module grade is accounted for by the submission of weekly programming problem sets (during the first half of the semester). The presentation and submission of a machine learning programming project (during the 2nd half of the semester) accounts for the final 25% of the module-wide grade. Interested students can in addition earn a "Seminarschein".

Conditions
A formal prerequisite for taking this module is that students successfully complete all partial exams of the module wide exam within the same semester (only).
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
We put students into the shoes of a chief risk manager of a global quant asset management firm. Students first learn the most essential finance concepts such as Markowitz approach to portfolio management, the Capital Asset Pricing Model to determine cost of capital (and expected asset returns) of investments, linear factor models to predict expected returns and systematic and unsystematic risk of investments. After completion of this first couple of learning points, students learn modern machine learning tools to accomplish superior predictions for future returns and risks of different asset classes (such as equity, fixed-income, derivatives).
Upon completion of the module, students will have a conceptual, analytical and practical working knowledge of the following concepts and implemented these using Python:

1. Financial Concepts

A.1 Portfolio Management
- Markowitz
- Black-Litterman
A.2 Predicting an asset's expected return
- CAPM, Fama-French, linear factor models
- Fama-MacBeth
- ARMA modeling

- State Space modeling
A.3 Predicting an asset's future risk
- ARCH/GARCH
- State Space modeling

1. Machine Learning concepts

B.1 'Supervised learning' within linear and nonlinear models (e.g. least squares, maximum likelihood, Kalman Filter, MCMC)
B.2 'Unsupervised learning' (e.g. PCA, SVD)

Content
This module provides a hands-on introduction to the use of machine learning for modeling financial markets. We will cover methods on how to predict asset returns, how to estimate the risk density of returns and respective risk premiums and how to build optimal portfolios. We will make use of modern statistical machine learning algorithms and test them rigorously with risk and asset management applications. The intuitive, yet analytical combination of machine learning on the one hand and financial applications on the other hand are a key feature of this module. The revealed knowledge will be useful for quantitative industry internships and jobs as well as for quantitative and/or data driven lectures, seminars and bachelor thesis at the FBV or other KIT institutes. In addition to studying the machine learning concepts, students receive numerous opportunities use modern machine learning software in order to solve current financial problems.

Recommendations
This module is self-contained. It is recommended that students have already heard other finance courses, although this is not a formal prerequisite. Students are assumed to have earned at least good grades during the KIT Bachelor's math, stats, OR and IT courses.

Remarks
The courses of the module are held in English.

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

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

Responsibility: Marcus Wouters

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102800	Management Accounting 1 (S. 452)	4,5	Marcus Wouters
T-WIWI-102801	Management Accounting 2 (S. 453)	4,5	Marcus Wouters

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
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.

Remarks
Students who like this module are probably also interested in the courses

- 2530216 Financial Management
- 2530210 Management Accounting

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

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

Responsibility: Thomas Lützkendorf

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102744	Real Estate Management I (S. 520)	4,5	Thomas Lützkendorf
T-WIWI-102745	Real Estate Management II (S. 521)	4,5	Thomas Lützkendorf

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

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

Recommendations
The combination with the module*Design Constructions and Assessment of Green Buildings* is recommended.
Furthermore a combination with courses in the area of

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

is recommended.

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

M Module: Risk and Insurance Management [M-WIWI-101436]

Responsibility: Ute Werner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102603	Principles of Insurance Management (S. 502)	4,5	Ute Werner
T-WIWI-102608	Enterprise Risk Management (S. 385)	4,5	Ute Werner

Learning Control / Examinations
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 lectures are examined by oral presentations and related term papers in the context of the lectures. Furthermore, there is a final oral examination.

The grade of each examination consists of the oral presentation and the term paper (50 percent) and the oral examination (50 percent). 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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
See German version.

Content
See German version.

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

Responsibility: Andreas Geyer-Schulz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 321)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 484)	4,5	Andreas Geyer-Schulz

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the single courses of this module, 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.

Conditions
Successful passing of the corresponding modules of the basic program.

- It is only possible to choose this module in combination with the module *CRM and Servicemanagement*. The module is passed only after the final partial exam of *CRM and Servicemanagement* is additionally passed.
- At least, one of the courses *Analytic CRM* [2540522] and *Operative CRM* [2540520] has to be taken.

Modeled Conditions
The following conditions must be met:

1. Module [M-WIWI-101460] *CRM and Service Management* has to be started before taking this module.
2. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
3. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

- knows the scientific methods (from business administration, statistics, informatics) which are most relevant for analytic CRM and he autonomously applies these methods to standard cases,
- gains an overview of the market for CRM software,

- designs, implements, and analyzes operative CRM processes in concrete application domains (e.g. campaign management, call center management, ...),
- is aware of the problems of protecting the privacy of customers and the implications of privacy law.

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

- Strategic marketing processes
- Operative marketing processes (campaign managament, permission marketing, ...)
- Customer service processes (sales force management, field services, call center management, ...)

Remarks
The courses *Analytical CRM* and *Operative CRM* will take place in an alternating way from winter term 14/15. Analytical CRM is offered for a last time in the summer term 14. Details on

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

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

Responsibility: Hagen Lindstädt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102629	Management and Strategy (S. 454)	3,5	Hagen Lindstädt
T-WIWI-102630	Managing Organizations (S. 459)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 504)	2	Hagen Lindstädt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
See German version.

Content
Das Modul ist praxisnah und handlungsorientiert aufgebaut und vermittelt dem Studierenden einen aktuellen Überblick grundlegender Konzepte und Modelle des strategischen Managements und ein realistisches Bild von Möglichkeiten und Grenzen rationaler Gestaltungsansätze der Organisation.
Im Mittelpunkt stehen erstens interne und externe strategische Analyse, Konzept und Quellen von Wettbewerbsvorteilen, Formulierung von Wettbewerbs- und von Unternehmensstrategien sowie Strategiebewertung und -implementierung. Zweitens werden Stärken und Schwächen organisationaler Strukturen und Regelungen anhand systematischer Kriterien beurteilt. Dabei werden Konzepte für die Gestaltung organisationaler Strukturen, die Regulierung organisationaler Prozesse und die Steuerung organisationaler Veränderungen vorgestellt.

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

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

Responsibility: Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102598	Management of Business Networks (S. 455)	4,5	Christof Weinhardt
T-WIWI-102760	Management of Business Networks (Introduction) (S. 456)	3	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; max. 4 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel
T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems (S. 447)	6	Kai Furmans

Learning Control / Examinations
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.

Conditions
At least one of the courses Management of Business Networks [2590452] *and* Management of Business Networks (Introduction) [2540496] *has to be taken.*
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
The module "Supply Chain Management" gives an overview of the mutual dependencies of information systems and of supply chains spanning several enterprises. The specifics of supply chains and their information needs set new requirements for the operational information management. In the core lecture "Management of Business Networks" the focus is set on the strategic aspects of management and information systems. The course is held in English and teaches parts of the syllabus with the support of a case study elaborated with Prof Kersten from Concordia University, Montreal, Canada. The course MBN introduction is consisting out of the first part of the regular MBN lecture, but as it has less credits will not include the analysis of the case study.
The module is completed by an elective course addressing appropriate optimization methods for the Supply Chain Management and for modern logistic approaches.

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

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 398)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 341)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 324)	3	Andreas Sauer

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.
In addition to that it is possible to choose the module *Topics in Finance II*.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.
3. Module [M-WIWI-101435] *Essentials of Finance* has to be started before taking this module.

Qualification Objectives
The student

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

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

Recommendations
None

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 398)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 341)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 324)	3	Andreas Sauer

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.
In addition to that it is possible to choose the module *Topics in Finance I*.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.
3. Module [M-WIWI-101435] *Essentials of Finance* has to be started before taking this module.

Qualification Objectives
The student

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

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

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

5 Economics

5.1 Basic program

M Module: Economics [M-WIWI-101606]

Responsibility: Clemens Puppe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Economics/Basic program

ECTS	Language	Level
15	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102708	Economics I: Microeconomics (S. 368)	5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102709	Economics II: Macroeconomics (S. 370)	5	Berthold Wigger
T-WIWI-102736	Economics III: Introduction in Econometrics (S. 371)	5	Melanie Schienle

Learning Control / Examinations
The assessment mix of each course of this module is defined for each course separately. The final mark for the module is the average of the marks for each course weighted by the credits of the course.

Conditions
None

Qualification Objectives
The student

- knows and understands the basics of economic problems
- understands current economic policy problems which occur in a globalized world
- is able to find a solution strategies using an economical approach

Content
Essential concepts, methods and models of the micro and macroeconomic theory are discussed.
The lecture Economics I [2610012] discusses basics of game theory in addition to microeconomic decision theory, questions of market theory and problems of imperfect competition. Economics II [2600014] handles the economical organizational model, national accounts as well as international trade and monetary policy. Furthermore, complex growth, boom and economic speculations are discussed.
In Economics III [2520016] the students learn about quantitative economic relations. The basic problems of econometrics are applied to simple economic studies.

Recommendations
It is recommended to attend the lectures in the following order: Economics I: Microeconomics [2610012], Economics II: Macroeconomics [2600014], Economics III: Introduction in Econometrics [2520016].

Remarks
Notice: The lecture *Economics I*: *Microeconomics* [2610012] is part of the preliminary examination concerning § 8(1) of the examination regulation. This examination must be passed until the end of the examination period of the second semester. Any Re-examinations has to be passed until the end of the examination period of the third semester. Otherwise the examination claim will be lost.

Workload
The total workload for this module is approximately 450 hours. For further information see German version.

5.2 Specialisation program

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

Responsibility: Johannes Philipp Reiß

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Language	Level
9	Each term	1 Semester	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 433)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger
T-WIWI-102876	Auction & Mechanism Design (S. 325)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 367)	4,5	Nora Szech
T-WIWI-102792	Decision Theory (S. 361)	4,5	Karl-Martin Ehrhart
T-WIWI-102736	Economics III: Introduction in Econometrics (S. 371)	5	Melanie Schienle

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Qualification Objectives
Students

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

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

Recommendations
Completion of the module Economics is assumed.

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

M Module: Econometrics and Economics [M-WIWI-101420]

Responsibility: Wolf-Dieter Heller

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Level
9	Once	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-103063	Analysis of multivariate Data (S. 319)	4,5	Oliver Grothe
T-WIWI-102792	Decision Theory (S. 361)	4,5	Karl-Martin Ehrhart
T-WIWI-103065	Statistical Modeling of generalized regression models (S. 559)	4,5	Wolf-Dieter Heller
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß

Learning Control / Examinations
See German version.

Conditions
Successful passing of the corresponding modules of the basic program.
For further information see German version.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
See German version.

Recommendations
None

Remarks
T-WIWI-102844 "Industrial Organization" replaces T-WIWI-102824 "Theory of Business Cycles" starting summer term 2016.

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

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

Responsibility: Ingrid Ott

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-103213	Basic Principles of Economic Policy (S. 329)	4,5	Ingrid Ott
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
Students shall be given the ability to

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

Content

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

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

Remarks
The course "Basic Principles of Economic Policy" [2560280] is not offered in summer term 2015.

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

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

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

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

Responsibility: Clemens Puppe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 433)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102610	Welfare Economics (S. 572)	4,5	Clemens Puppe
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß
T-WIWI-102609	Advanced Topics in Economic Theory (S. 314)	4,5	Kay Mitusch, Marten Hillebrand
T-WIWI-102876	Auction & Mechanism Design (S. 325)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 367)	4,5	Nora Szech

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.
2. Es müssen die folgenden Bestandteile erfüllt werden:

Qualification Objectives
See German version.

Recommendations
None

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

Responsibility: Berthold Wigger

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102836	Monetary and Financial Policy (S. 476)	4,5	Joachim Nagel, Berthold Wigger
T-WIWI-102877	Monetary and Financial Policy (S. 477)	4,5	Berthold Wigger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
See German version.

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

Recommendations
It is recommended to attend the course*Spezielle Steuerlehre*[2560129] after having completed the course*Öffentliche Einnahmen*[2560120].

Remarks
See German version.

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

6 Informatics

M Module: Foundations of Informatics [M-WIWI-101417]

Responsibility: Hartmut Schmeck, York Sure-Vetter

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Informatics

ECTS	Recurrence	Duration	Level
10	Each term	2 semester	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102749	Foundations of Informatics I (S. 403)	5	York Sure-Vetter
T-WIWI-102707	Foundations of Informatics II (S. 404)	5	Hartmut Schmeck

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the individual courses of this module.
The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. For a successful module assessment both partial exams have to be passed.

- Foundations of Informatics I: Written exam in the first week of the recess period (60 min)
- Foundations of Informatics II: Written exam in the first week of the recess period (90 min). It is possible to gain 0,3-0.4 additional grading points for a passed exam by successful completion of a bonus exam.

When both partial exams are passed, the overall grade of the module is the average of the grades for each course weighted by the credit points and truncated after the first decimal.

Conditions
None

Qualification Objectives
The student

- knows the main principles, methods and systems of computer science,
- can use this knowledge for applications in advanced computer science courses and other areas for situation-adequate problem solving,
- is capable of finding strategic and creative responses in the search for solutions to well defined, concrete, and abstract problems.

The student can deepen the learned concepts, methods, and systems of computer science in advanced computer science lectures.

Content
This module conveys knowledge about modeling, logic, algorithms, sorting and searching algorithms, complexity theory, problem specifications, and data structures. From the field of theoretical computer science, formal models of automata, languages and algorithms are presented and applied to the architecture of computer systems.

Recommendations
It is strongly recommended to attend the courses of the core program in the following sequence: *Introduction to Programming with Java*, *Foundations of Informatics I*,*Foundations of Informatics II*

Workload
The total workload for this module is approximately 300 hours.

M Module: Introduction to Programming [M-WIWI-101581]

Responsibility: Johann Marius Zöllner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Informatics

ECTS	Recurrence	Duration	Language	Level
5	Each winter term	1 Semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102735	Introduction to Programming with Java (S. 439)	5	Johann Marius Zöllner, N.N.

Learning Control / Examinations
The assessment consists of a written resp. computer-based exam (60 min) according to Section 4 (2),1 of the examination regulation. The successful completion of the compulsory tests in the computer lab is prerequisited for admission to the written resp. computer-based exam.
The examination takes place every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Qualification Objectives
see german version

Content
see german version

Workload
The total workload for this course is approximately 150 hours. For further information see German version.

7 Operations Research

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

Responsibility: Oliver Stein, Karl-Heinz Waldmann, Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Operations Research

ECTS	Recurrence	Duration	Level
9	Each summer term	2 semester	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102758	Introduction to Operations Research I and II (S. 438)	9	Oliver Stein, Karl-Heinz Waldmann, Stefan Nickel

Learning Control / Examinations
The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.
In each term (usually in March and July), one examination is held for both courses.

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

Conditions
None

Qualification Objectives
The student

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

Content
This module treats the following topics: linear programming, network models, integer programming, nonlinear programming, dynamic programming, queuing theory, heuristic models.
This module forms the basis of a series of advanced lectures with a focus on both theoretical and practical aspects of Operations Research.

8 Law

M Module: Constitutional and Administrative Law [M-INFO-101192]

Responsibility: Matthias Bäcker

Organisation: KIT-Fakultät für Informatik
Curricular Anchorage: Compulsory
Contained in: Law

ECTS	Recurrence	Duration	Language	Level
6	Each term	2 semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-INFO-101963	Public Law I - Basic Principles (S. 515)	3	Matthias Bäcker
T-INFO-102042	Public Law II (S. 516)	3	Matthias Bäcker

Qualification Objectives
Der/die Studierende

- ordnet Probleme im öffentlichen Recht ein und löst einfache Fälle mit Bezug zum öffentlichen Recht,
- bearbeitet einen aktuellen Fall aufbautechnisch,
- zieht Vergleiche zwischen verschiedenen Rechtsproblemen im Öffentlichen Recht,
- kennt die methodischen Grundlagen des Öffentlichen Rechts,
- kennt den Unterschied zwischen Privatrecht und dem öffentlichem Recht,
- kennt die Rechtsschutzmöglichkeiten mit Blick auf das behördliche Handeln,
- kann mit verfassungsrechtlichen und spezialgesetzlichen Rechtsnormen umgehen.

Content
Das Modul umfasst die Kernaspekte des Verfassungsrechts (Staatsorganisationsrecht und Grundrechte), des Verwaltungsrechts und des öffentlichen Wirtschaftsrechts. Die Vorlesungen vermitteln die Grundlagen des öffentlichen Rechts. Die Studierenden sollen die staatsorganisationsrechtlichen Grundlagen, die Grundrechte, die das staatliche Handeln und das gesamte Rechtssystem steuern, sowie die Handlungsmöglichkeiten und -formen (insb. Gesetz, Verwaltungsakt, Öff.-rechtl. Vertrag) der öffentlichen Hand kennen lernen. Besonderer Wert wird dabei auf eine systematische Erarbeitung des Stoffs sowie eine Vernetzung der einzelnen Aspekte zu einem systemstringenten Ganzen gelegt. Studenten sollen daher auch methodisch sicher das öffentliche Recht bearbeiten lernen. Daher steht neben der Vermittlung materiell-rechtlicher Inhalte (wie z.B. Inhalte von Staatsprinzipien wie Demokratie- und Rechtsstaatsprinzip, Schutzgehalt der einzelnen Grundrechte, Bedingungen der Rechtmäßigkeit von Verwaltungsakten) immer wieder auch die Einübung von Aufbau, Auslegung, und allgemeiner Herangehensweise an Fälle im Öffentlichen Recht.

Workload
See German version.

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

Responsibility: Thomas Dreier

Organisation: KIT-Fakultät für Informatik
Curricular Anchorage: Compulsory
Contained in: Law

ECTS	Recurrence	Duration	Language	Level
5	Each winter term	1 semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-INFO-103339	Civil Law for Beginners (S. 343)	5	Thomas Dreier

Qualification Objectives
Der/die Studierende kennt die Grundstruktur des deutschen Rechtssystems und versteht die Unterschiede von Privatrecht, öffentlichem Recht und Strafrecht. Er/sie hat Kenntnisse über die Grundprinzipien (Privatautonomie, Abstraktions- und Trennungsprinzip) und Grundbegriffe des Bürgerlichen Rechts (Rechtssubjekte, Rechtsobjekte, Willenserklärung, Vertragsschluss, allgemeine Geschäftsbedingungen, Verbraucherschutz, Leistungsstörungen usw.). Der/die Studierende hat ein Grundverständnis für rechtliche Problemlagen und juristische Lösungsstrategien entwickelt. Er/sie erkennt rechtlich relevante Sachverhalte und kann anhand der Gesetzestexte einfach gelagerte Fälle lösen.Er/sie hat einen Eindruck davon, wie Juristen ihre Lösungen im Gutachtenstil darstellen und macht sich zunehmend mit der juristischen Arbeitsweise und Darstellungsform vertraut

Content
Die Vorlesung beginnt mit einer allgemeinen Einführung ins Recht. Was ist Recht, warum gilt Recht und was will Recht im Zusammenspiel mit Sozialverhalten, Technikentwicklung und Markt? Welche Beziehung besteht zwischen Recht und Gerechtigkeit? Ebenfalls einführend wird die Unterscheidung von Privatrecht, öffentlichem Recht und Strafrecht vorgestellt sowie die Grundzüge der gerichtlichen und außergerichtlichen einschließlich der internationalen Rechtsdurchsetzung erläutert. Anschließend werden die Grundbegriffe des Rechts in ihrer konkreten Ausformung im deutschen Bürgerlichen Gesetzbuch (BGB) besprochen. Das betrifft insbesondere Rechtssubjekte, Rechtsobjekte, Willenserklärung, die Einschaltung Dritter (insbes. Stellvertretung), Vertragsschluss (einschließlich Trennungs- und Abstraktionsprinzip), allgemeine Geschäftsbedingungen, Verbraucherschutz, Leistungsstörungen. Abschließend erfolgt ein Ausblick auf das Schuld- und das Sachenrecht. Schließlich wird eine Einführung in die Subsumtionstechnik gegeben

9 Physics or Chemistry

M Module: Experimental Physics [M-PHYS-100283]

Responsibility: Thomas Schimmel

Organisation: KIT-Fakultät für Physik
Curricular Anchorage: Compulsory Elective
Contained in: Physics or Chemistry

ECTS	Recurrence	Duration	Language
14	Each winter term	2 Semester	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-PHYS-100278	Experimental Physics (S. 393)	14	Thomas Schimmel

Conditions
none

M Module: General and Inorganic Chemistry [M-CHEMBIO-102335]

Responsibility:

Organisation: KIT-Fakultät für Chemie und Biowissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Physics or Chemistry

ECTS	Language	Level
7	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-CHEMBIO-101866	General and Inorganic Chemistry (S. 411)	7	Mario Ruben

Conditions
none

Modeled Conditions
The following conditions must be met:

- Module [M-PHYS-100283] *Experimental Physics* and this module are mutually exclusive.

M Module: Laboratory Work in Inorganic Chemistry [M-CHEMBIO-102336]

Responsibility:

Organisation: KIT-Fakultät für Chemie und Biowissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Physics or Chemistry

ECTS	Language
7	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-CHEMBIO-104638	Laboratory Work in General and Inorganic Chemistry (S. 445)	7	

Conditions
none

10 Statistics

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

Responsibility: Melanie Schienle

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Statistics

ECTS	Recurrence	Duration	Level
10	Each term	2 semester	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102737	Statistics I (S. 560)	5	Melanie Schienle
T-WIWI-102738	Statistics II (S. 561)	5	Melanie Schienle

Learning Control / Examinations
The assessment of this module consists of two written examinations according to Section 4(2), 1 of the examination regulation (one for each of the courses Statistics I and II).
The overall grade of the module is the average of the grades of these two written examinations.

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

Conditions
Notice: The lecture *Statistics I* [25008/25009] is part of the preliminary examination concerning Section 8(1) of the examination regulation. This examination must be passed until the end of the examination period of the second semester. Any Re-examinations has to be passed until the end of the examination period of the third semester. Otherwise the examination claim will be lost.

Qualification Objectives
See German version.

Content
The module contains the fundamental methods and scopes of Statistics.
A. Descriptive Statistics: univariate und bivariate analysis
B. Probability Theory: probability space, conditional and product probabilities, transformation of probabilities, parameters of location and dispersion, most importand discrete and continuous distributions, covariance and correlation, limit distributions
C. Theory of estimation and testing: suffiency of statistics, point estimation (optimality, ML-method), internal estimations, linear regression

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

11 Mathematics

M Module: Mathematics 1 [M-MATH-101676]

Responsibility: Günter Last

Organisation: KIT-Fakultät für Mathematik
Curricular Anchorage: Compulsory
Contained in: Mathematics

ECTS	Recurrence	Duration	Language
7	Each winter term	1 Semester	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-MATH-102260	Mathematics I - Midterm Exam (S. 467)	3,5	Günter Last, Steffen Winter, Martin Folkers, Daniel Hug
T-MATH-102261	Mathematics I - Final Exam (S. 466)	3,5	Günter Last, Steffen Winter, Martin Folkers, Daniel Hug

Qualification Objectives
Der/die Studierende
- besitzt grundlegende Kenntnisse der Differential- und Integralrechnung von Funktionen einer reellen Veränderlichen.

Content
Die Veranstaltung Mathematik 1 [01350] ist der erste Teil der dreisemestrigen Grundausbildung im Fach Mathematik.
- Grundbegriffe der Aussagenlogik und der Mengenlehre
- Grundbegriffe der Kombinatorik
- Zahlbereiche und Grundbegriffe der Arithmetik
- Konvergenz von Folgen und Reihen
- Stetige Funktionen
- Differenzierbare Funktionen
- Potenzreihen und spezielle Funktionen
- Der Satz von Taylor
- Das Riemannintegral

M Module: Mathematics 2 [M-MATH-101677]

Responsibility: Günter Last

Organisation: KIT-Fakultät für Mathematik
Curricular Anchorage: Compulsory
Contained in: Mathematics

ECTS	Recurrence	Duration	Language
7	Each summer term	1 Semester	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-MATH-102262	Mathematics II - Midterm Exam (S. 469)	3,5	Günter Last, Steffen Winter, Martin Folkers, Daniel Hug
T-MATH-102263	Mathematics II - Final Exam (S. 468)	3,5	Günter Last, Steffen Winter, Martin Folkers, Daniel Hug

Qualification Objectives
Der/die Studierende
- kennt die wichtigsten Konzepte der Matrizentheorie,
- besitzt grundlegende Kenntnisse der Differential- und Integralrechnung für Funktionen mehrerer Veränderlicher.

Content
Die Veranstaltung Mathematik 2 [01830] ist der zweite Teil der dreisemestrigen Grundausbildung im Fach Mathematik.
- Lineare Gleichungssysteme
- Der n-dimensionale reelle Vektorraum
- Skalarprodukte, Länge und Winkel
- Lineare Abbildungen und Matrizen
- Determinanten
- Differentialrechnung mehrerer Veränderlicher
- Implizit definierte Funktionen

M Module: Mathematics 3 [M-MATH-101679]

Responsibility: Günter Last

Organisation: KIT-Fakultät für Mathematik
Curricular Anchorage: Compulsory
Contained in: Mathematics

ECTS	Recurrence	Duration	Language
7	Each winter term	1 Semester	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-MATH-102264	Mathematics III - Final Exam (S. 470)	7	Günter Last, Steffen Winter, Martin Folkers, Daniel Hug

Qualification Objectives
Der/die Studierende
- beherrscht die wichtigsten Konzepte der Linearen Algebra,
- erwirbt Grundkenntnisse in der Theorie der Fourierreihen und in der Theorie der gewöhnlichen Differentialgleichungen.

Content
Die Veranstaltung Mathematik 3 [01352] ist der dritte Teil der dreisemestrigen Grundausbildung im Fach Mathematik.
- Das Bereichsintegral
- Der allgemeine Vektorraumbegriff
- Lineare Abbildungen
- Komplexe Zahlen
- Eigenwerte und Eigenvektoren
- Normierte Räume
- Der Fixpunktsatz von Banach
- Gewöhnliche Differentialgleichungen
- Lineare Differentialgleichungen
- Fourierreihen
- Integraltransformationen

12 Compulsory Elective Modules

12.1 Seminar module

M Module: Seminar Module [M-WIWI-101816]

Responsibility: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory
Contained in: Compulsory Elective Modules/Seminar module

ECTS	Language
3	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 3, max. 3 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-103485	Seminar in Informatics (Bachelor) (S. 534)	3	Rudi Studer, Hartmut Schmeck, Andreas Oberweis, York Sure-Vetter, Johann Marius Zöllner
T-WIWI-103486	Seminar in Business Administration (Bachelor) (S. 530)	3	Martin Klarmann, Marliese Uhrig-Homburg, Christof Weinhardt, Andreas Geyer-Schulz, Ju-Young Kim, Hagen Lindstädt, Thomas Lützkendorf, Stefan Nickel, Marcus Wouters, Petra Nieken, Wolf Fichtner, Hansjörg Fromm, Ute Werner, David Lorenz, Gerhard Satzger, Frank Schultmann, Bruno Neibecker, Orestis Terzidis, Marion Weissenberger-Eibl, Martin Ruckes
T-WIWI-103487	Seminar in Economics (Bachelor) (S. 532)	3	Kay Mitusch, Ingrid Ott, Jan Kowalski, Marten Hillebrand, Clemens Puppe, Johannes Philipp Reiß, Berthold Wigger
T-WIWI-103488	Seminar in Operations Research (Bachelor) (S. 538)	3	Oliver Stein, Karl-Heinz Waldmann, Stefan Nickel
T-WIWI-103489	Seminar in Statistics (Bachelor) (S. 539)	3	Wolf-Dieter Heller, Melanie Schienle, Oliver Grothe
T-WIWI-102755	Seminar in Engineering Science (Bachelor) (S. 533)	3	Fachvertreter ingenieurwissenschaftlicher Fakultäten
T-MATH-102265	Seminar in Mathematics (Bachelor) (S. 537)	3	Günter Last, Martin Folkers
T-INFO-101997	Seminar: Legal Studies I (S. 540)	3	Thomas Dreier

Learning Control / Examinations
SPO 2015: The modul examination consists of **one** seminar (according to §4 (3), 3 of the examintaion regulation). A detailed description of the assessment is given in the specific course characerization.
SPO 2007: The modul examination consists of **two** seminars and of at least one **key qualification** (KQ) course (according to §4 (3), 3 of the examintaion regulation). As key qualification one of the following courses must be chosen: Academic Learning HoC (2-3 credits), Key Qualifikations ZAK (1-3 credits) or Elective „Educational development for student teachers“ (2-3 credits). A detailed description of every singled assessment is given in the specific course characerization.

Conditions
All modules of the basic program should be completed. For further information see German version.

Qualification Objectives

- Students are able to independently deal with a defined problem in a specialized field based on scientific criteria.

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

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. A detailled description o these qualifications is given in the section "Key Qualifications" of the module handbook.
Furthermore, the module also includes additional key qualifications provided by the KQ-courses.

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

Workload
See German version.

12.2 Elective Module 1

12.2.1 Economics

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

Responsibility: Johannes Philipp Reiß

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Language	Level
9	Each term	1 Semester	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 433)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger
T-WIWI-102876	Auction & Mechanism Design (S. 325)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 367)	4,5	Nora Szech
T-WIWI-102792	Decision Theory (S. 361)	4,5	Karl-Martin Ehrhart
T-WIWI-102736	Economics III: Introduction in Econometrics (S. 371)	5	Melanie Schienle

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Qualification Objectives
Students

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

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

Recommendations
Completion of the module Economics is assumed.

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

M Module: Econometrics and Economics [M-WIWI-101420]

Responsibility: Wolf-Dieter Heller

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Level
9	Once	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-103063	Analysis of multivariate Data (S. 319)	4,5	Oliver Grothe
T-WIWI-102792	Decision Theory (S. 361)	4,5	Karl-Martin Ehrhart
T-WIWI-103065	Statistical Modeling of generalized regression models (S. 559)	4,5	Wolf-Dieter Heller
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß

Learning Control / Examinations
See German version.

Conditions
Successful passing of the corresponding modules of the basic program.
For further information see German version.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
See German version.

Recommendations
None

Remarks
T-WIWI-102844 "Industrial Organization" replaces T-WIWI-102824 "Theory of Business Cycles" starting summer term 2016.

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

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

Responsibility: Ingrid Ott

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-103213	Basic Principles of Economic Policy (S. 329)	4,5	Ingrid Ott
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
Students shall be given the ability to

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

Content

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

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

Remarks
The course "Basic Principles of Economic Policy" [2560280] is not offered in summer term 2015.

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

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

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

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

Responsibility: Clemens Puppe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 433)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102610	Welfare Economics (S. 572)	4,5	Clemens Puppe
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß
T-WIWI-102609	Advanced Topics in Economic Theory (S. 314)	4,5	Kay Mitusch, Marten Hillebrand
T-WIWI-102876	Auction & Mechanism Design (S. 325)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 367)	4,5	Nora Szech

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.
2. Es müssen die folgenden Bestandteile erfüllt werden:

Qualification Objectives
See German version.

Recommendations
None

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

Responsibility: Berthold Wigger

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102836	Monetary and Financial Policy (S. 476)	4,5	Joachim Nagel, Berthold Wigger
T-WIWI-102877	Monetary and Financial Policy (S. 477)	4,5	Berthold Wigger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
See German version.

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

Recommendations
It is recommended to attend the course*Spezielle Steuerlehre*[2560129] after having completed the course*Öffentliche Einnahmen*[2560120].

Remarks
See German version.

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

12.2.2 Business Administration

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

Responsibility: Andreas Geyer-Schulz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 2, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 321)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 484)	4,5	Andreas Geyer-Schulz
T-WIWI-102595	Customer Relationship Management (S. 356)	4,5	Andreas Geyer-Schulz

Learning Control / Examinations
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. Therby every leture is examined by a written exam (according to Section 4(2), 1 of the examination regulation) and by succcessful completion of exercises (according to Section 4 (2), 3 of the examination regulation).
The grades of the individual lectures consists of the grade of the written exam (approximately 90 percent resp. 100 of 112 points) and of the exercise performance (approximately 10 percent resp. 12 of 112 points). In the case of passing the written exam (50 points) the points of the exercise performance will be added to the points of the written exam. 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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
In the module *CRM and Service Management* we teach the principles of modern customer-oriented management and its support by system architectures and CRM software packages. Choosing customer relationship management as a company's strategy requires service management and a strict implmentation of service management in all parts of the company.
For operative CRM we present the design of customer-oriented, IT-supported business processes based on business process modelling and we explain these processes in concrete application scenarios (e.g. marketing campaign management, call center management, sales force management, field services, ...).
Analytic CRM is dedicated to improve the use of knowledge about customers in the broadest sense for decision-making (e.g. product-mix decisions, bonus programs based on customer loyality, ...) and for the improvement of services. A requirement for this is the tight integration of operative systems with a data warehouse, the development of customer-oriented and flexible reporting systems, and – last but not least – the application of statistical methods (clustering, regression, stochastic models, ...).

Remarks
The lecture *Customer Relationship Management* [2540508] is given in English.
The courses *Analytical CRM* and *Operative CRM* will take place in an alternating way from winter term 14/15. Analytical CRM is offered for a last time in the summer term 14. Details on the cycle and on the exams can be found on http://www.em.uni-karlsruhe.de/studies/.

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

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

Responsibility: Christof Weinhardt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger
T-WIWI-102598	Management of Business Networks (S. 455)	4,5	Christof Weinhardt
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102706	Special Topics in Information Engineering & Management (S. 552)	4,5	Christof Weinhardt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
This module gives an overview of the mutual dependencies of strategic management and information systems. The central role of information is exemplified by the structuring concept of the *information life cycle*. The single phases of this life cycle from generation over allocation until dissemination and use of the information are analyzed from a business and microeconomic perspective, applying classical and new theories. The state of the art of economic theory on aspects of the information life cycle are presented. The lecture is complemented by exercise courses.
The courses "Management of Business Networks", "eFinance: Information engineering and management in finance" and ""eServices" constitute three different application domains in which the basic principles of the Internet Economy are deepened. In the course

"Management of Business Networks" the focus is set on the strategic aspects of management and information systems. It is held in English and teaches parts of the syllabus with the support of a case study elaborated with Lecturers from Concordia University, Montreal, or if applicable, Rotterdam School of Management. Thus the matter of strategic enterprise networks, a.k.a. smart business networks is also analysed by employing an international perspective.
The course "eFinance: information engineering and management for securities tradingprovides theoretically profound and also practical-oriented background about the functioning of international financial markets. The focus is placed on the economic and technical design of markets as information processing systems.
In "eServices" the increasing impact of electronic services compared to the traditional services is outlined. The Information- und Communication Technologies enable the provision of services, which are mainly characterized by interactivity and individuality. This course provides basic knowledge about the development and management of ICT-based servies.
The theortic fundamentals of Information Engineering and Management can be enriched by a practical experience in Special Topics in Information Engineering and Management. Any practical Seminar at the IM can be chosen for the course Special Topics in Information Engineering and Management.

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

M Module: eFinance [M-WIWI-101402]

Responsibility: Christof Weinhardt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course *eFinance: Information Engineering and Management for Securities Trading* [2540454] is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
The module "eFinance: Information engineering and management in finance" addresses current problems in the finance sector. It is investigated the role of information and knowledge in the finance sector and how information systems can solve or extenuate them.

Speakers from practice will contribute to lectures with their broad knowledge. Core courses of the module deal with the background of banks and insurance companies and the electronic commerce of stocks in global finance markets. In addtion the course Derivatives offers an insight into future and forward contracts as well as the assesment of options. Exchanges and International Finance are also alternatives which provide a suplementary understanding for capital markets.
Information management topics are in the focus of the lecture "eFinance: information engineering and management for securities trading". For the functioning of the international finance markets, it is necessary that there is an efficient information flow. Also, the regulatory frameworks play an important role. In this context, the role and the functioning of (electronic) stock markets, online brokers and other finance intermediaries and their platforms are presented. Not only IT concepts of German finance intermediaries are presented, but also international system approaches will be compared. The lecture is supplemented by speakers from the practice (and excursions, if possible) coming from the Deutsche Börse and the Stuttgart Stock Exchange.

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

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

Responsibility: Wolf Fichtner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration
9	Each term	1 semester

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102746	Introduction to Energy Economics (S. 432)	5,5	Wolf Fichtner

Ergänzungsangebot
Non-Compulsory Block; min. 3,5, max. 3,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics (S. 523)	3,5	Russell McKenna
T-WIWI-102607	Energy Policy (S. 382)	3,5	Martin Wietschel

Learning Control / Examinations
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) about the lecture*Introduction into Energy Economics*[2581010] and one optional lecture of the module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
The lecture *Introduction into Energy Economics* [2581010] has to be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Introduction to Energy Economics: Characterisation (reserves, suppliers, cost, technologies) of different energy carriers (coal, gas, oil, electricity, heat etc.)
Renewable Energy - Resources, Technology and Economics: Characterisation of different renewable energy carriers (wind, solar, hydro, geothermal etc.)

Corporate Governance in Energy Economics: Challenges of the management of a large company in energy economics (superior leadership role, structures, processes and projects from a leadership perspective etc.)
Energy Policy: Management of energy flows, energy-political targets and instruments (emission trading etc.)

Recommendations
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.

Remarks
Upon request, the authorisation for taking the examinations for modules of specialisation can be granted by the examination committee even if the mentioned conditions are not fulfilled. The approving statement of the coordinator of the module of specialisation claimed on the application form is not required for the module Energy Economics [TVWLIIP2]. The application form has to be submitted to the examination committee of the faculty along with a current transcript of records (e.g. via letterbox).
Upon request at the institute, additional recognition of studies (e.g. from other universities) is possible in the module.

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

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102604	Investments (S. 441)	4,5	Marliese Uhrig-Homburg
T-WIWI-102605	Financial Management (S. 399)	4,5	Martin Ruckes

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

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

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

Responsibility: Martin Klarmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102805	Managing the Marketing Mix (S. 460)	4,5	Martin Klarmann

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102798	Brand Management (S. 335)	4,5	Bruno Neibecker
T-WIWI-102806	Services Marketing and B2B Marketing (S. 542)	3	Martin Klarmann, Ju-Young Kim
T-WIWI-102807	International Marketing (S. 429)	1,5	Martin Klarmann

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course *Marketing Mix* is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
Ziel dieses Moduls ist es, Studierende auf eine Tätigkeit in Marketing oder Vertrieb vorzubereiten. Gerade in technisch orientierten Unternehmen werden hierfür gerne Mitarbeiter eingesetzt, die als Wirtschaftsingenieure oder Informationswirte auch selbst einen gewissen technischen Hintergrund haben.
Studierende

- kennen die wichtigsten Konzepte, Verfahren und Theorien der vier Instrumente des Marketing Mix (Produktmanagement,Preismanagement, Kommunikationsmanagement und Vertriebsmanagement)
- verfügen über das Wissen, Entscheidungen bezüglich der gegenwärtigen und zukünftigen Produkte (Produktinnovationen) zu treffen (z.B. mittels Conjoint-Analyse)
- wissen, wie Kunden Marken wahrnehmen und wie diese Wahrnehmung durch das Unternehmen beeinflusst werden kann

- verstehen, wie Kunden auf Preise reagieren (z.B. mittels Preis-Absatz-Funktionen)
- können Preise auf Basis konzeptioneller und quantitativer Überlegungen bestimmen
- kennen die Grundlagen der Preisdifferenzierung
- sind mit verschiedenen Instrumenten der Kommunikation vertraut (z.B. TV-Werbung) und können diese treffsicher gestalten
- treffen Kommunikationsentscheidungen systematisch (z.B. mittels Mediaplanung)
- können den Markt segmentieren und das Produkt positionieren
- wissen, wie die Wichtigkeit und Zufriedenheit von Kunden beurteilt werden können
- können die Beziehung zu Kunden und Vertriebspartnern gestalten
- wissen um Besonderheiten des Marketing im Dienstleistungs- und B2B-Bereich
- kennen die Besonderheiten des Marketing im internationalen Kontext

Content
The core course of the module is "Marketing Mix". This course is compulsory and must be examined. "Marketing Mix" contains instruments and methods that enable you to goal-oriented decisions in the operative marketing management (product management, pricing, promotion and sales management).
To deepen the marketing knowledge students can complete the module in two ways:

- by choosing the course "Brand Management".
- by choosing the combination of the courses "Services- and B2B-Marketing" and "International Marketing".

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

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

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

Responsibility: Christof Weinhardt, Gerhard Satzger

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger
T-WIWI-105775	Foundations of Digital Services B (S. 402)	4,5	Stefan Nickel, Stefan Morana, Alexander Mädche
T-WIWI-105711	Practical Seminar Digital Services (S. 496)	4,5	Christof Weinhardt, Rudi Studer, Stefan Nickel, Wolf Fichtner, Alexander Mädche, York Sure-Vetter, Gerhard Satzger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
Students

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

Content
Global economy is increasingly determined by services: in industrialized countries nearly 70% of gross value added is achieved in the tertiary sector. Unfortunately, for the design, development and the management of services traditional concepts focused on goods

are often insufficient or inappropriate. Besides, the rapid technical advance in the information and communication technology sector pushesthe economic importance of digital services even further thus changing the competition environment. ICT-based interaction and individualization open up completely new dimensions of shared value between clients and providers, dynamic and scalable "service value networks" replace established value chains, digital services are provided globally crossing geographical boundaries. This module establishes a basis for further specialization in service innovation, service economics, service design, service modelling, service analytics as well as the transformation and coordination of service networks.

Recommendations
None

Remarks
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.
The course Foundations of Digital Services B [new] is first offered in WS 2016/17.

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

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

Responsibility: Petra Nieken

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 Semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102909	Human Resource Management (S. 416)	4,5	Petra Nieken

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 5,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102908	Personnel Policies and Labor Market Institutions (S. 489)	4,5	Petra Nieken
T-WIWI-102630	Managing Organizations (S. 459)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 504)	2	Hagen Lindstädt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course Personalmanagement (Human Resource Management) is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Students acquire basic knowledge in the field of human resource and organizational management. Strategic as well as operative

aspects of human resource management practices are analyzed. The module offers an up-to-date overview over basic concepts and models. It also shows the strengths and weaknesses of rational concepts in human resources and organizational management.
The students learn to apply methods and instruments to plan, select, and manage staff. Current issues of organizational management or selected aspects of personnel politics are examined and evaluated.
The focus lies on the strategic analysis of decisions and the use microeconomic or behavioral approaches. Empirical results of field or lab studies are discussed critically.

Recommendations
Completion of module Business Administration is recommended.
Basic knowledge of microeconomics, game theory and statistics is recommended.

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

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

Responsibility: Frank Schultmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102606	Fundamentals of Production Management (S. 408)	5,5	Frank Schultmann

Ergänzungsangebot
Non-Compulsory Block; min. 3,5, max. 3,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102820	Production Economics and Sustainability (S. 510)	3,5	Magnus Fröhling
T-WIWI-102870	Logistics and Supply Chain Management (S. 449)	3,5	Marcus Wiens

Learning Control / Examinations
The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course "Fundamentals of Production Management" [2581950] and one further single course of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
The course "Fundamentals of Production Management" [2581950] and one additional activity have to be chosen.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives

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

Content
This module is designed to introduce students into the wide area of industrial production and logistics management. It focuses on strategic production management under the aspect of sustainability. The courses use interdisciplinary approaches of systems, also

theory to describe the central tasks of industrial production management and logistics. Herein, attention is drawn upon strategic corporate planning, research and development as well as site selection. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

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

M Module: Machine Learning for Finance and Data Science [M-WIWI-102753]

Responsibility: Maxim Ulrich

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Englisch	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-105712	Probabilistic Machine Learning for Finance and Data Science (S. 503)	4,5	Maxim Ulrich
T-WIWI-105714	Solving Finance Problems using Machine Learning (S. 550)	4,5	Maxim Ulrich

Learning Control / Examinations
The assessment is carried out as a module wide exam which itself consists of several partial exams (according to Section 4 (2), 1-3 SPO). A written exam at the end of the semester (120 min) (§4(2), 1 SPO) accounts for 50% of the module-wide grade. Students who have failed the first exam are allowed to retake the exam (during the 4th lecture free week in the same summer term).
Another 25% of the module grade is accounted for by the submission of weekly programming problem sets (during the first half of the semester). The presentation and submission of a machine learning programming project (during the 2nd half of the semester) accounts for the final 25% of the module-wide grade. Interested students can in addition earn a "Seminarschein".

Conditions
A formal prerequisite for taking this module is that students successfully complete all partial exams of the module wide exam within the same semester (only).
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
We put students into the shoes of a chief risk manager of a global quant asset management firm. Students first learn the most essential finance concepts such as Markowitz approach to portfolio management, the Capital Asset Pricing Model to determine cost of capital (and expected asset returns) of investments, linear factor models to predict expected returns and systematic and unsystematic risk of investments. After completion of this first couple of learning points, students learn modern machine learning tools to accomplish superior predictions for future returns and risks of different asset classes (such as equity, fixed-income, derivatives).
Upon completion of the module, students will have a conceptual, analytical and practical working knowledge of the following concepts and implemented these using Python:

1. Financial Concepts

A.1 Portfolio Management
- Markowitz
- Black-Litterman
A.2 Predicting an asset's expected return
- CAPM, Fama-French, linear factor models
- Fama-MacBeth
- ARMA modeling

- State Space modeling
A.3 Predicting an asset's future risk
- ARCH/GARCH
- State Space modeling

1. Machine Learning concepts

B.1 'Supervised learning' within linear and nonlinear models (e.g. least squares, maximum likelihood, Kalman Filter, MCMC)
B.2 'Unsupervised learning' (e.g. PCA, SVD)

Content
This module provides a hands-on introduction to the use of machine learning for modeling financial markets. We will cover methods on how to predict asset returns, how to estimate the risk density of returns and respective risk premiums and how to build optimal portfolios. We will make use of modern statistical machine learning algorithms and test them rigorously with risk and asset management applications. The intuitive, yet analytical combination of machine learning on the one hand and financial applications on the other hand are a key feature of this module. The revealed knowledge will be useful for quantitative industry internships and jobs as well as for quantitative and/or data driven lectures, seminars and bachelor thesis at the FBV or other KIT institutes. In addition to studying the machine learning concepts, students receive numerous opportunities use modern machine learning software in order to solve current financial problems.

Recommendations
This module is self-contained. It is recommended that students have already heard other finance courses, although this is not a formal prerequisite. Students are assumed to have earned at least good grades during the KIT Bachelor's math, stats, OR and IT courses.

Remarks
The courses of the module are held in English.

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

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

Responsibility: Marcus Wouters

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102800	Management Accounting 1 (S. 452)	4,5	Marcus Wouters
T-WIWI-102801	Management Accounting 2 (S. 453)	4,5	Marcus Wouters

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
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.

Remarks
Students who like this module are probably also interested in the courses

- 2530216 Financial Management
- 2530210 Management Accounting

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

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

Responsibility: Thomas Lützkendorf

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102744	Real Estate Management I (S. 520)	4,5	Thomas Lützkendorf
T-WIWI-102745	Real Estate Management II (S. 521)	4,5	Thomas Lützkendorf

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

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

Recommendations
The combination with the module*Design Constructions and Assessment of Green Buildings* is recommended.
Furthermore a combination with courses in the area of

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

is recommended.

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

M Module: Risk and Insurance Management [M-WIWI-101436]

Responsibility: Ute Werner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102603	Principles of Insurance Management (S. 502)	4,5	Ute Werner
T-WIWI-102608	Enterprise Risk Management (S. 385)	4,5	Ute Werner

Learning Control / Examinations
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 lectures are examined by oral presentations and related term papers in the context of the lectures. Furthermore, there is a final oral examination.

The grade of each examination consists of the oral presentation and the term paper (50 percent) and the oral examination (50 percent). 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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
See German version.

Content
See German version.

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

Responsibility: Andreas Geyer-Schulz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 321)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 484)	4,5	Andreas Geyer-Schulz

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the single courses of this module, 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.

Conditions
Successful passing of the corresponding modules of the basic program.

- It is only possible to choose this module in combination with the module *CRM and Servicemanagement*. The module is passed only after the final partial exam of *CRM and Servicemanagement* is additionally passed.
- At least, one of the courses *Analytic CRM* [2540522] and *Operative CRM* [2540520] has to be taken.

Modeled Conditions
The following conditions must be met:

1. Module [M-WIWI-101460] *CRM and Service Management* has to be started before taking this module.
2. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
3. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

- knows the scientific methods (from business administration, statistics, informatics) which are most relevant for analytic CRM and he autonomously applies these methods to standard cases,
- gains an overview of the market for CRM software,

- designs, implements, and analyzes operative CRM processes in concrete application domains (e.g. campaign management, call center management, ...),
- is aware of the problems of protecting the privacy of customers and the implications of privacy law.

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

- Strategic marketing processes
- Operative marketing processes (campaign managament, permission marketing, ...)
- Customer service processes (sales force management, field services, call center management, ...)

Remarks
The courses *Analytical CRM* and *Operative CRM* will take place in an alternating way from winter term 14/15. Analytical CRM is offered for a last time in the summer term 14. Details on

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

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

Responsibility: Hagen Lindstädt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102629	Management and Strategy (S. 454)	3,5	Hagen Lindstädt
T-WIWI-102630	Managing Organizations (S. 459)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 504)	2	Hagen Lindstädt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
See German version.

Content
Das Modul ist praxisnah und handlungsorientiert aufgebaut und vermittelt dem Studierenden einen aktuellen Überblick grundlegender Konzepte und Modelle des strategischen Managements und ein realistisches Bild von Möglichkeiten und Grenzen rationaler Gestaltungsansätze der Organisation.
Im Mittelpunkt stehen erstens interne und externe strategische Analyse, Konzept und Quellen von Wettbewerbsvorteilen, Formulierung von Wettbewerbs- und von Unternehmensstrategien sowie Strategiebewertung und -implementierung. Zweitens werden Stärken und Schwächen organisationaler Strukturen und Regelungen anhand systematischer Kriterien beurteilt. Dabei werden Konzepte für die Gestaltung organisationaler Strukturen, die Regulierung organisationaler Prozesse und die Steuerung organisationaler Veränderungen vorgestellt.

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

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

Responsibility: Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102598	Management of Business Networks (S. 455)	4,5	Christof Weinhardt
T-WIWI-102760	Management of Business Networks (Introduction) (S. 456)	3	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; max. 4 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel
T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems (S. 447)	6	Kai Furmans

Learning Control / Examinations
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.

Conditions
At least one of the courses Management of Business Networks [2590452] *and* Management of Business Networks (Introduction) [2540496] *has to be taken.*
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
The module "Supply Chain Management" gives an overview of the mutual dependencies of information systems and of supply chains spanning several enterprises. The specifics of supply chains and their information needs set new requirements for the operational information management. In the core lecture "Management of Business Networks" the focus is set on the strategic aspects of management and information systems. The course is held in English and teaches parts of the syllabus with the support of a case study elaborated with Prof Kersten from Concordia University, Montreal, Canada. The course MBN introduction is consisting out of the first part of the regular MBN lecture, but as it has less credits will not include the analysis of the case study.
The module is completed by an elective course addressing appropriate optimization methods for the Supply Chain Management and for modern logistic approaches.

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

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 398)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 341)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 324)	3	Andreas Sauer

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.
In addition to that it is possible to choose the module *Topics in Finance II*.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.
3. Module [M-WIWI-101435] *Essentials of Finance* has to be started before taking this module.

Qualification Objectives
The student

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

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

Recommendations
None

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 398)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 341)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 324)	3	Andreas Sauer

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.
In addition to that it is possible to choose the module *Topics in Finance I*.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.
3. Module [M-WIWI-101435] *Essentials of Finance* has to be started before taking this module.

Qualification Objectives
The student

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

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

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

12.2.3 Informatics

M Module: Electives in Informatic [M-WIWI-101426]

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Informatics
Compulsory Elective Modules/Elective Module 2/Informatics

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlplfichtangebot
Non-Compulsory Block; min. 9, max. 10 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 323)	5	Johann Marius Zöllner
T-WIWI-102652	Applied Informatics I - Modelling (S. 322)	5	Andreas Oberweis, York Sure-Vetter
T-WIWI-102910	Special Topics of Applied Informatics (S. 553)	5	Rudi Studer, Hartmut Schmeck, Andreas Oberweis
T-WIWI-102655	Efficient Algorithms (S. 372)	5	Hartmut Schmeck
T-WIWI-102658	Algorithms for Internet Applications (S. 316)	5	Hartmut Schmeck
T-WIWI-102660	Database Systems (S. 359)	5	Andreas Oberweis
T-WIWI-100809	Software Engineering (S. 547)	4	Andreas Oberweis
T-WIWI-102664	Knowledge Management (S. 443)	4	Rudi Studer
T-WIWI-104679	Foundations of mobile Business (S. 405)	5	Andreas Oberweis, Gunther Schiefer

Learning Control / Examinations
The assessment is carried out as two 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.
Please note the following information about the module component exams of Prof. Dr. H. Schmeck:
Algorithms for Internet Applications [T-WIWI-102658]: The examination will be offered latest until summer term 2017 (repeaters only).
Efficient Algorithms [T-WIWI-102655]: The examination will be offered latest until winter term 2016/2017 (repeaters only).

Conditions
See German version

Qualification Objectives
The student

- knows and has mastered methods and systems for core topics and core application areas of computer science,
- can choose these methods and system situation adequately and can furthermore design and employ them for problem solving,
- is able to independently find strategic and creative answers in the finding of solutions to well defined, concrete, and abstract problems.

Content
The elective module conveys advanced knowledge in the area of applied computer science. This includes, for example, the efficient design and optimization of technical systems, the design and management of database applications or the systematic development of large software systems. Moreover, modeling of complex systems, the use of computer science methods to support knowledge management, and the design and implementation of service-oriented architectures are discussed in this module.

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

M Module: Emphasis Informatics [M-WIWI-101399]

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Informatics
Compulsory Elective Modules/Elective Module 2/Informatics

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 5, max. 5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102747	Advanced Programming - Java Network Programming (S. 313)	5	Dietmar Ratz
T-WIWI-102748	Advanced Programming - Application of Business Software (S. 311)	5	Stefan Klink, Andreas Oberweis

Ergänzungsangebot
Non-Compulsory Block; min. 4, max. 5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 323)	5	Johann Marius Zöllner
T-WIWI-102652	Applied Informatics I - Modelling (S. 322)	5	Andreas Oberweis, York Sure-Vetter
T-WIWI-102910	Special Topics of Applied Informatics (S. 553)	5	Rudi Studer, Hartmut Schmeck, Andreas Oberweis
T-WIWI-102658	Algorithms for Internet Applications (S. 316)	5	Hartmut Schmeck
T-WIWI-102664	Knowledge Management (S. 443)	4	Rudi Studer
T-WIWI-100809	Software Engineering (S. 547)	4	Andreas Oberweis
T-WIWI-102655	Efficient Algorithms (S. 372)	5	Hartmut Schmeck
T-WIWI-102660	Database Systems (S. 359)	5	Andreas Oberweis
T-WIWI-104679	Foundations of mobile Business (S. 405)	5	Andreas Oberweis, Gunther Schiefer

Learning Control / Examinations
The assessment is carried out as two partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module. For passing the module exam in every singled partial exam the respective minimum requirements has to be achieved.

- Partial exam I: *Advanced Programming - Java Network Programming* or alternativly *Advanced Programming - Application of Business Software*
- Partial exam II: all the rest

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.
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.
Please note the following information about the module component exams of Prof. Dr. H. Schmeck:
Algorithms for Internet Applications [T-WIWI-102658]: The examination will be offered latest until summer term 2017 (repeaters only).
Effiziente Algorithmen [T-WIWI-102655]: The examination will be offered latest until winter term 2016/2017 (repeaters only).

Conditions
See German version.

Qualification Objectives
The student

- has the capability of dealing with the practical application of the Java programming language (which is the dominating programming language in many application areas) or alternatively the ability to configure, parameterize and deploy enterprise software to enable, support and automate business processes,
- is familiar with methods and systems of a core topic or core application area of computer science,
- can choose these methods and system situation adequately and can furthermore design and employ them for problem solving,
- is able to independently find strategic and creative answers in the finding of solutions to well defined, concrete, and abstract problems.

Content
In this module, object-oriented programming skills using the Java programming language are further deepened. Alternatively important fundamentals of business information systems are conveyed that enable, support and accelerate new forms of business processes and organizational forms. Based on a core application area, basic methods and techniques of computer science are presented.

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

12.2.4 Operations Research

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

Responsibility: Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Operations Research
Compulsory Elective Modules/Elective Module 2/Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 4 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102717	Software Laboratory: OR Models I (S. 548)	4,5	Stefan Nickel
T-WIWI-102726	Global Optimization I (S. 413)	4,5	Oliver Stein
T-WIWI-102627	Simulation I (S. 543)	4,5	Karl-Heinz Waldmann

Learning Control / Examinations
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.

Conditions
At least one of the courses *Facility Location and strategic Supply Chain Management* [2550486] and *Tactical and operational Supply Chain Management* [2550488] has to be taken.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student

- is familiar with basic concepts and terms of Supply Chain Management,
- knows the different areas of Supply Chain Management and their respective optimization problems,
- is acquainted with classical location problem models (in the plane, on networks and discrete) as well as fundamental methods for distribution and transport planning, inventory planning and management,

- is able to model practical problems mathematically and estimate their complexity as well as choose and adapt appropriate solution methods.

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

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

M Module: Methodical Foundations of OR [M-WIWI-101414]

Responsibility: Oliver Stein

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Operations Research
Compulsory Elective Modules/Elective Module 2/Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 3 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102726	Global Optimization I (S. 413)	4,5	Oliver Stein
T-WIWI-103062	Prerequisite for Nonlinear Optimization I (Bachelor) (S. 499)		
T-WIWI-102724	Nonlinear Optimization I (S. 480)	4,5	Oliver Stein

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102727	Global Optimization II (S. 415)	4,5	Oliver Stein
T-WIWI-103638	Global Optimization I and II (S. 414)	9	
T-WIWI-103060	Prerequisite for Nonlinear Optimization II (Bachelor) (S. 500)		Oliver Stein
T-WIWI-102725	Nonlinear Optimization II (S. 482)	4,5	Oliver Stein
T-WIWI-103637	Nonlinear Optimization I und II (S. 481)	9	
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-102710	Markov Decision Models I (S. 462)	5	Karl-Heinz Waldmann

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

Conditions
At least one of the lectures *Nonlinear Optimization I* [2550111] and *Global Optimization I* [2550134] has to be examined.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student

- names and describes basic notions for optimization methods, in particular from nonlinear and from global optimization,
- knows the indispensable methods and models for quantitative analysis,

- models and classifies optimization problems and chooses the appropriate solution methods to solve also challenging optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions.

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

Remarks
The planned lectures and courses for the next three years are announced online (http://www.ior.kit.edu).
For the lectures of Prof. Stein a grade of 30 % of the exercise course has to be fulfilled. The description of the particular lectures is more detailed.

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

M Module: Stochastic Methods and Simulation [M-WIWI-101400]

Responsibility: Karl-Heinz Waldmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Operations Research
Compulsory Elective Modules/Elective Module 2/Operations Research

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102710	Markov Decision Models I (S. 462)	5	Karl-Heinz Waldmann
T-WIWI-102627	Simulation I (S. 543)	4,5	Karl-Heinz Waldmann

Ergänzungsangebot
Non-Compulsory Block; max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102711	Markov Decision Models II (S. 463)	4,5	Karl-Heinz Waldmann
T-WIWI-102703	Simulation II (S. 544)	4,5	Karl-Heinz Waldmann
T-WIWI-103062	Prerequisite for Nonlinear Optimization I (Bachelor) (S. 499)		
T-WIWI-102724	Nonlinear Optimization I (S. 480)	4,5	Oliver Stein
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel

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

Conditions
At least one of the courses Markov Decision Models [2550679] or Simulation I [2550662] has to be attended.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student posses profound knowledge in modelling, analyzing and optimizing stochastic systems in economy and engineering.

Content
Markov Decision Models I: Markov Chains, Poisson Processes
Markov Decision Models II: Queuing Systems, Stochastic Decision Processes
Simulation I: Generation of random numbers, Monte Carlo integration, Discrete event simulation, Discrete and continuous random variables, Statistical analysis of simulated data.
Simulation II: Variance reduction techniques, Simulation of stochastic processes, Case studies.

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

12.2.5 Engineering Sciences

M Module: Combustion Engines I [M-MACH-101275]

Responsibility: Heiko Kubach

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102194	Combustion Engines I (S. 345)	5	Thomas Koch, Heiko Kubach
T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines (S. 380)	4	Thomas Koch, Heiko Kubach

Conditions
None

Qualification Objectives
The student can name and explain the working princile of combustion engines. He is able to analyse and evaluate the combustion process. He is able to evaluate influences of gas exchange, mixture formation, fuels and exhaust gas aftertreatment on the combustion performance. He can solve basic research problems in the field of engine development.
The student can name all important influences on the combustion process. He can analyse and evaluate the engine process considering efficiency, emissions and potential.

Content
Introduction, History, Concepts
Working Principle and Termodynamics
Characteristic Parameters
Air Path
Fuel Path
Energy Conversion
Fuels
Emissions
Exhaust Gas Aftertreatment
Reaction kinetics
Gas exchange
Ignition
Flow field of gasoline engines
Working process
Pressure trace analysis
Thermodynamic analysis of the high pressure process
Exergy analysis and waste heat recuperation
Aspects of sustainability

M Module: Combustion Engines II [M-MACH-101303]

Responsibility: Heiko Kubach

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Level
9	Each term	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-104609	Combustion Engines II (S. 346)	5	Heiko Kubach

Verbrennungsmotoren II
Non-Compulsory Block; min. 4 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment (S. 407)	4	Egbert Lox
T-MACH-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines (S. 318)	4	Marcus Gohl
T-MACH-105184	Fuels and Lubricants for Combustion Engines (S. 406)	4	Bernhard Kehrwald
T-MACH-105167	Analysis Tools for Combustion Diagnostics (S. 320)	4	Uwe Wagner
T-MACH-102197	Gas Engines (S. 409)	4	Rainer Golloch
T-MACH-102199	Model Based Application Methods (S. 475)	4	Frank Kirschbaum
T-MACH-105169	Engine Measurement Techniques (S. 383)	4	Sören Bernhardt

Conditions
None

Modeled Conditions
The following conditions must be met:

- Module [M-MACH-101275] *Combustion Engines I* has to be started before taking this module.

Qualification Objectives
See courses.

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

Responsibility: Thomas Lützkendorf

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102742	Design, Construction and Sustainability Assessment of Buildings I (S. 364)	4,5	Thomas Lützkendorf
T-WIWI-102743	Design, Construction and Sustainability Assessment of Buildings II (S. 365)	4,5	Thomas Lützkendorf

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Sustainable design, construction and operation of buildings currently are predominant topics of the real estate sector, as well as "green buildings". Not only designers and civil engineers, but also other actors who are concerned with project development, financing and insurance of buildings or portfolio management are interested in these topics.
On the one hand the courses included in this module cover the basics of energy-efficient, resource-saving and health-supporting design and construction of buildings. On the other hand fundamental assessment procedures for analysing and communicating the ecological advantageousness of technical solutions are discussed. With the basics of green building certification systems the lectures provide presently strongly demanded knowledge.
Additionally, videos and simulation tools are used for providing a better understanding of the content of teaching.

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

Furthermore a combination with courses in the area of

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

is recommended.

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

M Module: Energy Generation and Network Components [M-ETIT-101165]

Responsibility: Thomas Leibfried, Bernd Hoferer

Organisation: KIT-Fakultät für Elektrotechnik und Informationstechnik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-101924	Power Generation (S. 494)	3	Bernd Hoferer
T-ETIT-101925	Design and Operation of Power Transformers (S. 363)	3	N. N., Mitarbeiter
T-ETIT-101927	Automation of Power Grids (S. 326)	3	N.N.

Learning Control / Examinations
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 examinations take place at the beginning of the recess period. 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 weighted average of the grades for each course and truncated after the first decimal.

Conditions
It is only possible to choose this module in combination with the module *Power Networks* [WW3INGETIT3]. The module is passed only after the final partial exam of *Power Networks* is additionally passed.

Modeled Conditions
The following conditions must be met:

- Module [M-ETIT-102379] *Power Network* has to be started before taking this module.

Qualification Objectives
The student

- has basic and advanced knowledge of electrical power engineering,
- is capable to analyse, calculate and develop electrical power engineering systems.

Content
The module deals with basic knowledge about the structure and operation of electrical power networks and their needed facilities. Further lectures give an insight into specific topics, such as Automation in electric power engineering or the procedures for generating electrical energy.

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

M Module: Extracurricular Module in Engineering [M-WIWI-101404]

Responsibility:

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences

ECTS	Recurrence	Level
9	Once	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-ETIT-100724	Photovoltaics (S. 490)	3	N.N.
T-ETIT-101924	Power Generation (S. 494)	3	Bernd Hoferer
T-MACH-100966	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I (S. 331)	3	Andreas Guber
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II (S. 332)	3	Andreas Guber
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III (S. 333)	3	Andreas Guber
T-MACH-102107	Quality Management (S. 519)	4	Gisela Lanza
T-MACH-102176	Current Topics on BioMEMS (S. 355)	3	Andreas Guber
T-MACH-105234	Windpower (S. 603)	4	Norbert Lewald
T-BGU-100139	Hydro Power Engineering (S. 418)	6	Peter Oberle

Learning Control / Examinations
The assessment of the module is determined by the respective module corrdinator. It can either be in the form of a general exam or partial exams, and must be contain at least 9 credit points and at least 6 hours per week. The examination may contain presentations, experiments, laboratories, term papers, etc. At least 50 percent of the module examination has to be in the form of a written or an oral examination (according to Section 4 (2), 1 or 2 of the examination regulation).

The formation of the overall grade of the module will be determined by the respective module coordinator.

Conditions
See German version.

Qualification Objectives
See German version.

Content
Entsprechend dem interdisziplinären Profil des Studiengangs können technisch-orientierte Lehrveranstaltungen zu einem außerplanmäßigen Ingenieurmodul zusammengestellt werden, die nicht oder nicht in dieser Kombination im Modulhandbuch des Studiengangs aufgeführt sind. Die im außerplanmäßigen Ingenieurmodul zusammengestellten technisch-orientierten Lehrveranstaltungen umfassen dabei in Summe mindestens 9 LP und mindestens 6 SWS.
Zunehmend bieten ingenieurwissenschaftliche Fakultäten Lehrveranstaltungen mit nicht technischem, meist wirtschaftswissenschaftlichem Bezug an. Diese aus ingenieurwissenschaftlicher Sicht sinnvolle Ergänzung zur technischen Ausbildung ihrer Studierenden, ist für die Studiengänge der Fakultät für Wirtschaftswissenschaften nicht geeignet. Daher genehmigt der Prüfungsausschuss solche Lehrveranstaltungen grundsätzlich nicht im Rahmen der zu erwerbenden 9 LP des außerplanmäßigen Ingenieurmoduls. Wer dennoch solche Lehrveranstaltungen in die Fachprüfung Ingenieurwissenschaften integrieren möchte, kann – in Übereinstimmung mit dem zuständigen Prüfer - ein Modul zusammenstellen, das dann entsprechend mehr Leistungspunkte umfassen muss.

Remarks
Die oben stehende Aufstellung ist nicht vollständig, sondernenthält nur eine Auswahl möglicher Teilleistungen. Die Liste wird fortlaufend aktualisiert. Wie oben beschrieben kann das außerplanmäßige Ingenieurmodul auf genehmigungspflichtigen Antrag

indidviduell zusammengestellt werden.
Neben den 9 LP müssen mindestens 6 Semesterwochenstunden erbracht werden.
Es kann maximal ein außerplanmäßiges Ingenieurmodul abgelegt werden.

M Module: Fundamentals of construction [M-BGU-101004]

Responsibility: Shervin Haghsheno

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-101691	Construction Technology (S. 352)	6	Shervin Haghsheno
T-BGU-101675	Project Management (S. 513)	3	Shervin Haghsheno

Conditions
none

Qualification Objectives
The student

- is familiar with all substantial domains of construction
- knows and understands substantial construction methods and construction machines
- masters basic construction calculations
- knows and understands the fundamentals of project management in civil engineering

can apply his / her knowledge in a goal-oriented manner to accomplish a construction project efficiently

Content
Courses of this module comprise methods and machines from all construction domains. Specifically, the module covers production planning as well as substantial parts of structural engineering and underground engineering, including auxiliary systems. In addition to the explanation of fundamentals, machines, and methods the courses include performance calculations. Further, students receive an introduction to project management in civil engineering which includes project phases, project organization, and the columns of project management which are schedule management, cost management, and quality management.

Remarks
We encourage students to deepen their knowledge in construction by building additional customized modules from the courses offered by TMB. Please consult with the tutors of this module. Further information is available at www.tmb.kit.edu.

M Module: Integrated Production Planning [M-MACH-101272]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102106	Integrated Production Planning (S. 426)	9	Gisela Lanza

Conditions
none

Qualification Objectives
The students

- can discuss basic questions of production technology.
- are able to apply the methods of integrated production planning they have learned about to new problems.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques they have learned about for a specific problem.
- can apply the learned methods of integrated production planning to new problems.
- can use their knowledge targeted for efficient production technology.

Content
Within this engineering sciences-oriented module the students will get to learn principle aspects of organization and planning of production systems. Further information can be found at the description of the lecture "Integrated Production Planning".

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

M Module: Introduction to Natural Hazards and Risk Analysis 1 [M-WIWI-101646]

Responsibility: Michael Kunz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 12 ECTS

Identifier	Course	ECTS	Responsibility
T-PHYS-103117	Geological Hazards and Risks for external students (S. 412)	4	
T-BGU-101693	Hydrology (S. 419)	4	Erwin Zehe
T-BGU-101667	Hydraulic Engineering and Water Management (S. 417)	4	Franz Nestmann
T-BGU-101636	Remote Sensing, exam (S. 522)	4	Stefan Hinz
T-BGU-101637	Systems of Remote Sensing, Prerequisite (S. 563)	1	Stefan Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite (S. 506)	1	Uwe Weidner
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 434)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 435)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103542	Procedures of Remote Sensing (S. 505)	3	Uwe Weidner
T-PHYS-101092	Climatology (S. 344)		Peter Braesicke
T-PHYS-105594	Exam on Climatology (S. 388)	6	
T-PHYS-101557	Meteorological Hazards (S. 472)		Michael Kunz
T-PHYS-105954	Exam on Meteorological Hazards (S. 389)	3	Michael Kunz
T-BGU-101814	Project in Applied Remote Sensing (S. 512)	1	Stefan Hinz

Learning Control / Examinations
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.

Conditions
There are no singular exams for Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66]. Therefore it not possible to choose Remote Sensing [GEOD-BFB-1] and additionally the courses Remote Sensing Systems, Remote Sensing Methods or the project Angewandte Fernerkundung [20267] (because they are already included). See also "Recommendations".

Qualification Objectives
See German version

Content
See German version

Recommendations
The courses Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66] may be chosen as a minimal combination for the exam. However, it is recommended to choose the comprehensive combination Remote Sensing [GEOD-BFB-1], which includes Remote Sensing Systems [20241/42], Remote Sensing Methods [20265/66] and the project Angewandte Fernerkundung [20267].

Remarks
Students, who successfully completed both modules "Understanding and Prediction of Disasters" I and II (alternatively: one of

the modules in Bachelor and Master) can get a certificate of the module coordinator (CEDIM). This certificate lists the successful completed courses within the two modules.

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

M Module: Introduction to Natural Hazards and Risk Analysis 2 [M-WIWI-101648]

Responsibility: Michael Kunz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 12 ECTS

Identifier	Course	ECTS	Responsibility
T-PHYS-103117	Geological Hazards and Risks for external students (S. 412)	4	
T-BGU-101667	Hydraulic Engineering and Water Management (S. 417)	4	Franz Nestmann
T-BGU-101693	Hydrology (S. 419)	4	Erwin Zehe
T-BGU-101636	Remote Sensing, exam (S. 522)	4	Stefan Hinz
T-BGU-101637	Systems of Remote Sensing, Prerequisite (S. 563)	1	Stefan Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite (S. 506)	1	Uwe Weidner
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 434)	3	Sven Wursthorn, Norbert Rösch
T-BGU-101814	Project in Applied Remote Sensing (S. 512)	1	Stefan Hinz
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 435)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103542	Procedures of Remote Sensing (S. 505)	3	Uwe Weidner
T-PHYS-101092	Climatology (S. 344)		Peter Braesicke
T-PHYS-105594	Exam on Climatology (S. 388)	6	
T-PHYS-101557	Meteorological Hazards (S. 472)		Michael Kunz
T-PHYS-105954	Exam on Meteorological Hazards (S. 389)	3	Michael Kunz

Learning Control / Examinations
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.

Conditions
There are no singular exams for Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66]. Therefore it not possible to choose Remote Sensing [GEOD-BFB-1] and additionally the courses Remote Sensing Systems, Remote Sensing Methods or the project Angewandte Fernerkundung [20267] (because they are already included). See also "Recommendations".

Modeled Conditions
The following conditions must be met:

- Module [M-WIWI-101646] *Introduction to Natural Hazards and Risk Analysis 1* has to be started before taking this module.

Qualification Objectives
See German version

Content
See German version

Recommendations
The courses Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66] may be chosen as a minimal combination for the exam. However, it is recommended to choose the comprehensive combination Remote Sensing [GEOD-BFB-1], which includes

Remote Sensing Systems [20241/42], Remote Sensing Methods [20265/66] and the project Angewandte Fernerkundung [20267].

Remarks
Students, who successfully completed both modules Introduction to Natural Hazards and Risk Analysis 1/2 (alternatively: one of the modules in Bachelor and Master) can get a certificate of the module coordinator (CEDIM). This certificate lists the successful completed courses within the two modules.

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

M Module: Introduction to Technical Logistics [M-MACH-101269]

Responsibility: Kai Furmans

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Einführung in die Technische Logistik
Non-Compulsory Block; min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102151	Material Flow in Logistic Systems (S. 464)	6	Kai Furmans
T-MACH-102092	Industrial Application of Material Handling Systems in Sorting and Distribution Systems (S. 420)	4	Jörg Föller
T-MACH-102128	Information Systems and Supply Chain Management (S. 425)	4	Christoph Kilger
T-MACH-102163	Basics of Technical Logistics (S. 330)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-102159	Elements and Systems of Technical Logistics (S. 376)	4	Vladimir Madzharov, Martin Mittwollen
T-MACH-102178	Elements of Technical Logistics and Project (S. 377)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-102160	Selected Applications of Technical Logistics (S. 525)	4	Vladimir Madzharov, Martin Mittwollen
T-MACH-102161	Selected Applications of Technical Logistics and Project (S. 526)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-105149	Industrial Application of Technological Logistics Instancing Crane Systems (S. 421)	4	Markus Golder
T-MACH-105174	Warehousing and Distribution Systems (S. 569)	4	Melanie Schwab, Judith Weiblen
T-MACH-105151	Energy Efficient Intralogistic Systems (S. 381)	4	Meike Braun, Frank Schönung
T-MACH-105165	Automotive Logistics (S. 327)	4	Kai Furmans
T-MACH-105175	Airport Logistics (S. 315)	4	André Richter
T-WIWI-103091	Production and Logistics Controlling (S. 509)	3	Helmut Wlcek

Conditions
One of the core courses *Material Flow in Logistic Systems* [2117051] or *Basics of Technical Logistics* [2117095] or *Elements and systems of Technical Logistics* [2117096] is mandatory. *Elements and systems of Technical Logistics* is only allowed to be examined after *Basics of Technical Logistics* is passed successfully in this or an other module. For simultaneous attending of both courses, examination dates are sequenced accordingly.

Qualification Objectives
The student aquires

- well-founded knowledge and method knowledge in the main topics of technical logistics,
- expertise and understanding about the functionality of conveyor technology,
- ability for modeling logistic systems with adequate accuracy by using simple models,
- ability to evaluate logistic systems and to identify cause-and-effects-chains within logistic systems.

Content
The module *Introduction to Technical Logistics* provides first insights into main topics of technical logistics. Within the lectures, the interaction between several components of material handling systems will be clarified. The focus will be on technical characteristics of material handling technology and basics for sizing of material handling systems. To gain a deeper understanding, the course is accompanied by exercises and further improved by case studies.

M Module: Introduction to Track Guided Transport Systems [M-BGU-102283]

Responsibility: Eberhard Hohnecker

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences

ECTS	Recurrence	Duration	Language
9	Each winter term	2 Semester	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-104580	Introduction to Track Guided Transport Systems (S. 440)	9	Eberhard Hohnecker

Conditions
Successful passing of the engineering modules of the core programm. For exceptions see § 17 Abs. 6 SPO.

M Module: Machine Tools and Industrial Handling [M-MACH-101286]

Responsibility: Jürgen Fleischer

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102158	Machine Tools and Industrial Handling (S. 450)	9	Jürgen Fleischer

Conditions
None

Qualification Objectives
The students

- are capable to explain the use and application of machine tools and handling devices as well as differentiate their characteristics and structure.
- are able to name and describe the essential components (frame, main spindles, feed axis, peripheral equipment, control) of machine tools.
- Are capable to distinguish and select and describe the essential components regarding structure, characteristics advantages and disadvantages.
- are enabled to dimension the main components of machine tools.
- are able to name and describe the control principles of machine tools.
- are capable to name examples of machine tools and industrial handling as well as to deduce compare the essential components. Additionally they can allocate manufacturing processes.
- are enabled to identify drawbacks as well as derive and asses measures for improvements.
- are qualified to apply methods for selection and evaluation of machine tools.
- are experienced to deduce the particular failure characteristics of a ball screw.

Content
The module overviews the assembly, dimensioning and application of machine tools and industrial handling. A consolidated and practice oriented knowledge is imparted about the choice, dimensioning and assessment of production machines. At first, the major components of machine tools are explained systematically. At this, the characteristics of dimensioning of machine tools are described in detail. Finally, the application of machine tools is demonstrated by means of example machines of the manufacturing processes turning, milling, grinding, massive forming, sheet metal forming and toothing.

M Module: Manufacturing Technology [M-MACH-101276]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102105	Manufacturing Technology (S. 461)	9	Frederik Zanger, Volker Schulze

Conditions
None

Qualification Objectives
The students

- can name different manufacturing processes, can describe their specific characteristics and are capable to depict the general function of manufacturing processes and are able to assign manufacturing processes to the specific main groups.
- are enabled to identify correlations between different processes and to select a process depending on possible applications.
- are capable to describe the theoretical basics for the manufacturing processes they got to know within the scope of the course and are able to compare the processes.
- are able to correlate based on their knowledge in materials science the processing parameters with the resulting material properties by taking into account the microstructural effects.
- are qualified to evaluate different processes on a material scientific basis.

Content
Within this engineering sciences-oriented module the students will get to learn principle aspects of manufacturing technology. Further information can be found at the description of the lecture "Manufacturing Technology".

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

M Module: Microsystem Technology [M-MACH-101287]

Responsibility: Volker Saile

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-105182	Introduction to Microsystem Technology I (S. 436)	3	Jan Gerrit Korvink, Andreas Guber

Wahlplfichtangebot
Non-Compulsory Block; min. 5 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-105183	Introduction to Microsystem Technology II (S. 437)	3	Andreas Guber
T-MACH-102164	Practical Training in Basics of Microsystem Technology (S. 497)	3	Arndt Last
T-MACH-100530	Physics for Engineers (S. 491)	6	Alexander Nesterov-Müller, Peter Gumbsch
T-MACH-102165	Selected Topics on Optics and Microoptics for Mechanical Engineers (S. 527)	3	Timo Mappes
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II (S. 332)	3	Andreas Guber
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III (S. 333)	3	Andreas Guber
T-MACH-101910	Microactuators (S. 473)	3	Manfred Kohl
T-MACH-102152	Novel Actuators and Sensors (S. 483)	4	Manfred Kohl, Martin Sommer
T-MACH-102080	Nanotechnology with Clusterbeams (S. 478)	3	Jürgen Gspann
T-MACH-102172	Bionics for Engineers and Natural Scientists (S. 334)	3	Hendrik Hölscher
T-ETIT-101907	Optoelectronic Components (S. 485)	4	Wolfgang Freude

Conditions
None

Qualification Objectives

- construction and production of e. g. mechanical, optical, fluidic and sensory microsystems.

Content
The module offers courses in microsystem technology. Knowledge is imparted in various fields like basics in construction and production of e. g. mechanical, optical, fluidic and sensory microsystems.

Remarks
If you have any questions concerning the module, please contact Prof. Dr. Andreas E. Guber.

M Module: Mobility and Infrastructure [M-BGU-101067]

Responsibility: Ralf Roos

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-101791	Mobility and Infrastructure (S. 474)	9	Ralf Roos

Conditions
none

Qualification Objectives
Learning the fundamental terminology and methodology of spatial and transportation planning, traffic engineering as well as highway engineering

Content
Basic tasks and contents of different planning levels, for example: Land use and conflicts, provision of services and infrastructure as well as their costs, planning on local, regional, national and European level.

Fundamentals of transportation planning (convention for analyses, surveys of travel behaviour), fundamentals of traffic engineering

Design Basics in Highway Engineering: Road network layout, driving dynamics, principles of highway design; earthworks, pavements and their dimensioning

M Module: Power Network [M-ETIT-102379]

Responsibility: Thomas Leibfried, Bernd Hoferer

Organisation: KIT-Fakultät für Elektrotechnik und Informationstechnik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Language
9	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-101923	Electric Energy Systems (S. 375)	5	Thomas Leibfried
T-ETIT-100830	Power Network (S. 495)	6	Thomas Leibfried

M Module: Product Lifecycle Management [M-MACH-101270]

Responsibility: Jivka Ovtcharova

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-105147	Product Lifecycle Management (S. 507)	6	Jivka Ovtcharova

Product Lifecycle Management
Non-Compulsory Block; min. 3 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102125	Computer Integrated Planning of New Products (S. 351)	4	Roland Kläger
T-MACH-102153	PLM-CAD Workshop (S. 493)	4	Jivka Ovtcharova
T-MACH-102181	PLM for Product Development in Mechatronics (S. 492)	4	Martin Eigner
T-MACH-102209	Information Engineering (S. 423)	3	Jivka Ovtcharova
T-MACH-105937	Information management in production (S. 424)	4	Oliver Riedel

Conditions
None

Qualification Objectives
The students should:

- have basic knowledge about the challenges in product and process data management regarding the whole product lifecycle;
- have understanding about challenges and functional concepts of product lifecycle management;
- be able to operate common PLM systems.

Content
This module describes management and organizational approaches of Product Lifecycle Management, their application in IT and the potential benefits of PLM system solutions. Optional courses of this module introduce current product development processes in the scope of enterprise PLM system solutions.

M Module: Specialization in Production Engineering [M-MACH-101284]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration
9	Each term	2 semester

Vertiefung der Produktionstechnik
Non-Compulsory Block; min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102107	Quality Management (S. 519)	4	Gisela Lanza
T-MACH-105166	Materials and Processes for Body Leightweight Construction in the Automotive Industry (S. 465)	4	Stefan Kienzle, Dieter Steegmüller
T-MACH-105177	Metal Forming (S. 471)	4	Florian Herlan
T-MACH-105185	Control Technology (S. 353)	4	Christoph Gönnheimer
T-MACH-102148	Gear Cutting Technology (S. 410)	4	Markus Klaiber
T-MACH-102189	Production Technology and Management in Automotive Industry (S. 511)	4	Volker Michael Stauch
T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars (S. 427)	4	Karl-Hubert Schlichtenmayer

Qualification Objectives
Der/ die Studierende

- besitzt grundlegende Kenntnisse über die industrielle Anwendung der Informationstechnologie im Gebiet der Produktentstehung,
- versteht die gegenwärtige und zukünftige Nutzung von Informationssystemen im Produktentstehungsprozess im Kontext des Product Lifecycle Managements und des Virtual Engineering,
- ist in der Lage, gängige Cax-und PLM-Systeme im Produktentstehungsprozess einzusetzen.

Content
Dieses Modul vermittelt eine integrative lebenszyklusorientierte Betrachtung von Produkten und Prozessen. Beschrieben werden die globale Verteilung von Entwicklung, Fertigung und Vertrieb, sowie die Erschließung der Potenziale des Einsatzes neuer immersiver, interaktiver und intelligenter Technologien (Virtual Reality, Augmented Reality, Mixed Reality, Virtual Mock-Up) für funktionsbezogene Validierungstätigkeiten im Kontext des gesamten Produktes.

Remarks
Das Modul kann nicht mehr neu belegt werden. Studierende, die das Modul bereits begonnen haben, können dies noch unter den alten Bedingungen bis zum WS2011/12 abschließen oder sich auf schriftlichen Antrag beim Studienbüro auf eines der Nachfolgemodule *Virtual Engineering A* [WW4INGMB29] und *Virtual Engineering B* [WW4INGMB30] umbuchen lassen.

12.2.6 Statistics

M Module: Statistics and Econometrics [M-WIWI-101608]

Responsibility: Melanie Schienle, Oliver Grothe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Statistics
Compulsory Elective Modules/Elective Module 2/Statistics

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-103064	Financial Econometrics (S. 397)	4,5	Melanie Schienle
T-WIWI-103063	Analysis of multivariate Data (S. 319)	4,5	Oliver Grothe
T-WIWI-103065	Statistical Modeling of generalized regression models (S. 559)	4,5	Wolf-Dieter Heller
T-WIWI-103066	Data Mining and Applications (S. 357)	4,5	Rheza Nakhaeizadeh

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101432] *Introduction to Statistics* is required before taking this module.

Qualification Objectives
The student

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

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

Recommendations
None

Remarks
New module starting winter term 2015/2016. It replaces the old module "Statistical Applications of Financial Risk Management" [WW3STAT].

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

12.3 Elective Module 2

12.3.1 Economics

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

Responsibility: Johannes Philipp Reiß

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Language	Level
9	Each term	1 Semester	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 433)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger
T-WIWI-102876	Auction & Mechanism Design (S. 325)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 367)	4,5	Nora Szech
T-WIWI-102792	Decision Theory (S. 361)	4,5	Karl-Martin Ehrhart
T-WIWI-102736	Economics III: Introduction in Econometrics (S. 371)	5	Melanie Schienle

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Qualification Objectives
Students

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

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

Recommendations
Completion of the module Economics is assumed.

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

M Module: Econometrics and Economics [M-WIWI-101420]

Responsibility: Wolf-Dieter Heller

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Level
9	Once	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-103063	Analysis of multivariate Data (S. 319)	4,5	Oliver Grothe
T-WIWI-102792	Decision Theory (S. 361)	4,5	Karl-Martin Ehrhart
T-WIWI-103065	Statistical Modeling of generalized regression models (S. 559)	4,5	Wolf-Dieter Heller
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß

Learning Control / Examinations
See German version.

Conditions
Successful passing of the corresponding modules of the basic program.
For further information see German version.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
See German version.

Recommendations
None

Remarks
T-WIWI-102844 "Industrial Organization" replaces T-WIWI-102824 "Theory of Business Cycles" starting summer term 2016.

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

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

Responsibility: Ingrid Ott

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-103213	Basic Principles of Economic Policy (S. 329)	4,5	Ingrid Ott
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
Students shall be given the ability to

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

Content

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

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

Remarks
The course "Basic Principles of Economic Policy" [2560280] is not offered in summer term 2015.

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

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

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

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

Responsibility: Clemens Puppe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 433)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102610	Welfare Economics (S. 572)	4,5	Clemens Puppe
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß
T-WIWI-102609	Advanced Topics in Economic Theory (S. 314)	4,5	Kay Mitusch, Marten Hillebrand
T-WIWI-102876	Auction & Mechanism Design (S. 325)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 367)	4,5	Nora Szech

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.
2. Es müssen die folgenden Bestandteile erfüllt werden:

Qualification Objectives
See German version.

Recommendations
None

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

Responsibility: Berthold Wigger

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102836	Monetary and Financial Policy (S. 476)	4,5	Joachim Nagel, Berthold Wigger
T-WIWI-102877	Monetary and Financial Policy (S. 477)	4,5	Berthold Wigger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
See German version.

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

Recommendations
It is recommended to attend the course*Spezielle Steuerlehre*[2560129] after having completed the course*Öffentliche Einnahmen*[2560120].

Remarks
See German version.

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

12.3.2 Business Administration

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

Responsibility: Andreas Geyer-Schulz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 2, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 321)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 484)	4,5	Andreas Geyer-Schulz
T-WIWI-102595	Customer Relationship Management (S. 356)	4,5	Andreas Geyer-Schulz

Learning Control / Examinations
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. Therby every leture is examined by a written exam (according to Section 4(2), 1 of the examination regulation) and by succcessful completion of exercises (according to Section 4 (2), 3 of the examination regulation).
The grades of the individual lectures consists of the grade of the written exam (approximately 90 percent resp. 100 of 112 points) and of the exercise performance (approximately 10 percent resp. 12 of 112 points). In the case of passing the written exam (50 points) the points of the exercise performance will be added to the points of the written exam. 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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
In the module *CRM and Service Management* we teach the principles of modern customer-oriented management and its support by system architectures and CRM software packages. Choosing customer relationship management as a company's strategy requires service management and a strict implmentation of service management in all parts of the company.
For operative CRM we present the design of customer-oriented, IT-supported business processes based on business process modelling and we explain these processes in concrete application scenarios (e.g. marketing campaign management, call center management, sales force management, field services, ...).
Analytic CRM is dedicated to improve the use of knowledge about customers in the broadest sense for decision-making (e.g. product-mix decisions, bonus programs based on customer loyality, ...) and for the improvement of services. A requirement for this is the tight integration of operative systems with a data warehouse, the development of customer-oriented and flexible reporting systems, and – last but not least – the application of statistical methods (clustering, regression, stochastic models, ...).

Remarks
The lecture *Customer Relationship Management* [2540508] is given in English.
The courses *Analytical CRM* and *Operative CRM* will take place in an alternating way from winter term 14/15. Analytical CRM is offered for a last time in the summer term 14. Details on the cycle and on the exams can be found on http://www.em.uni-karlsruhe.de/studies/.

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

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

Responsibility: Christof Weinhardt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger
T-WIWI-102598	Management of Business Networks (S. 455)	4,5	Christof Weinhardt
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102706	Special Topics in Information Engineering & Management (S. 552)	4,5	Christof Weinhardt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
This module gives an overview of the mutual dependencies of strategic management and information systems. The central role of information is exemplified by the structuring concept of the *information life cycle*. The single phases of this life cycle from generation over allocation until dissemination and use of the information are analyzed from a business and microeconomic perspective, applying classical and new theories. The state of the art of economic theory on aspects of the information life cycle are presented. The lecture is complemented by exercise courses.
The courses "Management of Business Networks", "eFinance: Information engineering and management in finance" and ""eServices" constitute three different application domains in which the basic principles of the Internet Economy are deepened. In the course

"Management of Business Networks" the focus is set on the strategic aspects of management and information systems. It is held in English and teaches parts of the syllabus with the support of a case study elaborated with Lecturers from Concordia University, Montreal, or if applicable, Rotterdam School of Management. Thus the matter of strategic enterprise networks, a.k.a. smart business networks is also analysed by employing an international perspective.
The course "eFinance: information engineering and management for securities tradingprovides theoretically profound and also practical-oriented background about the functioning of international financial markets. The focus is placed on the economic and technical design of markets as information processing systems.
In "eServices" the increasing impact of electronic services compared to the traditional services is outlined. The Information- und Communication Technologies enable the provision of services, which are mainly characterized by interactivity and individuality. This course provides basic knowledge about the development and management of ICT-based servies.
The theortic fundamentals of Information Engineering and Management can be enriched by a practical experience in Special Topics in Information Engineering and Management. Any practical Seminar at the IM can be chosen for the course Special Topics in Information Engineering and Management.

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

M Module: eFinance [M-WIWI-101402]

Responsibility: Christof Weinhardt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course *eFinance: Information Engineering and Management for Securities Trading* [2540454] is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
The module "eFinance: Information engineering and management in finance" addresses current problems in the finance sector. It is investigated the role of information and knowledge in the finance sector and how information systems can solve or extenuate them.

Speakers from practice will contribute to lectures with their broad knowledge. Core courses of the module deal with the background of banks and insurance companies and the electronic commerce of stocks in global finance markets. In addtion the course Derivatives offers an insight into future and forward contracts as well as the assesment of options. Exchanges and International Finance are also alternatives which provide a suplementary understanding for capital markets.
Information management topics are in the focus of the lecture "eFinance: information engineering and management for securities trading". For the functioning of the international finance markets, it is necessary that there is an efficient information flow. Also, the regulatory frameworks play an important role. In this context, the role and the functioning of (electronic) stock markets, online brokers and other finance intermediaries and their platforms are presented. Not only IT concepts of German finance intermediaries are presented, but also international system approaches will be compared. The lecture is supplemented by speakers from the practice (and excursions, if possible) coming from the Deutsche Börse and the Stuttgart Stock Exchange.

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

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

Responsibility: Wolf Fichtner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration
9	Each term	1 semester

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102746	Introduction to Energy Economics (S. 432)	5,5	Wolf Fichtner

Ergänzungsangebot
Non-Compulsory Block; min. 3,5, max. 3,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics (S. 523)	3,5	Russell McKenna
T-WIWI-102607	Energy Policy (S. 382)	3,5	Martin Wietschel

Learning Control / Examinations
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) about the lecture*Introduction into Energy Economics*[2581010] and one optional lecture of the module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
The lecture *Introduction into Energy Economics* [2581010] has to be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Introduction to Energy Economics: Characterisation (reserves, suppliers, cost, technologies) of different energy carriers (coal, gas, oil, electricity, heat etc.)
Renewable Energy - Resources, Technology and Economics: Characterisation of different renewable energy carriers (wind, solar, hydro, geothermal etc.)

Corporate Governance in Energy Economics: Challenges of the management of a large company in energy economics (superior leadership role, structures, processes and projects from a leadership perspective etc.)
Energy Policy: Management of energy flows, energy-political targets and instruments (emission trading etc.)

Recommendations
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.

Remarks
Upon request, the authorisation for taking the examinations for modules of specialisation can be granted by the examination committee even if the mentioned conditions are not fulfilled. The approving statement of the coordinator of the module of specialisation claimed on the application form is not required for the module Energy Economics [TVWLIIP2]. The application form has to be submitted to the examination committee of the faculty along with a current transcript of records (e.g. via letterbox).
Upon request at the institute, additional recognition of studies (e.g. from other universities) is possible in the module.

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

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102604	Investments (S. 441)	4,5	Marliese Uhrig-Homburg
T-WIWI-102605	Financial Management (S. 399)	4,5	Martin Ruckes

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

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

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

Responsibility: Martin Klarmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102805	Managing the Marketing Mix (S. 460)	4,5	Martin Klarmann

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102798	Brand Management (S. 335)	4,5	Bruno Neibecker
T-WIWI-102806	Services Marketing and B2B Marketing (S. 542)	3	Martin Klarmann, Ju-Young Kim
T-WIWI-102807	International Marketing (S. 429)	1,5	Martin Klarmann

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course *Marketing Mix* is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
Ziel dieses Moduls ist es, Studierende auf eine Tätigkeit in Marketing oder Vertrieb vorzubereiten. Gerade in technisch orientierten Unternehmen werden hierfür gerne Mitarbeiter eingesetzt, die als Wirtschaftsingenieure oder Informationswirte auch selbst einen gewissen technischen Hintergrund haben.
Studierende

- kennen die wichtigsten Konzepte, Verfahren und Theorien der vier Instrumente des Marketing Mix (Produktmanagement,Preismanagement, Kommunikationsmanagement und Vertriebsmanagement)
- verfügen über das Wissen, Entscheidungen bezüglich der gegenwärtigen und zukünftigen Produkte (Produktinnovationen) zu treffen (z.B. mittels Conjoint-Analyse)
- wissen, wie Kunden Marken wahrnehmen und wie diese Wahrnehmung durch das Unternehmen beeinflusst werden kann

- verstehen, wie Kunden auf Preise reagieren (z.B. mittels Preis-Absatz-Funktionen)
- können Preise auf Basis konzeptioneller und quantitativer Überlegungen bestimmen
- kennen die Grundlagen der Preisdifferenzierung
- sind mit verschiedenen Instrumenten der Kommunikation vertraut (z.B. TV-Werbung) und können diese treffsicher gestalten
- treffen Kommunikationsentscheidungen systematisch (z.B. mittels Mediaplanung)
- können den Markt segmentieren und das Produkt positionieren
- wissen, wie die Wichtigkeit und Zufriedenheit von Kunden beurteilt werden können
- können die Beziehung zu Kunden und Vertriebspartnern gestalten
- wissen um Besonderheiten des Marketing im Dienstleistungs- und B2B-Bereich
- kennen die Besonderheiten des Marketing im internationalen Kontext

Content
The core course of the module is "Marketing Mix". This course is compulsory and must be examined. "Marketing Mix" contains instruments and methods that enable you to goal-oriented decisions in the operative marketing management (product management, pricing, promotion and sales management).
To deepen the marketing knowledge students can complete the module in two ways:

- by choosing the course "Brand Management".
- by choosing the combination of the courses "Services- and B2B-Marketing" and "International Marketing".

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

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

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

Responsibility: Christof Weinhardt, Gerhard Satzger

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger
T-WIWI-105775	Foundations of Digital Services B (S. 402)	4,5	Stefan Nickel, Stefan Morana, Alexander Mädche
T-WIWI-105711	Practical Seminar Digital Services (S. 496)	4,5	Christof Weinhardt, Rudi Studer, Stefan Nickel, Wolf Fichtner, Alexander Mädche, York Sure-Vetter, Gerhard Satzger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
Students

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

Content
Global economy is increasingly determined by services: in industrialized countries nearly 70% of gross value added is achieved in the tertiary sector. Unfortunately, for the design, development and the management of services traditional concepts focused on goods

are often insufficient or inappropriate. Besides, the rapid technical advance in the information and communication technology sector pushesthe economic importance of digital services even further thus changing the competition environment. ICT-based interaction and individualization open up completely new dimensions of shared value between clients and providers, dynamic and scalable "service value networks" replace established value chains, digital services are provided globally crossing geographical boundaries. This module establishes a basis for further specialization in service innovation, service economics, service design, service modelling, service analytics as well as the transformation and coordination of service networks.

Recommendations
None

Remarks
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.
The course Foundations of Digital Services B [new] is first offered in WS 2016/17.

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

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

Responsibility: Petra Nieken

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 Semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102909	Human Resource Management (S. 416)	4,5	Petra Nieken

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 5,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102908	Personnel Policies and Labor Market Institutions (S. 489)	4,5	Petra Nieken
T-WIWI-102630	Managing Organizations (S. 459)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 504)	2	Hagen Lindstädt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course Personalmanagement (Human Resource Management) is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Students acquire basic knowledge in the field of human resource and organizational management. Strategic as well as operative

aspects of human resource management practices are analyzed. The module offers an up-to-date overview over basic concepts and models. It also shows the strengths and weaknesses of rational concepts in human resources and organizational management.
The students learn to apply methods and instruments to plan, select, and manage staff. Current issues of organizational management or selected aspects of personnel politics are examined and evaluated.
The focus lies on the strategic analysis of decisions and the use microeconomic or behavioral approaches. Empirical results of field or lab studies are discussed critically.

Recommendations
Completion of module Business Administration is recommended.
Basic knowledge of microeconomics, game theory and statistics is recommended.

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

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

Responsibility: Frank Schultmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102606	Fundamentals of Production Management (S. 408)	5,5	Frank Schultmann

Ergänzungsangebot
Non-Compulsory Block; min. 3,5, max. 3,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102820	Production Economics and Sustainability (S. 510)	3,5	Magnus Fröhling
T-WIWI-102870	Logistics and Supply Chain Management (S. 449)	3,5	Marcus Wiens

Learning Control / Examinations
The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course "Fundamentals of Production Management" [2581950] and one further single course of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
The course "Fundamentals of Production Management" [2581950] and one additional activity have to be chosen.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives

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

Content
This module is designed to introduce students into the wide area of industrial production and logistics management. It focuses on strategic production management under the aspect of sustainability. The courses use interdisciplinary approaches of systems, also

theory to describe the central tasks of industrial production management and logistics. Herein, attention is drawn upon strategic corporate planning, research and development as well as site selection. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

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

M Module: Machine Learning for Finance and Data Science [M-WIWI-102753]

Responsibility: Maxim Ulrich

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Englisch	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-105712	Probabilistic Machine Learning for Finance and Data Science (S. 503)	4,5	Maxim Ulrich
T-WIWI-105714	Solving Finance Problems using Machine Learning (S. 550)	4,5	Maxim Ulrich

Learning Control / Examinations
The assessment is carried out as a module wide exam which itself consists of several partial exams (according to Section 4 (2), 1-3 SPO). A written exam at the end of the semester (120 min) (§4(2), 1 SPO) accounts for 50% of the module-wide grade. Students who have failed the first exam are allowed to retake the exam (during the 4th lecture free week in the same summer term).
Another 25% of the module grade is accounted for by the submission of weekly programming problem sets (during the first half of the semester). The presentation and submission of a machine learning programming project (during the 2nd half of the semester) accounts for the final 25% of the module-wide grade. Interested students can in addition earn a "Seminarschein".

Conditions
A formal prerequisite for taking this module is that students successfully complete all partial exams of the module wide exam within the same semester (only).
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
We put students into the shoes of a chief risk manager of a global quant asset management firm. Students first learn the most essential finance concepts such as Markowitz approach to portfolio management, the Capital Asset Pricing Model to determine cost of capital (and expected asset returns) of investments, linear factor models to predict expected returns and systematic and unsystematic risk of investments. After completion of this first couple of learning points, students learn modern machine learning tools to accomplish superior predictions for future returns and risks of different asset classes (such as equity, fixed-income, derivatives).
Upon completion of the module, students will have a conceptual, analytical and practical working knowledge of the following concepts and implemented these using Python:

1. Financial Concepts

A.1 Portfolio Management
- Markowitz
- Black-Litterman
A.2 Predicting an asset's expected return
- CAPM, Fama-French, linear factor models
- Fama-MacBeth
- ARMA modeling

- State Space modeling
A.3 Predicting an asset's future risk
- ARCH/GARCH
- State Space modeling

1. Machine Learning concepts

B.1 'Supervised learning' within linear and nonlinear models (e.g. least squares, maximum likelihood, Kalman Filter, MCMC)
B.2 'Unsupervised learning' (e.g. PCA, SVD)

Content
This module provides a hands-on introduction to the use of machine learning for modeling financial markets. We will cover methods on how to predict asset returns, how to estimate the risk density of returns and respective risk premiums and how to build optimal portfolios. We will make use of modern statistical machine learning algorithms and test them rigorously with risk and asset management applications. The intuitive, yet analytical combination of machine learning on the one hand and financial applications on the other hand are a key feature of this module. The revealed knowledge will be useful for quantitative industry internships and jobs as well as for quantitative and/or data driven lectures, seminars and bachelor thesis at the FBV or other KIT institutes. In addition to studying the machine learning concepts, students receive numerous opportunities use modern machine learning software in order to solve current financial problems.

Recommendations
This module is self-contained. It is recommended that students have already heard other finance courses, although this is not a formal prerequisite. Students are assumed to have earned at least good grades during the KIT Bachelor's math, stats, OR and IT courses.

Remarks
The courses of the module are held in English.

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

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

Responsibility: Marcus Wouters

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102800	Management Accounting 1 (S. 452)	4,5	Marcus Wouters
T-WIWI-102801	Management Accounting 2 (S. 453)	4,5	Marcus Wouters

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
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.

Remarks
Students who like this module are probably also interested in the courses

- 2530216 Financial Management
- 2530210 Management Accounting

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

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

Responsibility: Thomas Lützkendorf

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102744	Real Estate Management I (S. 520)	4,5	Thomas Lützkendorf
T-WIWI-102745	Real Estate Management II (S. 521)	4,5	Thomas Lützkendorf

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

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

Recommendations
The combination with the module*Design Constructions and Assessment of Green Buildings* is recommended.
Furthermore a combination with courses in the area of

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

is recommended.

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

M Module: Risk and Insurance Management [M-WIWI-101436]

Responsibility: Ute Werner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102603	Principles of Insurance Management (S. 502)	4,5	Ute Werner
T-WIWI-102608	Enterprise Risk Management (S. 385)	4,5	Ute Werner

Learning Control / Examinations
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 lectures are examined by oral presentations and related term papers in the context of the lectures. Furthermore, there is a final oral examination.

The grade of each examination consists of the oral presentation and the term paper (50 percent) and the oral examination (50 percent). 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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
See German version.

Content
See German version.

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

Responsibility: Andreas Geyer-Schulz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 321)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 484)	4,5	Andreas Geyer-Schulz

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the single courses of this module, 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.

Conditions
Successful passing of the corresponding modules of the basic program.

- It is only possible to choose this module in combination with the module *CRM and Servicemanagement*. The module is passed only after the final partial exam of *CRM and Servicemanagement* is additionally passed.
- At least, one of the courses *Analytic CRM* [2540522] and *Operative CRM* [2540520] has to be taken.

Modeled Conditions
The following conditions must be met:

1. Module [M-WIWI-101460] *CRM and Service Management* has to be started before taking this module.
2. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
3. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

- knows the scientific methods (from business administration, statistics, informatics) which are most relevant for analytic CRM and he autonomously applies these methods to standard cases,
- gains an overview of the market for CRM software,

- designs, implements, and analyzes operative CRM processes in concrete application domains (e.g. campaign management, call center management, ...),
- is aware of the problems of protecting the privacy of customers and the implications of privacy law.

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

- Strategic marketing processes
- Operative marketing processes (campaign managament, permission marketing, ...)
- Customer service processes (sales force management, field services, call center management, ...)

Remarks
The courses *Analytical CRM* and *Operative CRM* will take place in an alternating way from winter term 14/15. Analytical CRM is offered for a last time in the summer term 14. Details on

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

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

Responsibility: Hagen Lindstädt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102629	Management and Strategy (S. 454)	3,5	Hagen Lindstädt
T-WIWI-102630	Managing Organizations (S. 459)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 504)	2	Hagen Lindstädt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
See German version.

Content
Das Modul ist praxisnah und handlungsorientiert aufgebaut und vermittelt dem Studierenden einen aktuellen Überblick grundlegender Konzepte und Modelle des strategischen Managements und ein realistisches Bild von Möglichkeiten und Grenzen rationaler Gestaltungsansätze der Organisation.
Im Mittelpunkt stehen erstens interne und externe strategische Analyse, Konzept und Quellen von Wettbewerbsvorteilen, Formulierung von Wettbewerbs- und von Unternehmensstrategien sowie Strategiebewertung und -implementierung. Zweitens werden Stärken und Schwächen organisationaler Strukturen und Regelungen anhand systematischer Kriterien beurteilt. Dabei werden Konzepte für die Gestaltung organisationaler Strukturen, die Regulierung organisationaler Prozesse und die Steuerung organisationaler Veränderungen vorgestellt.

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

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

Responsibility: Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102598	Management of Business Networks (S. 455)	4,5	Christof Weinhardt
T-WIWI-102760	Management of Business Networks (Introduction) (S. 456)	3	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; max. 4 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel
T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems (S. 447)	6	Kai Furmans

Learning Control / Examinations
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.

Conditions
At least one of the courses Management of Business Networks [2590452] *and* Management of Business Networks (Introduction) [2540496] *has to be taken.*
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
The module "Supply Chain Management" gives an overview of the mutual dependencies of information systems and of supply chains spanning several enterprises. The specifics of supply chains and their information needs set new requirements for the operational information management. In the core lecture "Management of Business Networks" the focus is set on the strategic aspects of management and information systems. The course is held in English and teaches parts of the syllabus with the support of a case study elaborated with Prof Kersten from Concordia University, Montreal, Canada. The course MBN introduction is consisting out of the first part of the regular MBN lecture, but as it has less credits will not include the analysis of the case study.
The module is completed by an elective course addressing appropriate optimization methods for the Supply Chain Management and for modern logistic approaches.

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

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 398)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 341)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 324)	3	Andreas Sauer

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.
In addition to that it is possible to choose the module *Topics in Finance II*.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.
3. Module [M-WIWI-101435] *Essentials of Finance* has to be started before taking this module.

Qualification Objectives
The student

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

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

Recommendations
None

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 398)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 341)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 324)	3	Andreas Sauer

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.
In addition to that it is possible to choose the module *Topics in Finance I*.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.
3. Module [M-WIWI-101435] *Essentials of Finance* has to be started before taking this module.

Qualification Objectives
The student

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

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

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

12.3.3 Informatics

M Module: Electives in Informatic [M-WIWI-101426]

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Informatics
Compulsory Elective Modules/Elective Module 2/Informatics

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlplfichtangebot
Non-Compulsory Block; min. 9, max. 10 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 323)	5	Johann Marius Zöllner
T-WIWI-102652	Applied Informatics I - Modelling (S. 322)	5	Andreas Oberweis, York Sure-Vetter
T-WIWI-102910	Special Topics of Applied Informatics (S. 553)	5	Rudi Studer, Hartmut Schmeck, Andreas Oberweis
T-WIWI-102655	Efficient Algorithms (S. 372)	5	Hartmut Schmeck
T-WIWI-102658	Algorithms for Internet Applications (S. 316)	5	Hartmut Schmeck
T-WIWI-102660	Database Systems (S. 359)	5	Andreas Oberweis
T-WIWI-100809	Software Engineering (S. 547)	4	Andreas Oberweis
T-WIWI-102664	Knowledge Management (S. 443)	4	Rudi Studer
T-WIWI-104679	Foundations of mobile Business (S. 405)	5	Andreas Oberweis, Gunther Schiefer

Learning Control / Examinations
The assessment is carried out as two 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.
Please note the following information about the module component exams of Prof. Dr. H. Schmeck:
Algorithms for Internet Applications [T-WIWI-102658]: The examination will be offered latest until summer term 2017 (repeaters only).
Efficient Algorithms [T-WIWI-102655]: The examination will be offered latest until winter term 2016/2017 (repeaters only).

Conditions
See German version

Qualification Objectives
The student

- knows and has mastered methods and systems for core topics and core application areas of computer science,
- can choose these methods and system situation adequately and can furthermore design and employ them for problem solving,
- is able to independently find strategic and creative answers in the finding of solutions to well defined, concrete, and abstract problems.

Content
The elective module conveys advanced knowledge in the area of applied computer science. This includes, for example, the efficient design and optimization of technical systems, the design and management of database applications or the systematic development of large software systems. Moreover, modeling of complex systems, the use of computer science methods to support knowledge management, and the design and implementation of service-oriented architectures are discussed in this module.

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

M Module: Emphasis Informatics [M-WIWI-101399]

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Informatics
Compulsory Elective Modules/Elective Module 2/Informatics

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 5, max. 5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102747	Advanced Programming - Java Network Programming (S. 313)	5	Dietmar Ratz
T-WIWI-102748	Advanced Programming - Application of Business Software (S. 311)	5	Stefan Klink, Andreas Oberweis

Ergänzungsangebot
Non-Compulsory Block; min. 4, max. 5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 323)	5	Johann Marius Zöllner
T-WIWI-102652	Applied Informatics I - Modelling (S. 322)	5	Andreas Oberweis, York Sure-Vetter
T-WIWI-102910	Special Topics of Applied Informatics (S. 553)	5	Rudi Studer, Hartmut Schmeck, Andreas Oberweis
T-WIWI-102658	Algorithms for Internet Applications (S. 316)	5	Hartmut Schmeck
T-WIWI-102664	Knowledge Management (S. 443)	4	Rudi Studer
T-WIWI-100809	Software Engineering (S. 547)	4	Andreas Oberweis
T-WIWI-102655	Efficient Algorithms (S. 372)	5	Hartmut Schmeck
T-WIWI-102660	Database Systems (S. 359)	5	Andreas Oberweis
T-WIWI-104679	Foundations of mobile Business (S. 405)	5	Andreas Oberweis, Gunther Schiefer

Learning Control / Examinations
The assessment is carried out as two partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module. For passing the module exam in every singled partial exam the respective minimum requirements has to be achieved.

- Partial exam I: *Advanced Programming - Java Network Programming* or alternativly *Advanced Programming - Application of Business Software*
- Partial exam II: all the rest

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.
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.
Please note the following information about the module component exams of Prof. Dr. H. Schmeck:
Algorithms for Internet Applications [T-WIWI-102658]: The examination will be offered latest until summer term 2017 (repeaters only).
Effiziente Algorithmen [T-WIWI-102655]: The examination will be offered latest until winter term 2016/2017 (repeaters only).

Conditions
See German version.

Qualification Objectives
The student

- has the capability of dealing with the practical application of the Java programming language (which is the dominating programming language in many application areas) or alternatively the ability to configure, parameterize and deploy enterprise software to enable, support and automate business processes,
- is familiar with methods and systems of a core topic or core application area of computer science,
- can choose these methods and system situation adequately and can furthermore design and employ them for problem solving,
- is able to independently find strategic and creative answers in the finding of solutions to well defined, concrete, and abstract problems.

Content
In this module, object-oriented programming skills using the Java programming language are further deepened. Alternatively important fundamentals of business information systems are conveyed that enable, support and accelerate new forms of business processes and organizational forms. Based on a core application area, basic methods and techniques of computer science are presented.

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

12.3.4 Operations Research

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

Responsibility: Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Operations Research
Compulsory Elective Modules/Elective Module 2/Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 4 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102717	Software Laboratory: OR Models I (S. 548)	4,5	Stefan Nickel
T-WIWI-102726	Global Optimization I (S. 413)	4,5	Oliver Stein
T-WIWI-102627	Simulation I (S. 543)	4,5	Karl-Heinz Waldmann

Learning Control / Examinations
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.

Conditions
At least one of the courses *Facility Location and strategic Supply Chain Management* [2550486] and *Tactical and operational Supply Chain Management* [2550488] has to be taken.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student

- is familiar with basic concepts and terms of Supply Chain Management,
- knows the different areas of Supply Chain Management and their respective optimization problems,
- is acquainted with classical location problem models (in the plane, on networks and discrete) as well as fundamental methods for distribution and transport planning, inventory planning and management,

- is able to model practical problems mathematically and estimate their complexity as well as choose and adapt appropriate solution methods.

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

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

M Module: Methodical Foundations of OR [M-WIWI-101414]

Responsibility: Oliver Stein

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Operations Research
Compulsory Elective Modules/Elective Module 2/Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 3 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102726	Global Optimization I (S. 413)	4,5	Oliver Stein
T-WIWI-103062	Prerequisite for Nonlinear Optimization I (Bachelor) (S. 499)		
T-WIWI-102724	Nonlinear Optimization I (S. 480)	4,5	Oliver Stein

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102727	Global Optimization II (S. 415)	4,5	Oliver Stein
T-WIWI-103638	Global Optimization I and II (S. 414)	9	
T-WIWI-103060	Prerequisite for Nonlinear Optimization II (Bachelor) (S. 500)		Oliver Stein
T-WIWI-102725	Nonlinear Optimization II (S. 482)	4,5	Oliver Stein
T-WIWI-103637	Nonlinear Optimization I und II (S. 481)	9	
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-102710	Markov Decision Models I (S. 462)	5	Karl-Heinz Waldmann

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

Conditions
At least one of the lectures *Nonlinear Optimization I* [2550111] and *Global Optimization I* [2550134] has to be examined.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student

- names and describes basic notions for optimization methods, in particular from nonlinear and from global optimization,
- knows the indispensable methods and models for quantitative analysis,

- models and classifies optimization problems and chooses the appropriate solution methods to solve also challenging optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions.

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

Remarks
The planned lectures and courses for the next three years are announced online (http://www.ior.kit.edu).
For the lectures of Prof. Stein a grade of 30 % of the exercise course has to be fulfilled. The description of the particular lectures is more detailed.

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

M Module: Stochastic Methods and Simulation [M-WIWI-101400]

Responsibility: Karl-Heinz Waldmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Operations Research
Compulsory Elective Modules/Elective Module 2/Operations Research

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102710	Markov Decision Models I (S. 462)	5	Karl-Heinz Waldmann
T-WIWI-102627	Simulation I (S. 543)	4,5	Karl-Heinz Waldmann

Ergänzungsangebot
Non-Compulsory Block; max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102711	Markov Decision Models II (S. 463)	4,5	Karl-Heinz Waldmann
T-WIWI-102703	Simulation II (S. 544)	4,5	Karl-Heinz Waldmann
T-WIWI-103062	Prerequisite for Nonlinear Optimization I (Bachelor) (S. 499)		
T-WIWI-102724	Nonlinear Optimization I (S. 480)	4,5	Oliver Stein
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel

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

Conditions
At least one of the courses Markov Decision Models [2550679] or Simulation I [2550662] has to be attended.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student posses profound knowledge in modelling, analyzing and optimizing stochastic systems in economy and engineering.

Content
Markov Decision Models I: Markov Chains, Poisson Processes
Markov Decision Models II: Queuing Systems, Stochastic Decision Processes
Simulation I: Generation of random numbers, Monte Carlo integration, Discrete event simulation, Discrete and continuous random variables, Statistical analysis of simulated data.
Simulation II: Variance reduction techniques, Simulation of stochastic processes, Case studies.

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

12.3.5 Engineering Sciences

M Module: Combustion Engines I [M-MACH-101275]

Responsibility: Heiko Kubach

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102194	Combustion Engines I (S. 345)	5	Thomas Koch, Heiko Kubach
T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines (S. 380)	4	Thomas Koch, Heiko Kubach

Conditions
None

Qualification Objectives
The student can name and explain the working princile of combustion engines. He is able to analyse and evaluate the combustion process. He is able to evaluate influences of gas exchange, mixture formation, fuels and exhaust gas aftertreatment on the combustion performance. He can solve basic research problems in the field of engine development.
The student can name all important influences on the combustion process. He can analyse and evaluate the engine process considering efficiency, emissions and potential.

Content
Introduction, History, Concepts
Working Principle and Termodynamics
Characteristic Parameters
Air Path
Fuel Path
Energy Conversion
Fuels
Emissions
Exhaust Gas Aftertreatment
Reaction kinetics
Gas exchange
Ignition
Flow field of gasoline engines
Working process
Pressure trace analysis
Thermodynamic analysis of the high pressure process
Exergy analysis and waste heat recuperation
Aspects of sustainability

M Module: Combustion Engines II [M-MACH-101303]

Responsibility: Heiko Kubach

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Level
9	Each term	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-104609	Combustion Engines II (S. 346)	5	Heiko Kubach

Verbrennungsmotoren II
Non-Compulsory Block; min. 4 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment (S. 407)	4	Egbert Lox
T-MACH-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines (S. 318)	4	Marcus Gohl
T-MACH-105184	Fuels and Lubricants for Combustion Engines (S. 406)	4	Bernhard Kehrwald
T-MACH-105167	Analysis Tools for Combustion Diagnostics (S. 320)	4	Uwe Wagner
T-MACH-102197	Gas Engines (S. 409)	4	Rainer Golloch
T-MACH-102199	Model Based Application Methods (S. 475)	4	Frank Kirschbaum
T-MACH-105169	Engine Measurement Techniques (S. 383)	4	Sören Bernhardt

Conditions
None

Modeled Conditions
The following conditions must be met:

- Module [M-MACH-101275] *Combustion Engines I* has to be started before taking this module.

Qualification Objectives
See courses.

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

Responsibility: Thomas Lützkendorf

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102742	Design, Construction and Sustainability Assessment of Buildings I (S. 364)	4,5	Thomas Lützkendorf
T-WIWI-102743	Design, Construction and Sustainability Assessment of Buildings II (S. 365)	4,5	Thomas Lützkendorf

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Sustainable design, construction and operation of buildings currently are predominant topics of the real estate sector, as well as "green buildings". Not only designers and civil engineers, but also other actors who are concerned with project development, financing and insurance of buildings or portfolio management are interested in these topics.
On the one hand the courses included in this module cover the basics of energy-efficient, resource-saving and health-supporting design and construction of buildings. On the other hand fundamental assessment procedures for analysing and communicating the ecological advantageousness of technical solutions are discussed. With the basics of green building certification systems the lectures provide presently strongly demanded knowledge.
Additionally, videos and simulation tools are used for providing a better understanding of the content of teaching.

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

Furthermore a combination with courses in the area of

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

is recommended.

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

M Module: Energy Generation and Network Components [M-ETIT-101165]

Responsibility: Thomas Leibfried, Bernd Hoferer

Organisation: KIT-Fakultät für Elektrotechnik und Informationstechnik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-101924	Power Generation (S. 494)	3	Bernd Hoferer
T-ETIT-101925	Design and Operation of Power Transformers (S. 363)	3	N. N., Mitarbeiter
T-ETIT-101927	Automation of Power Grids (S. 326)	3	N.N.

Learning Control / Examinations
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 examinations take place at the beginning of the recess period. 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 weighted average of the grades for each course and truncated after the first decimal.

Conditions
It is only possible to choose this module in combination with the module *Power Networks* [WW3INGETIT3]. The module is passed only after the final partial exam of *Power Networks* is additionally passed.

Modeled Conditions
The following conditions must be met:

- Module [M-ETIT-102379] *Power Network* has to be started before taking this module.

Qualification Objectives
The student

- has basic and advanced knowledge of electrical power engineering,
- is capable to analyse, calculate and develop electrical power engineering systems.

Content
The module deals with basic knowledge about the structure and operation of electrical power networks and their needed facilities. Further lectures give an insight into specific topics, such as Automation in electric power engineering or the procedures for generating electrical energy.

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

M Module: Extracurricular Module in Engineering [M-WIWI-101404]

Responsibility:

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences

ECTS	Recurrence	Level
9	Once	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-ETIT-100724	Photovoltaics (S. 490)	3	N.N.
T-ETIT-101924	Power Generation (S. 494)	3	Bernd Hoferer
T-MACH-100966	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I (S. 331)	3	Andreas Guber
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II (S. 332)	3	Andreas Guber
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III (S. 333)	3	Andreas Guber
T-MACH-102107	Quality Management (S. 519)	4	Gisela Lanza
T-MACH-102176	Current Topics on BioMEMS (S. 355)	3	Andreas Guber
T-MACH-105234	Windpower (S. 603)	4	Norbert Lewald
T-BGU-100139	Hydro Power Engineering (S. 418)	6	Peter Oberle

Learning Control / Examinations
The assessment of the module is determined by the respective module corrdinator. It can either be in the form of a general exam or partial exams, and must be contain at least 9 credit points and at least 6 hours per week. The examination may contain presentations, experiments, laboratories, term papers, etc. At least 50 percent of the module examination has to be in the form of a written or an oral examination (according to Section 4 (2), 1 or 2 of the examination regulation).

The formation of the overall grade of the module will be determined by the respective module coordinator.

Conditions
See German version.

Qualification Objectives
See German version.

Content
Entsprechend dem interdisziplinären Profil des Studiengangs können technisch-orientierte Lehrveranstaltungen zu einem außerplanmäßigen Ingenieurmodul zusammengestellt werden, die nicht oder nicht in dieser Kombination im Modulhandbuch des Studiengangs aufgeführt sind. Die im außerplanmäßigen Ingenieurmodul zusammengestellten technisch-orientierten Lehrveranstaltungen umfassen dabei in Summe mindestens 9 LP und mindestens 6 SWS.
Zunehmend bieten ingenieurwissenschaftliche Fakultäten Lehrveranstaltungen mit nicht technischem, meist wirtschaftswissenschaftlichem Bezug an. Diese aus ingenieurwissenschaftlicher Sicht sinnvolle Ergänzung zur technischen Ausbildung ihrer Studierenden, ist für die Studiengänge der Fakultät für Wirtschaftswissenschaften nicht geeignet. Daher genehmigt der Prüfungsausschuss solche Lehrveranstaltungen grundsätzlich nicht im Rahmen der zu erwerbenden 9 LP des außerplanmäßigen Ingenieurmoduls. Wer dennoch solche Lehrveranstaltungen in die Fachprüfung Ingenieurwissenschaften integrieren möchte, kann – in Übereinstimmung mit dem zuständigen Prüfer - ein Modul zusammenstellen, das dann entsprechend mehr Leistungspunkte umfassen muss.

Remarks
Die oben stehende Aufstellung ist nicht vollständig, sondernenthält nur eine Auswahl möglicher Teilleistungen. Die Liste wird fortlaufend aktualisiert. Wie oben beschrieben kann das außerplanmäßige Ingenieurmodul auf genehmigungspflichtigen Antrag

indidviduell zusammengestellt werden.
Neben den 9 LP müssen mindestens 6 Semesterwochenstunden erbracht werden.
Es kann maximal ein außerplanmäßiges Ingenieurmodul abgelegt werden.

M Module: Fundamentals of construction [M-BGU-101004]

Responsibility: Shervin Haghsheno

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-101691	Construction Technology (S. 352)	6	Shervin Haghsheno
T-BGU-101675	Project Management (S. 513)	3	Shervin Haghsheno

Conditions
none

Qualification Objectives
The student

- is familiar with all substantial domains of construction
- knows and understands substantial construction methods and construction machines
- masters basic construction calculations
- knows and understands the fundamentals of project management in civil engineering

can apply his / her knowledge in a goal-oriented manner to accomplish a construction project efficiently

Content
Courses of this module comprise methods and machines from all construction domains. Specifically, the module covers production planning as well as substantial parts of structural engineering and underground engineering, including auxiliary systems. In addition to the explanation of fundamentals, machines, and methods the courses include performance calculations. Further, students receive an introduction to project management in civil engineering which includes project phases, project organization, and the columns of project management which are schedule management, cost management, and quality management.

Remarks
We encourage students to deepen their knowledge in construction by building additional customized modules from the courses offered by TMB. Please consult with the tutors of this module. Further information is available at www.tmb.kit.edu.

M Module: Integrated Production Planning [M-MACH-101272]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102106	Integrated Production Planning (S. 426)	9	Gisela Lanza

Conditions
none

Qualification Objectives
The students

- can discuss basic questions of production technology.
- are able to apply the methods of integrated production planning they have learned about to new problems.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques they have learned about for a specific problem.
- can apply the learned methods of integrated production planning to new problems.
- can use their knowledge targeted for efficient production technology.

Content
Within this engineering sciences-oriented module the students will get to learn principle aspects of organization and planning of production systems. Further information can be found at the description of the lecture "Integrated Production Planning".

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

M Module: Introduction to Natural Hazards and Risk Analysis 1 [M-WIWI-101646]

Responsibility: Michael Kunz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 12 ECTS

Identifier	Course	ECTS	Responsibility
T-PHYS-103117	Geological Hazards and Risks for external students (S. 412)	4	
T-BGU-101693	Hydrology (S. 419)	4	Erwin Zehe
T-BGU-101667	Hydraulic Engineering and Water Management (S. 417)	4	Franz Nestmann
T-BGU-101636	Remote Sensing, exam (S. 522)	4	Stefan Hinz
T-BGU-101637	Systems of Remote Sensing, Prerequisite (S. 563)	1	Stefan Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite (S. 506)	1	Uwe Weidner
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 434)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 435)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103542	Procedures of Remote Sensing (S. 505)	3	Uwe Weidner
T-PHYS-101092	Climatology (S. 344)		Peter Braesicke
T-PHYS-105594	Exam on Climatology (S. 388)	6	
T-PHYS-101557	Meteorological Hazards (S. 472)		Michael Kunz
T-PHYS-105954	Exam on Meteorological Hazards (S. 389)	3	Michael Kunz
T-BGU-101814	Project in Applied Remote Sensing (S. 512)	1	Stefan Hinz

Learning Control / Examinations
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.

Conditions
There are no singular exams for Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66]. Therefore it not possible to choose Remote Sensing [GEOD-BFB-1] and additionally the courses Remote Sensing Systems, Remote Sensing Methods or the project Angewandte Fernerkundung [20267] (because they are already included). See also "Recommendations".

Qualification Objectives
See German version

Content
See German version

Recommendations
The courses Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66] may be chosen as a minimal combination for the exam. However, it is recommended to choose the comprehensive combination Remote Sensing [GEOD-BFB-1], which includes Remote Sensing Systems [20241/42], Remote Sensing Methods [20265/66] and the project Angewandte Fernerkundung [20267].

Remarks
Students, who successfully completed both modules "Understanding and Prediction of Disasters" I and II (alternatively: one of

the modules in Bachelor and Master) can get a certificate of the module coordinator (CEDIM). This certificate lists the successful completed courses within the two modules.

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

M Module: Introduction to Natural Hazards and Risk Analysis 2 [M-WIWI-101648]

Responsibility: Michael Kunz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 12 ECTS

Identifier	Course	ECTS	Responsibility
T-PHYS-103117	Geological Hazards and Risks for external students (S. 412)	4	
T-BGU-101667	Hydraulic Engineering and Water Management (S. 417)	4	Franz Nestmann
T-BGU-101693	Hydrology (S. 419)	4	Erwin Zehe
T-BGU-101636	Remote Sensing, exam (S. 522)	4	Stefan Hinz
T-BGU-101637	Systems of Remote Sensing, Prerequisite (S. 563)	1	Stefan Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite (S. 506)	1	Uwe Weidner
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 434)	3	Sven Wursthorn, Norbert Rösch
T-BGU-101814	Project in Applied Remote Sensing (S. 512)	1	Stefan Hinz
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 435)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103542	Procedures of Remote Sensing (S. 505)	3	Uwe Weidner
T-PHYS-101092	Climatology (S. 344)		Peter Braesicke
T-PHYS-105594	Exam on Climatology (S. 388)	6	
T-PHYS-101557	Meteorological Hazards (S. 472)		Michael Kunz
T-PHYS-105954	Exam on Meteorological Hazards (S. 389)	3	Michael Kunz

Learning Control / Examinations
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.

Conditions
There are no singular exams for Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66]. Therefore it not possible to choose Remote Sensing [GEOD-BFB-1] and additionally the courses Remote Sensing Systems, Remote Sensing Methods or the project Angewandte Fernerkundung [20267] (because they are already included). See also "Recommendations".

Modeled Conditions
The following conditions must be met:

- Module [M-WIWI-101646] *Introduction to Natural Hazards and Risk Analysis 1* has to be started before taking this module.

Qualification Objectives
See German version

Content
See German version

Recommendations
The courses Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66] may be chosen as a minimal combination for the exam. However, it is recommended to choose the comprehensive combination Remote Sensing [GEOD-BFB-1], which includes

Remote Sensing Systems [20241/42], Remote Sensing Methods [20265/66] and the project Angewandte Fernerkundung [20267].

Remarks
Students, who successfully completed both modules Introduction to Natural Hazards and Risk Analysis 1/2 (alternatively: one of the modules in Bachelor and Master) can get a certificate of the module coordinator (CEDIM). This certificate lists the successful completed courses within the two modules.

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

M Module: Introduction to Technical Logistics [M-MACH-101269]

Responsibility: Kai Furmans

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Einführung in die Technische Logistik
Non-Compulsory Block; min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102151	Material Flow in Logistic Systems (S. 464)	6	Kai Furmans
T-MACH-102092	Industrial Application of Material Handling Systems in Sorting and Distribution Systems (S. 420)	4	Jörg Föller
T-MACH-102128	Information Systems and Supply Chain Management (S. 425)	4	Christoph Kilger
T-MACH-102163	Basics of Technical Logistics (S. 330)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-102159	Elements and Systems of Technical Logistics (S. 376)	4	Vladimir Madzharov, Martin Mittwollen
T-MACH-102178	Elements of Technical Logistics and Project (S. 377)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-102160	Selected Applications of Technical Logistics (S. 525)	4	Vladimir Madzharov, Martin Mittwollen
T-MACH-102161	Selected Applications of Technical Logistics and Project (S. 526)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-105149	Industrial Application of Technological Logistics Instancing Crane Systems (S. 421)	4	Markus Golder
T-MACH-105174	Warehousing and Distribution Systems (S. 569)	4	Melanie Schwab, Judith Weiblen
T-MACH-105151	Energy Efficient Intralogistic Systems (S. 381)	4	Meike Braun, Frank Schönung
T-MACH-105165	Automotive Logistics (S. 327)	4	Kai Furmans
T-MACH-105175	Airport Logistics (S. 315)	4	André Richter
T-WIWI-103091	Production and Logistics Controlling (S. 509)	3	Helmut Wlcek

Conditions
One of the core courses *Material Flow in Logistic Systems* [2117051] or *Basics of Technical Logistics* [2117095] or *Elements and systems of Technical Logistics* [2117096] is mandatory. *Elements and systems of Technical Logistics* is only allowed to be examined after *Basics of Technical Logistics* is passed successfully in this or an other module. For simultaneous attending of both courses, examination dates are sequenced accordingly.

Qualification Objectives
The student aquires

- well-founded knowledge and method knowledge in the main topics of technical logistics,
- expertise and understanding about the functionality of conveyor technology,
- ability for modeling logistic systems with adequate accuracy by using simple models,
- ability to evaluate logistic systems and to identify cause-and-effects-chains within logistic systems.

Content
The module *Introduction to Technical Logistics* provides first insights into main topics of technical logistics. Within the lectures, the interaction between several components of material handling systems will be clarified. The focus will be on technical characteristics of material handling technology and basics for sizing of material handling systems. To gain a deeper understanding, the course is accompanied by exercises and further improved by case studies.

M Module: Introduction to Track Guided Transport Systems [M-BGU-102283]

Responsibility: Eberhard Hohnecker

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences

ECTS	Recurrence	Duration	Language
9	Each winter term	2 Semester	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-104580	Introduction to Track Guided Transport Systems (S. 440)	9	Eberhard Hohnecker

Conditions
Successful passing of the engineering modules of the core programm. For exceptions see § 17 Abs. 6 SPO.

M Module: Machine Tools and Industrial Handling [M-MACH-101286]

Responsibility: Jürgen Fleischer

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102158	Machine Tools and Industrial Handling (S. 450)	9	Jürgen Fleischer

Conditions
None

Qualification Objectives
The students

- are capable to explain the use and application of machine tools and handling devices as well as differentiate their characteristics and structure.
- are able to name and describe the essential components (frame, main spindles, feed axis, peripheral equipment, control) of machine tools.
- Are capable to distinguish and select and describe the essential components regarding structure, characteristics advantages and disadvantages.
- are enabled to dimension the main components of machine tools.
- are able to name and describe the control principles of machine tools.
- are capable to name examples of machine tools and industrial handling as well as to deduce compare the essential components. Additionally they can allocate manufacturing processes.
- are enabled to identify drawbacks as well as derive and asses measures for improvements.
- are qualified to apply methods for selection and evaluation of machine tools.
- are experienced to deduce the particular failure characteristics of a ball screw.

Content
The module overviews the assembly, dimensioning and application of machine tools and industrial handling. A consolidated and practice oriented knowledge is imparted about the choice, dimensioning and assessment of production machines. At first, the major components of machine tools are explained systematically. At this, the characteristics of dimensioning of machine tools are described in detail. Finally, the application of machine tools is demonstrated by means of example machines of the manufacturing processes turning, milling, grinding, massive forming, sheet metal forming and toothing.

M Module: Manufacturing Technology [M-MACH-101276]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102105	Manufacturing Technology (S. 461)	9	Frederik Zanger, Volker Schulze

Conditions
None

Qualification Objectives
The students

- can name different manufacturing processes, can describe their specific characteristics and are capable to depict the general function of manufacturing processes and are able to assign manufacturing processes to the specific main groups.
- are enabled to identify correlations between different processes and to select a process depending on possible applications.
- are capable to describe the theoretical basics for the manufacturing processes they got to know within the scope of the course and are able to compare the processes.
- are able to correlate based on their knowledge in materials science the processing parameters with the resulting material properties by taking into account the microstructural effects.
- are qualified to evaluate different processes on a material scientific basis.

Content
Within this engineering sciences-oriented module the students will get to learn principle aspects of manufacturing technology. Further information can be found at the description of the lecture "Manufacturing Technology".

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

M Module: Microsystem Technology [M-MACH-101287]

Responsibility: Volker Saile

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-105182	Introduction to Microsystem Technology I (S. 436)	3	Jan Gerrit Korvink, Andreas Guber

Wahlplfichtangebot
Non-Compulsory Block; min. 5 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-105183	Introduction to Microsystem Technology II (S. 437)	3	Andreas Guber
T-MACH-102164	Practical Training in Basics of Microsystem Technology (S. 497)	3	Arndt Last
T-MACH-100530	Physics for Engineers (S. 491)	6	Alexander Nesterov-Müller, Peter Gumbsch
T-MACH-102165	Selected Topics on Optics and Microoptics for Mechanical Engineers (S. 527)	3	Timo Mappes
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II (S. 332)	3	Andreas Guber
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III (S. 333)	3	Andreas Guber
T-MACH-101910	Microactuators (S. 473)	3	Manfred Kohl
T-MACH-102152	Novel Actuators and Sensors (S. 483)	4	Manfred Kohl, Martin Sommer
T-MACH-102080	Nanotechnology with Clusterbeams (S. 478)	3	Jürgen Gspann
T-MACH-102172	Bionics for Engineers and Natural Scientists (S. 334)	3	Hendrik Hölscher
T-ETIT-101907	Optoelectronic Components (S. 485)	4	Wolfgang Freude

Conditions
None

Qualification Objectives

- construction and production of e. g. mechanical, optical, fluidic and sensory microsystems.

Content
The module offers courses in microsystem technology. Knowledge is imparted in various fields like basics in construction and production of e. g. mechanical, optical, fluidic and sensory microsystems.

Remarks
If you have any questions concerning the module, please contact Prof. Dr. Andreas E. Guber.

M Module: Mobility and Infrastructure [M-BGU-101067]

Responsibility: Ralf Roos

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-101791	Mobility and Infrastructure (S. 474)	9	Ralf Roos

Conditions
none

Qualification Objectives
Learning the fundamental terminology and methodology of spatial and transportation planning, traffic engineering as well as highway engineering

Content
Basic tasks and contents of different planning levels, for example: Land use and conflicts, provision of services and infrastructure as well as their costs, planning on local, regional, national and European level.

Fundamentals of transportation planning (convention for analyses, surveys of travel behaviour), fundamentals of traffic engineering

Design Basics in Highway Engineering: Road network layout, driving dynamics, principles of highway design; earthworks, pavements and their dimensioning

M Module: Power Network [M-ETIT-102379]

Responsibility: Thomas Leibfried, Bernd Hoferer

Organisation: KIT-Fakultät für Elektrotechnik und Informationstechnik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Language
9	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-101923	Electric Energy Systems (S. 375)	5	Thomas Leibfried
T-ETIT-100830	Power Network (S. 495)	6	Thomas Leibfried

M Module: Product Lifecycle Management [M-MACH-101270]

Responsibility: Jivka Ovtcharova

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-105147	Product Lifecycle Management (S. 507)	6	Jivka Ovtcharova

Product Lifecycle Management
Non-Compulsory Block; min. 3 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102125	Computer Integrated Planning of New Products (S. 351)	4	Roland Kläger
T-MACH-102153	PLM-CAD Workshop (S. 493)	4	Jivka Ovtcharova
T-MACH-102181	PLM for Product Development in Mechatronics (S. 492)	4	Martin Eigner
T-MACH-102209	Information Engineering (S. 423)	3	Jivka Ovtcharova
T-MACH-105937	Information management in production (S. 424)	4	Oliver Riedel

Conditions
None

Qualification Objectives
The students should:

- have basic knowledge about the challenges in product and process data management regarding the whole product lifecycle;
- have understanding about challenges and functional concepts of product lifecycle management;
- be able to operate common PLM systems.

Content
This module describes management and organizational approaches of Product Lifecycle Management, their application in IT and the potential benefits of PLM system solutions. Optional courses of this module introduce current product development processes in the scope of enterprise PLM system solutions.

M Module: Specialization in Production Engineering [M-MACH-101284]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration
9	Each term	2 semester

Vertiefung der Produktionstechnik
Non-Compulsory Block; min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102107	Quality Management (S. 519)	4	Gisela Lanza
T-MACH-105166	Materials and Processes for Body Leightweight Construction in the Automotive Industry (S. 465)	4	Stefan Kienzle, Dieter Steegmüller
T-MACH-105177	Metal Forming (S. 471)	4	Florian Herlan
T-MACH-105185	Control Technology (S. 353)	4	Christoph Gönnheimer
T-MACH-102148	Gear Cutting Technology (S. 410)	4	Markus Klaiber
T-MACH-102189	Production Technology and Management in Automotive Industry (S. 511)	4	Volker Michael Stauch
T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars (S. 427)	4	Karl-Hubert Schlichtenmayer

Qualification Objectives
Der/ die Studierende

- besitzt grundlegende Kenntnisse über die industrielle Anwendung der Informationstechnologie im Gebiet der Produktentstehung,
- versteht die gegenwärtige und zukünftige Nutzung von Informationssystemen im Produktentstehungsprozess im Kontext des Product Lifecycle Managements und des Virtual Engineering,
- ist in der Lage, gängige Cax-und PLM-Systeme im Produktentstehungsprozess einzusetzen.

Content
Dieses Modul vermittelt eine integrative lebenszyklusorientierte Betrachtung von Produkten und Prozessen. Beschrieben werden die globale Verteilung von Entwicklung, Fertigung und Vertrieb, sowie die Erschließung der Potenziale des Einsatzes neuer immersiver, interaktiver und intelligenter Technologien (Virtual Reality, Augmented Reality, Mixed Reality, Virtual Mock-Up) für funktionsbezogene Validierungstätigkeiten im Kontext des gesamten Produktes.

Remarks
Das Modul kann nicht mehr neu belegt werden. Studierende, die das Modul bereits begonnen haben, können dies noch unter den alten Bedingungen bis zum WS2011/12 abschließen oder sich auf schriftlichen Antrag beim Studienbüro auf eines der Nachfolgemodule *Virtual Engineering A* [WW4INGMB29] und *Virtual Engineering B* [WW4INGMB30] umbuchen lassen.

12.3.6 Statistics

M Module: Statistics and Econometrics [M-WIWI-101608]

Responsibility: Melanie Schienle, Oliver Grothe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Statistics
Compulsory Elective Modules/Elective Module 2/Statistics

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-103064	Financial Econometrics (S. 397)	4,5	Melanie Schienle
T-WIWI-103063	Analysis of multivariate Data (S. 319)	4,5	Oliver Grothe
T-WIWI-103065	Statistical Modeling of generalized regression models (S. 559)	4,5	Wolf-Dieter Heller
T-WIWI-103066	Data Mining and Applications (S. 357)	4,5	Rheza Nakhaeizadeh

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101432] *Introduction to Statistics* is required before taking this module.

Qualification Objectives
The student

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

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

Recommendations
None

Remarks
New module starting winter term 2015/2016. It replaces the old module "Statistical Applications of Financial Risk Management" [WW3STAT].

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

12.3.7 Law

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

Responsibility:

Organisation: KIT-Fakultät für Informatik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 2/Law

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-INFO-102013	Exercises in Civil Law (S. 391)	9	Yvonne Matz, Thomas Dreier

Qualification Objectives
Der/die Studierende

- besitzt vertiefte Kenntnisse des allgemeinen und des besonderen Schuldrechts sowie des Sachenrechts,
- ist in der Lage, das Zusammenwirken der gesetzlichen Regelungen im BGB (betreffend die verschiedenen Vertragstypen und die dazugehörigen Haftungsfragen, Leistungsabwicklung, Leistungsstörungen, verschiedene Übereignungsarten sowie die dinglichen Sicherungsrechte) und im Handels- und Gesellschaftsrecht (hier insbesondere betreffend die Besonderheiten der Handelsgeschäfte, die handelsrechtliche Stellvertretung und das Kaufmannsrecht sowie die Organisationsformen, die das deutsche Gesellschaftsrecht für unternehmerische Aktivität zur Verfügung stellt) zu durchschauen,
- erwirbt in der Privatrechtlichen Übung die Fähigkeit, juristische Problemfälle mit juristischen Mitteln methodisch sauber zu lösen.

Content
Das Modul baut auf dem Modul „Einführung in das Privatrecht“ auf. Der Studierende bekommt vertiefte Kenntnisse über besondere Vertragsarten des BGB sowie über komplexere gesellschaftsrechtliche Konstruktionen. Ferner wird den Studenten die Fähigkeit vermittelt, wie auch ein komplexerer juristischer Sachverhalt methodisch sauber zu lösen ist.

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

Responsibility: Thomas Dreier

Organisation: KIT-Fakultät für Informatik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 2/Law

ECTS	Recurrence	Duration	Language	Level
9	Each term	1 semester	Deutsch	3

Recht des Geistigen Eigentums
Non-Compulsory Block; min. 1 Courses, min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-INFO-102036	Computer Contract Law (S. 350)	3	Thomas Dreier
T-INFO-101307	Internet Law (S. 430)	3	Thomas Dreier
T-INFO-101308	Copyright (S. 354)	3	Thomas Dreier
T-INFO-101310	Patent Law (S. 488)	3	Thomas Dreier
T-INFO-101313	Trademark and Unfair Competition Law (S. 568)	3	Yvonne Matz

Conditions
None

Qualification Objectives
Der/die Studierende

- besitzt detaillierte Kenntnisse in den hauptsächlichen Rechten des geistigen Eigentums,
- analysiert und bewertet komplexere Sachverhalte und führt sie einer rechtlichen Lösung zu,
- setzt die rechtlichen Grundlagen in Verträge über die Nutzung geistigen Eigentums um und löst komplexere Verletzungsfälle,
- kennt und versteht die Grundzüge der registerrechtlichen Anmeldeverfahren und hat einen weitreichenden Überblick über die durch das Internet aufgeworfenen Rechtsfragen
- analysiert, bewertet und evaluiert entsprechende Rechtsfragen unter einem rechtlichem, einem informationstechnischen, wirtschaftswissenschaftlichen und rechtspolitischen Blickwinkel.

Remarks
Die Lehrveranstaltung ***Patentrecht II - Rechte an Erfindungen im Rechtsverkehr*** findet nicht mehr statt.

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

Responsibility: Thomas Dreier

Organisation: KIT-Fakultät für Informatik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 2/Law

ECTS	Recurrence	Duration	Language	Level
9	Each term	1 semester	Deutsch	3

Recht der Wirtschaftsunternehmen
Non-Compulsory Block; min. 1 Courses, min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-INFO-101994	Civil Law for Advanced (S. 342)	3	Thomas Dreier
T-INFO-101329	Employment Law I (S. 378)	3	Thomas Dreier
T-INFO-101330	Employment Law II (S. 379)	3	Thomas Dreier
T-INFO-101316	Law of Contracts (S. 446)	3	Thomas Dreier
T-INFO-101314	Tax Law II (S. 566)	3	Detlef Dietrich, Thomas Dreier
T-INFO-101315	Tax Law I (S. 565)	3	Thomas Dreier

Conditions
None

Qualification Objectives
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 Module: Public Business Law [M-INFO-101217]

Responsibility: Matthias Bäcker

Organisation: KIT-Fakultät für Informatik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 2/Law

ECTS	Recurrence	Duration	Language	Level
9	Each term	1 semester	Deutsch	3

Öffentliches Wirtschaftsrecht
Non-Compulsory Block; min. 1 Courses, min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-INFO-101309	Telecommunications Law (S. 567)	3	Matthias Bäcker
T-INFO-101303	Data Protection Law (S. 358)	3	Matthias Bäcker
T-INFO-101311	Public Media Law (S. 517)	3	Thomas Dreier
T-INFO-101312	European and International Law (S. 387)	3	Matthias Bäcker
T-INFO-101348	Environmental Law (S. 386)	3	Matthias Bäcker

Qualification Objectives
Der/die Studierende

- ordnet Probleme im besonderen Verwaltungsrecht ein, löst einfache Fälle mit Bezug zu diesen Spezialmaterien und hat einen Überblick über gängige Probleme,
- kann einen aktuellen Fall aus diesem Bereichen inhaltlich und aufbautechnisch sauber bearbeiten,
- kann Vergleiche im Öffentlichen Recht zwischen verschiedenen Rechtsproblemen aus verschiedenen Bereichen ziehen,
- kennt die Rechtsschutzmöglichkeiten mit Blick auf das spezifische behördliche Handeln,
- kann das besondere Verwaltungsrecht unter dem besonderen Blickwinkel des Umgangs mit Informationen auch unter ökonomischen und technischen Aspekten analysieren.

Content
Das Modul umfasst eine Reihe von Spezialmaterien des Verwaltungsrechts, die für die technische und inhaltliche Beurteilung der Steuerung des Umgangs mit Informationen von wesentlicher Bedeutung sind. Im Telekommunikationsrecht sollen nach einer Einführung in die ökonomischen Grundlagen, insb. Netzwerktheorien, die rechtliche Umsetzung der Regulierung erarbeitet werden. Das öffentliche Medienrecht setzt sich mit der rechtlichen Regelung von Inhalten, insb. im Bereich des Fernsehens und Rundfunks, auseinander. Die Vorlesung Europäisches und Internationales Recht stellt die Grundlagen einer Reihe von REgulierungen (u.a. Telekommunikationsrecht) über den nationalen Bereich hinaus dar. Das Datenschutzrecht schließlich als eine Kernmaterie des Informationswirtschaftsrechts behandelt aus rechtlicher Sicht die Beurteilung von Sachverhalten rund um den Personenbezug von Informationen. In allen Vorlesungen wird Wert auf aktuelle Probleme sowie auf grundlegendes Verständnis gelegt.

12.3.8 Sociology

M Module: Sociology/Empirical Social Research [M-GEISTSOZ-101167]

Responsibility: Gerd Nollmann

Organisation: KIT-Fakultät für Geistes- und Sozialwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 2/Sociology
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-GEISTSOZ-101959	Social Structures of Modern Societies (S. 546)	4	Gerd Nollmann
T-GEISTSOZ-101957	Special Sociology (S. 551)	4	Gerd Nollmann
T-GEISTSOZ-101958	Projectseminar (S. 514)	4	Gerd Nollmann

Conditions
None

Qualification Objectives
The student

- Gains theoretical and methodical knowledge of social processes and structures
- Is able to apply acquired knowledge practically
- Is able to present work results in a precise and clear way

Content
This module offers students the possibility to get to know research problems and to answer these theoretically as well as empirically. For example: Who does earn how much in his job and why? How do subcultures emerge? Why are boys' grades in school always worse than those of girls? Do divorces have negative influences on the development of children? How does mass consumption influence the individual? Is there a world society emerging?

In addition, this module contains courses on sociological methods that are essential to answer the above questions scientifically.

13 Additional Examinations

M Module: Additional Examinations [M-WIWI-101982]

Responsibility:

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Additional Examinations

ECTS	Language
30	Deutsch

Zusatzleistungen
Non-Compulsory Block; min. 30 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-104391	Wildcard Additional Examinations 1 (S. 573)	2	
T-WIWI-104392	Wildcard Additional Examinations 2 (S. 584)	2	
T-WIWI-104394	Wildcard Additional Examinations 3 (S. 595)	2	
T-WIWI-104395	Wildcard Additional Examinations 4 (S. 597)	2	
T-WIWI-104396	Wildcard Additional Examinations 5 (S. 598)	2	
T-WIWI-104397	Wildcard Additional Examinations 6 (S. 599)		
T-WIWI-104398	Wildcard Additional Examinations 7 (S. 600)		
T-WIWI-104399	Wildcard Additional Examinations 8 (S. 601)		
T-WIWI-104400	Wildcard Additional Examinations 9 (S. 602)		
T-WIWI-104401	Wildcard Additional Examinations 10 (S. 574)		
T-WIWI-104402	Wildcard Additional Examinations 11 (S. 575)	2	
T-WIWI-104403	Wildcard Additional Examinations 12 (S. 576)	2	
T-WIWI-104404	Wildcard Additional Examinations 13 (S. 577)	2	
T-WIWI-104405	Wildcard Additional Examinations 14 (S. 578)	2	
T-WIWI-104406	Wildcard Additional Examinations 15 (S. 579)	2	
T-WIWI-104407	Wildcard Additional Examinations 16 (S. 580)	2	
T-WIWI-104408	Wildcard Additional Examinations 17 (S. 581)	2	
T-WIWI-104409	Wildcard Additional Examinations 18 (S. 582)	2	
T-WIWI-104410	Wildcard Additional Examinations 19 (S. 583)	2	
T-WIWI-104411	Wildcard Additional Examinations 20 (S. 585)	2	
T-WIWI-104412	Wildcard Additional Examinations 21 (S. 586)	5	
T-WIWI-104413	Wildcard Additional Examinations 22 (S. 587)	5	
T-WIWI-104414	Wildcard Additional Examinations 23 (S. 588)	3	
T-WIWI-104415	Wildcard Additional Examinations 24 (S. 589)	3	
T-WIWI-104416	Wildcard Additional Examinations 25 (S. 590)	3	
T-WIWI-104417	Wildcard Additional Examinations 26 (S. 591)	3	
T-WIWI-104418	Wildcard Additional Examinations 27 (S. 592)	3	
T-WIWI-104419	Wildcard Additional Examinations 28 (S. 593)	3	
T-WIWI-106008	Wildcard Additional Examinations 29 (S. 594)	4	
T-WIWI-106009	Wildcard Additional Examinations 30 (S. 596)	4	

Conditions
None

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

Responsibility: Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Operations Research
Compulsory Elective Modules/Elective Module 2/Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 4 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102717	Software Laboratory: OR Models I (S. 548)	4,5	Stefan Nickel
T-WIWI-102726	Global Optimization I (S. 413)	4,5	Oliver Stein
T-WIWI-102627	Simulation I (S. 543)	4,5	Karl-Heinz Waldmann

Learning Control / Examinations
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.

Conditions
At least one of the courses *Facility Location and strategic Supply Chain Management* [2550486] and *Tactical and operational Supply Chain Management* [2550488] has to be taken.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student

- is familiar with basic concepts and terms of Supply Chain Management,
- knows the different areas of Supply Chain Management and their respective optimization problems,
- is acquainted with classical location problem models (in the plane, on networks and discrete) as well as fundamental methods for distribution and transport planning, inventory planning and management,

- is able to model practical problems mathematically and estimate their complexity as well as choose and adapt appropriate solution methods.

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

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

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

Responsibility: Johannes Philipp Reiß

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Language	Level
9	Each term	1 Semester	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 433)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger
T-WIWI-102876	Auction & Mechanism Design (S. 325)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 367)	4,5	Nora Szech
T-WIWI-102792	Decision Theory (S. 361)	4,5	Karl-Martin Ehrhart
T-WIWI-102736	Economics III: Introduction in Econometrics (S. 371)	5	Melanie Schienle

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Qualification Objectives
Students

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

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

Recommendations
Completion of the module Economics is assumed.

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

M Module: Combustion Engines I [M-MACH-101275]

Responsibility: Heiko Kubach

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102194	Combustion Engines I (S. 345)	5	Thomas Koch, Heiko Kubach
T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines (S. 380)	4	Thomas Koch, Heiko Kubach

Conditions
None

Qualification Objectives
The student can name and explain the working princile of combustion engines. He is able to analyse and evaluate the combustion process. He is able to evaluate influences of gas exchange, mixture formation, fuels and exhaust gas aftertreatment on the combustion performance. He can solve basic research problems in the field of engine development.
The student can name all important influences on the combustion process. He can analyse and evaluate the engine process considering efficiency, emissions and potential.

Content
Introduction, History, Concepts
Working Principle and Termodynamics
Characteristic Parameters
Air Path
Fuel Path
Energy Conversion
Fuels
Emissions
Exhaust Gas Aftertreatment
Reaction kinetics
Gas exchange
Ignition
Flow field of gasoline engines
Working process
Pressure trace analysis
Thermodynamic analysis of the high pressure process
Exergy analysis and waste heat recuperation
Aspects of sustainability

M Module: Combustion Engines II [M-MACH-101303]

Responsibility: Heiko Kubach

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Level
9	Each term	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-104609	Combustion Engines II (S. 346)	5	Heiko Kubach

Verbrennungsmotoren II
Non-Compulsory Block; min. 4 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment (S. 407)	4	Egbert Lox
T-MACH-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines (S. 318)	4	Marcus Gohl
T-MACH-105184	Fuels and Lubricants for Combustion Engines (S. 406)	4	Bernhard Kehrwald
T-MACH-105167	Analysis Tools for Combustion Diagnostics (S. 320)	4	Uwe Wagner
T-MACH-102197	Gas Engines (S. 409)	4	Rainer Golloch
T-MACH-102199	Model Based Application Methods (S. 475)	4	Frank Kirschbaum
T-MACH-105169	Engine Measurement Techniques (S. 383)	4	Sören Bernhardt

Conditions
None

Modeled Conditions
The following conditions must be met:

- Module [M-MACH-101275] *Combustion Engines I* has to be started before taking this module.

Qualification Objectives
See courses.

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

Responsibility: Andreas Geyer-Schulz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 2, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 321)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 484)	4,5	Andreas Geyer-Schulz
T-WIWI-102595	Customer Relationship Management (S. 356)	4,5	Andreas Geyer-Schulz

Learning Control / Examinations
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. Therby every leture is examined by a written exam (according to Section 4(2), 1 of the examination regulation) and by succcessful completion of exercises (according to Section 4 (2), 3 of the examination regulation).
The grades of the individual lectures consists of the grade of the written exam (approximately 90 percent resp. 100 of 112 points) and of the exercise performance (approximately 10 percent resp. 12 of 112 points). In the case of passing the written exam (50 points) the points of the exercise performance will be added to the points of the written exam. 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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
In the module *CRM and Service Management* we teach the principles of modern customer-oriented management and its support by

system architectures and CRM software packages. Choosing customer relationship management as a company's strategy requires service management and a strict implmentation of service management in all parts of the company.
For operative CRM we present the design of customer-oriented, IT-supported business processes based on business process modelling and we explain these processes in concrete application scenarios (e.g. marketing campaign management, call center management, sales force management, field services, ...).
Analytic CRM is dedicated to improve the use of knowledge about customers in the broadest sense for decision-making (e.g. product-mix decisions, bonus programs based on customer loyality, ...) and for the improvement of services. A requirement for this is the tight integration of operative systems with a data warehouse, the development of customer-oriented and flexible reporting systems, and – last but not least – the application of statistical methods (clustering, regression, stochastic models, ...).

Remarks
The lecture *Customer Relationship Management* [2540508] is given in English.
The courses *Analytical CRM* and *Operative CRM* will take place in an alternating way from winter term 14/15. Analytical CRM is offered for a last time in the summer term 14. Details on the cycle and on the exams can be found on http://www.em.uni-karlsruhe.de/studies/.

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

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

Responsibility: Thomas Lützkendorf

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102742	Design, Construction and Sustainability Assessment of Buildings I (S. 364)	4,5	Thomas Lützkendorf
T-WIWI-102743	Design, Construction and Sustainability Assessment of Buildings II (S. 365)	4,5	Thomas Lützkendorf

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Sustainable design, construction and operation of buildings currently are predominant topics of the real estate sector, as well as "green buildings". Not only designers and civil engineers, but also other actors who are concerned with project development, financing and insurance of buildings or portfolio management are interested in these topics.
On the one hand the courses included in this module cover the basics of energy-efficient, resource-saving and health-supporting design and construction of buildings. On the other hand fundamental assessment procedures for analysing and communicating the ecological advantageousness of technical solutions are discussed. With the basics of green building certification systems the lectures provide presently strongly demanded knowledge.
Additionally, videos and simulation tools are used for providing a better understanding of the content of teaching.

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

Furthermore a combination with courses in the area of

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

is recommended.

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

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

Responsibility: Christof Weinhardt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger
T-WIWI-102598	Management of Business Networks (S. 455)	4,5	Christof Weinhardt
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102706	Special Topics in Information Engineering & Management (S. 552)	4,5	Christof Weinhardt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
This module gives an overview of the mutual dependencies of strategic management and information systems. The central role of information is exemplified by the structuring concept of the *information life cycle*. The single phases of this life cycle from generation over allocation until dissemination and use of the information are analyzed from a business and microeconomic perspective, applying classical and new theories. The state of the art of economic theory on aspects of the information life cycle are presented. The lecture is complemented by exercise courses.
The courses "Management of Business Networks", "eFinance: Information engineering and management in finance" and ""eServices" constitute three different application domains in which the basic principles of the Internet Economy are deepened. In the course

“Management of Business Networks” the focus is set on the strategic aspects of management and information systems. It is held in English and teaches parts of the syllabus with the support of a case study elaborated with Lecturers from Concordia University, Montreal, or if applicable, Rotterdam School of Management. Thus the matter of strategic enterprise networks, a.k.a. smart business networks is also analysed by employing an international perspective.
The course "eFinance: information engineering and management for securities tradingprovides theoretically profound and also practical-oriented background about the functioning of international financial markets. The focus is placed on the economic and technical design of markets as information processing systems.
In “eServices” the increasing impact of electronic services compared to the traditional services is outlined. The Information- und Communication Technologies enable the provision of services, which are mainly characterized by interactivity and individuality. This course provides basic knowledge about the development and management of ICT-based servies.
The theortic fundamentals of Information Engineering and Management can be enriched by a practical experience in Special Topics in Information Engineering and Management. Any practical Seminar at the IM can be chosen for the course Special Topics in Information Engineering and Management.

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

M Module: Econometrics and Economics [M-WIWI-101420]

Responsibility: Wolf-Dieter Heller

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Level
9	Once	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-103063	Analysis of multivariate Data (S. 319)	4,5	Oliver Grothe
T-WIWI-102792	Decision Theory (S. 361)	4,5	Karl-Martin Ehrhart
T-WIWI-103065	Statistical Modeling of generalized regression models (S. 559)	4,5	Wolf-Dieter Heller
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß

Learning Control / Examinations
See German version.

Conditions
Successful passing of the corresponding modules of the basic program.
For further information see German version.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
See German version.

Recommendations
None

Remarks
T-WIWI-102844 "Industrial Organization" replaces T-WIWI-102824 "Theory of Business Cycles" starting summer term 2016.

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

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

Responsibility: Ingrid Ott

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-103213	Basic Principles of Economic Policy (S. 329)	4,5	Ingrid Ott
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
Students shall be given the ability to

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

Content

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

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

Remarks
The course "Basic Principles of Economic Policy" [2560280] is not offered in summer term 2015.

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

Attendance time per lecture: 3x14h

Preparation and wrap-up time per lecture: 3x14h

Rest: Exam Preparation

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

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

Responsibility: Clemens Puppe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 433)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102610	Welfare Economics (S. 572)	4,5	Clemens Puppe
T-WIWI-102844	Industrial Organization (S. 422)	4,5	Johannes Philipp Reiß
T-WIWI-102609	Advanced Topics in Economic Theory (S. 314)	4,5	Kay Mitusch, Marten Hillebrand
T-WIWI-102876	Auction & Mechanism Design (S. 325)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 367)	4,5	Nora Szech

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.
2. Es müssen die folgenden Bestandteile erfüllt werden:

Qualification Objectives
See German version.

Recommendations
None

M Module: eFinance [M-WIWI-101402]

Responsibility: Christof Weinhardt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course *eFinance: Information Engineering and Management for Securities Trading* [2540454] is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
The module "eFinance: Information engineering and management in finance" addresses current problems in the finance sector. It is investigated the role of information and knowledge in the finance sector and how information systems can solve or extenuate them.

Speakers from practice will contribute to lectures with their broad knowledge. Core courses of the module deal with the background of banks and insurance companies and the electronic commerce of stocks in global finance markets. In addtion the course Derivatives offers an insight into future and forward contracts as well as the assesment of options. Exchanges and International Finance are also alternatives which provide a suplementary understanding for capital markets.
Information management topics are in the focus of the lecture "eFinance: information engineering and management for securities trading". For the functioning of the international finance markets, it is necessary that there is an efficient information flow. Also, the regulatory frameworks play an important role. In this context, the role and the functioning of (electronic) stock markets, online brokers and other finance intermediaries and their platforms are presented. Not only IT concepts of German finance intermediaries are presented, but also international system approaches will be compared. The lecture is supplemented by speakers from the practice (and excursions, if possible) coming from the Deutsche Börse and the Stuttgart Stock Exchange.

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

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

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis, York Sure-Vetter, Johann Marius Zöllner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Additional Examinations

ECTS	Recurrence	Duration
9	Each term	1 semester

Wahlplfichtangebot
Non-Compulsory Block; min. 9, max. 10 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102658	Algorithms for Internet Applications (S. 316)	5	Hartmut Schmeck
T-WIWI-102759	Requirements Analysis and Requirements Management (S. 524)	4	Ralf Kneuper
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 323)	5	Johann Marius Zöllner
T-WIWI-102680	Computational Economics (S. 348)	4,5	Simon Caton, Pradyumn Kumar Shukla
T-WIWI-102661	Database Systems and XML (S. 360)	5	Andreas Oberweis
T-WIWI-102663	Document Management and Groupware Systems (S. 366)	4	Stefan Klink
T-WIWI-102655	Efficient Algorithms (S. 372)	5	Hartmut Schmeck
T-WIWI-102668	Enterprise Architecture Management (S. 384)	5	Thomas Wolf
T-WIWI-102666	Knowledge Discovery (S. 442)	5	Rudi Studer
T-WIWI-102667	Management of IT-Projects (S. 457)	5	Roland Schätzle
T-WIWI-102697	Business Process Modelling (S. 340)	5	Andreas Oberweis
T-WIWI-102679	Nature-Inspired Optimisation Methods (S. 479)	5	Pradyumn Kumar Shukla
T-WIWI-102659	Organic Computing (S. 486)	5	Hartmut Schmeck
T-WIWI-102874	Semantic Web Technologies (S. 528)	5	Rudi Studer, Andreas Harth
T-WIWI-105801	Service Oriented Computing (S. 541)	5	Barry Norton, Sudhir Agarwal, Rudi Studer
T-WIWI-102845	Smart Energy Distribution (S. 545)	4	Hartmut Schmeck
T-WIWI-102895	Software Quality Management (S. 549)	5	Andreas Oberweis
T-WIWI-102676	Special Topics of Enterprise Information Systems (S. 555)	5	Andreas Oberweis
T-WIWI-102657	Special Topics of Efficient Algorithms (S. 554)	5	Hartmut Schmeck
T-WIWI-102678	Special Topics of Software- and Systemsengineering (S. 557)	5	Andreas Oberweis
T-WIWI-102671	Special Topics of Knowledge Management (S. 556)	5	Rudi Studer
T-WIWI-102669	Strategic Management of Information Technology (S. 562)	5	Thomas Wolf
T-WIWI-103112	Web Science (S. 571)	5	York Sure-Vetter
T-WIWI-102662	Workflow-Management (S. 604)	5	Andreas Oberweis
T-WIWI-103523	Advanced Lab Informatics (S. 309)	4	Rudi Studer, Hartmut Schmeck, Andreas Oberweis, York Sure-Vetter, Johann Marius Zöllner

Learning Control / Examinations
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.
Please note the following information about the module component exams of Prof. Dr. H. Schmeck:
Algorithms for Internet Applications [T-WIWI-102658]: The examination will be offered latest until summer term 2017 (repeaters only).
Computational Economics [T-WIWI-102680]: The examination will be offered latest until summer term 2017 (repeaters only).
Efficient Algorithms [T-WIWI-102655]: The examination will be offered latest until winter term 2016/2017 (repeaters only).
Nature-Inspired Optimization Methods Optimierungsverfahren [T-WIWI-102679]: The examination will be offered latest until winter term 2017/2018 (repeaters only).
Organic Computing [T-WIWI-102659]: The examination will be offered latest until winter term 2016/2017 (repeaters only).
Smart Energy Distribution [T-WIWI-102845]: The examination will be offered latest until winter term 2016/2017 (repeaters only).

Conditions
None.

Qualification Objectives
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 Effiziente Algorithmen, Betriebliche Informations- und Kommunikationssysteme, Wissensmanagement, Komplexitätsmanagement and Software- und Systems Engineering.

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

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

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis, York Sure-Vetter

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Additional Examinations

ECTS	Recurrence	Duration
9	Each term	1 semester

Wahlplfichtangebot
Non-Compulsory Block; min. 9, max. 10 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102658	Algorithms for Internet Applications (S. 316)	5	Hartmut Schmeck
T-WIWI-102759	Requirements Analysis and Requirements Management (S. 524)	4	Ralf Kneuper
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 323)	5	Johann Marius Zöllner
T-WIWI-102680	Computational Economics (S. 348)	4,5	Simon Caton, Pradyumn Kumar Shukla
T-WIWI-102661	Database Systems and XML (S. 360)	5	Andreas Oberweis
T-WIWI-102663	Document Management and Groupware Systems (S. 366)	4	Stefan Klink
T-WIWI-102655	Efficient Algorithms (S. 372)	5	Hartmut Schmeck
T-WIWI-102668	Enterprise Architecture Management (S. 384)	5	Thomas Wolf
T-WIWI-102666	Knowledge Discovery (S. 442)	5	Rudi Studer
T-WIWI-102667	Management of IT-Projects (S. 457)	5	Roland Schätzle
T-WIWI-102697	Business Process Modelling (S. 340)	5	Andreas Oberweis
T-WIWI-102679	Nature-Inspired Optimisation Methods (S. 479)	5	Pradyumn Kumar Shukla
T-WIWI-102659	Organic Computing (S. 486)	5	Hartmut Schmeck
T-WIWI-102874	Semantic Web Technologies (S. 528)	5	Rudi Studer, Andreas Harth
T-WIWI-105801	Service Oriented Computing (S. 541)	5	Barry Norton, Sudhir Agarwal, Rudi Studer
T-WIWI-102845	Smart Energy Distribution (S. 545)	4	Hartmut Schmeck
T-WIWI-102895	Software Quality Management (S. 549)	5	Andreas Oberweis
T-WIWI-102676	Special Topics of Enterprise Information Systems (S. 555)	5	Andreas Oberweis
T-WIWI-102657	Special Topics of Efficient Algorithms (S. 554)	5	Hartmut Schmeck
T-WIWI-102678	Special Topics of Software- and Systemsengineering (S. 557)	5	Andreas Oberweis
T-WIWI-102671	Special Topics of Knowledge Management (S. 556)	5	Rudi Studer
T-WIWI-102669	Strategic Management of Information Technology (S. 562)	5	Thomas Wolf
T-WIWI-103112	Web Science (S. 571)	5	York Sure-Vetter
T-WIWI-102662	Workflow-Management (S. 604)	5	Andreas Oberweis
T-WIWI-103523	Advanced Lab Informatics (S. 309)	4	Rudi Studer, Hartmut Schmeck, Andreas Oberweis, York Sure-Vetter, Johann Marius Zöllner

Learning Control / Examinations
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.
Please note the following information about the module component exams of Prof. Dr. H. Schmeck:
Algorithms for Internet Applications [T-WIWI-102658]: The examination will be offered latest until summer term 2017 (repeaters only).
Computational Economics [T-WIWI-102680]: The examination will be offered latest until summer term 2017 (repeaters only).
Efficient Algorithms [T-WIWI-102655]: The examination will be offered latest until winter term 2016/2017 (repeaters only).
Nature-Inspired Optimization Methods Optimierungsverfahren [T-WIWI-102679]: The examination will be offered latest until winter term 2017/2018 (repeaters only).
Organic Computing [T-WIWI-102659]: The examination will be offered latest until winter term 2016/2017 (repeaters only).
Smart Energy Distribution [T-WIWI-102845]: The examination will be offered latest until winter term 2016/2017 (repeaters only).

Conditions
None.

Qualification Objectives
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 Effiziente Algorithmen, Betriebliche Informations- und Kommunikationssysteme, Wissensmanagement, Komplexitätsmanagement and Software- und Systems Engineering.

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

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

Responsibility: Wolf Fichtner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration
9	Each term	1 semester

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102746	Introduction to Energy Economics (S. 432)	5,5	Wolf Fichtner

Ergänzungsangebot
Non-Compulsory Block; min. 3,5, max. 3,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics (S. 523)	3,5	Russell McKenna
T-WIWI-102607	Energy Policy (S. 382)	3,5	Martin Wietschel

Learning Control / Examinations
The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) about the lecture*Introduction into Energy Economics*[2581010] and one optional lecture of the module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
The lecture *Introduction into Energy Economics* [2581010] has to be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Introduction to Energy Economics: Characterisation (reserves, suppliers, cost, technologies) of different energy carriers (coal, gas, oil, electricity, heat etc.)
Renewable Energy - Resources, Technology and Economics: Characterisation of different renewable energy carriers (wind, solar, hydro, geothermal etc.)

Corporate Governance in Energy Economics: Challenges of the management of a large company in energy economics (superior leadership role, structures, processes and projects from a leadership perspective etc.)
Energy Policy: Management of energy flows, energy-political targets and instruments (emission trading etc.)

Recommendations
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.

Remarks
Upon request, the authorisation for taking the examinations for modules of specialisation can be granted by the examination committee even if the mentioned conditions are not fulfilled. The approving statement of the coordinator of the module of specialisation claimed on the application form is not required for the module Energy Economics [TVWLIIP2]. The application form has to be submitted to the examination committee of the faculty along with a current transcript of records (e.g. via letterbox).
Upon request at the institute, additional recognition of studies (e.g. from other universities) is possible in the module.

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

M Module: Energy Generation and Network Components [M-ETIT-101165]

Responsibility: Thomas Leibfried, Bernd Hoferer

Organisation: KIT-Fakultät für Elektrotechnik und Informationstechnik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-101924	Power Generation (S. 494)	3	Bernd Hoferer
T-ETIT-101925	Design and Operation of Power Transformers (S. 363)	3	N. N., Mitarbeiter
T-ETIT-101927	Automation of Power Grids (S. 326)	3	N.N.

Learning Control / Examinations
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 examinations take place at the beginning of the recess period. 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 weighted average of the grades for each course and truncated after the first decimal.

Conditions
It is only possible to choose this module in combination with the module *Power Networks* [WW3INGETIT3]. The module is passed only after the final partial exam of *Power Networks* is additionally passed.

Modeled Conditions
The following conditions must be met:

- Module [M-ETIT-102379] *Power Network* has to be started before taking this module.

Qualification Objectives
The student

- has basic and advanced knowledge of electrical power engineering,
- is capable to analyse, calculate and develop electrical power engineering systems.

Content
The module deals with basic knowledge about the structure and operation of electrical power networks and their needed facilities. Further lectures give an insight into specific topics, such as Automation in electric power engineering or the procedures for generating electrical energy.

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

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102604	Investments (S. 441)	4,5	Marliese Uhrig-Homburg
T-WIWI-102605	Financial Management (S. 399)	4,5	Martin Ruckes

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

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

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

Responsibility: Martin Klarmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102805	Managing the Marketing Mix (S. 460)	4,5	Martin Klarmann

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102798	Brand Management (S. 335)	4,5	Bruno Neibecker
T-WIWI-102806	Services Marketing and B2B Marketing (S. 542)	3	Martin Klarmann, Ju-Young Kim
T-WIWI-102807	International Marketing (S. 429)	1,5	Martin Klarmann

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course *Marketing Mix* is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
Ziel dieses Moduls ist es, Studierende auf eine Tätigkeit in Marketing oder Vertrieb vorzubereiten. Gerade in technisch orientierten Unternehmen werden hierfür gerne Mitarbeiter eingesetzt, die als Wirtschaftsingenieure oder Informationswirte auch selbst einen gewissen technischen Hintergrund haben.
Studierende

- kennen die wichtigsten Konzepte, Verfahren und Theorien der vier Instrumente des Marketing Mix (Produktmanagement,Preismanagement, Kommunikationsmanagement und Vertriebsmanagement)
- verfügen über das Wissen, Entscheidungen bezüglich der gegenwärtigen und zukünftigen Produkte (Produktinnovationen) zu treffen (z.B. mittels Conjoint-Analyse)
- wissen, wie Kunden Marken wahrnehmen und wie diese Wahrnehmung durch das Unternehmen beeinflusst werden kann

- verstehen, wie Kunden auf Preise reagieren (z.B. mittels Preis-Absatz-Funktionen)
- können Preise auf Basis konzeptioneller und quantitativer Überlegungen bestimmen
- kennen die Grundlagen der Preisdifferenzierung
- sind mit verschiedenen Instrumenten der Kommunikation vertraut (z.B. TV-Werbung) und können diese treffsicher gestalten
- treffen Kommunikationsentscheidungen systematisch (z.B. mittels Mediaplanung)
- können den Markt segmentieren und das Produkt positionieren
- wissen, wie die Wichtigkeit und Zufriedenheit von Kunden beurteilt werden können
- können die Beziehung zu Kunden und Vertriebspartnern gestalten
- wissen um Besonderheiten des Marketing im Dienstleistungs- und B2B-Bereich
- kennen die Besonderheiten des Marketing im internationalen Kontext

Content
The core course of the module is "Marketing Mix". This course is compulsory and must be examined. "Marketing Mix" contains instruments and methods that enable you to goal-oriented decisions in the operative marketing management (product management, pricing, promotion and sales management).
To deepen the marketing knowledge students can complete the module in two ways:

- by choosing the course "Brand Management".
- by choosing the combination of the courses "Services- and B2B-Marketing" and "International Marketing".

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

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

M Module: Fundamentals of construction [M-BGU-101004]

Responsibility: Shervin Haghsheno

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-101691	Construction Technology (S. 352)	6	Shervin Haghsheno
T-BGU-101675	Project Management (S. 513)	3	Shervin Haghsheno

Conditions
none

Qualification Objectives
The student

- is familiar with all substantial domains of construction
- knows and understands substantial construction methods and construction machines
- masters basic construction calculations
- knows and understands the fundamentals of project management in civil engineering

can apply his / her knowledge in a goal-oriented manner to accomplish a construction project efficiently

Content
Courses of this module comprise methods and machines from all construction domains. Specifically, the module covers production planning as well as substantial parts of structural engineering and underground engineering, including auxiliary systems. In addition to the explanation of fundamentals, machines, and methods the courses include performance calculations. Further, students receive an introduction to project management in civil engineering which includes project phases, project organization, and the columns of project management which are schedule management, cost management, and quality management.

Remarks
We encourage students to deepen their knowledge in construction by building additional customized modules from the courses offered by TMB. Please consult with the tutors of this module. Further information is available at www.tmb.kit.edu.

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

Responsibility: Christof Weinhardt, Gerhard Satzger

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective

Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger
T-WIWI-105775	Foundations of Digital Services B (S. 402)	4,5	Stefan Nickel, Stefan Morana, Alexander Mädche
T-WIWI-105711	Practical Seminar Digital Services (S. 496)	4,5	Christof Weinhardt, Rudi Studer, Stefan Nickel, Wolf Fichtner, Alexander Mädche, York Sure-Vetter, Gerhard Satzger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
Students

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

Content
Global economy is increasingly determined by services: in industrialized countries nearly 70% of gross value added is achieved in the tertiary sector. Unfortunately, for the design, development and the management of services traditional concepts focused on goods

are often insufficient or inappropriate. Besides, the rapid technical advance in the information and communication technology sector pushesthe economic importance of digital services even further thus changing the competition environment. ICT-based interaction and individualization open up completely new dimensions of shared value between clients and providers, dynamic and scalable "service value networks" replace established value chains, digital services are provided globally crossing geographical boundaries. This module establishes a basis for further specialization in service innovation, service economics, service design, service modelling, service analytics as well as the transformation and coordination of service networks.

Recommendations
None

Remarks
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.
The course Foundations of Digital Services B [new] is first offered in WS 2016/17.

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

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

Responsibility: Petra Nieken

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 Semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102909	Human Resource Management (S. 416)	4,5	Petra Nieken

Ergänzungsangebot
Non-Compulsory Block; min. 4,5, max. 5,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102908	Personnel Policies and Labor Market Institutions (S. 489)	4,5	Petra Nieken
T-WIWI-102630	Managing Organizations (S. 459)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 504)	2	Hagen Lindstädt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.
The course Personalmanagement (Human Resource Management) is compulsory and must be examined.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

Content
Students acquire basic knowledge in the field of human resource and organizational management. Strategic as well as operative

aspects of human resource management practices are analyzed. The module offers an up-to-date overview over basic concepts and models. It also shows the strengths and weaknesses of rational concepts in human resources and organizational management.
The students learn to apply methods and instruments to plan, select, and manage staff. Current issues of organizational management or selected aspects of personnel politics are examined and evaluated.
The focus lies on the strategic analysis of decisions and the use microeconomic or behavioral approaches. Empirical results of field or lab studies are discussed critically.

Recommendations
Completion of module Business Administration is recommended.
Basic knowledge of microeconomics, game theory and statistics is recommended.

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

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

Responsibility: Frank Schultmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102606	Fundamentals of Production Management (S. 408)	5,5	Frank Schultmann

Ergänzungsangebot
Non-Compulsory Block; min. 3,5, max. 3,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102820	Production Economics and Sustainability (S. 510)	3,5	Magnus Fröhling
T-WIWI-102870	Logistics and Supply Chain Management (S. 449)	3,5	Marcus Wiens

Learning Control / Examinations
The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course "Fundamentals of Production Management" [2581950] and one further single course of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
The course "Fundamentals of Production Management" [2581950] and one additional activity have to be chosen.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives

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

Content
This module is designed to introduce students into the wide area of industrial production and logistics management. It focuses on strategic production management under the aspect of sustainability. The courses use interdisciplinary approaches of systems, also

theory to describe the central tasks of industrial production management and logistics. Herein, attention is drawn upon strategic corporate planning, research and development as well as site selection. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

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

M Module: Integrated Production Planning [M-MACH-101272]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102106	Integrated Production Planning (S. 426)	9	Gisela Lanza

Conditions
none

Qualification Objectives
The students

- can discuss basic questions of production technology.
- are able to apply the methods of integrated production planning they have learned about to new problems.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques they have learned about for a specific problem.
- can apply the learned methods of integrated production planning to new problems.
- can use their knowledge targeted for efficient production technology.

Content
Within this engineering sciences-oriented module the students will get to learn principle aspects of organization and planning of production systems. Further information can be found at the description of the lecture "Integrated Production Planning".

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

M Module: Introduction to Natural Hazards and Risk Analysis 1 [M-WIWI-101646]

Responsibility: Michael Kunz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 12 ECTS

Identifier	Course	ECTS	Responsibility
T-PHYS-103117	Geological Hazards and Risks for external students (S. 412)	4	
T-BGU-101693	Hydrology (S. 419)	4	Erwin Zehe
T-BGU-101667	Hydraulic Engineering and Water Management (S. 417)	4	Franz Nestmann
T-BGU-101636	Remote Sensing, exam (S. 522)	4	Stefan Hinz
T-BGU-101637	Systems of Remote Sensing, Prerequisite (S. 563)	1	Stefan Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite (S. 506)	1	Uwe Weidner
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 434)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 435)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103542	Procedures of Remote Sensing (S. 505)	3	Uwe Weidner
T-PHYS-101092	Climatology (S. 344)		Peter Braesicke
T-PHYS-105594	Exam on Climatology (S. 388)	6	
T-PHYS-101557	Meteorological Hazards (S. 472)		Michael Kunz
T-PHYS-105954	Exam on Meteorological Hazards (S. 389)	3	Michael Kunz
T-BGU-101814	Project in Applied Remote Sensing (S. 512)	1	Stefan Hinz

Learning Control / Examinations
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.

Conditions
There are no singular exams for Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66]. Therefore it not possible to choose Remote Sensing [GEOD-BFB-1] and additionally the courses Remote Sensing Systems, Remote Sensing Methods or the project Angewandte Fernerkundung [20267] (because they are already included). See also "Recommendations".

Qualification Objectives
See German version

Content
See German version

Recommendations
The courses Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66] may be chosen as a minimal combination for the exam. However, it is recommended to choose the comprehensive combination Remote Sensing [GEOD-BFB-1], which includes Remote Sensing Systems [20241/42], Remote Sensing Methods [20265/66] and the project Angewandte Fernerkundung [20267].

Remarks
Students, who successfully completed both modules "Understanding and Prediction of Disasters" I and II (alternatively: one of

the modules in Bachelor and Master) can get a certificate of the module coordinator (CEDIM). This certificate lists the successful completed courses within the two modules.

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

M Module: Introduction to Natural Hazards and Risk Analysis 2 [M-WIWI-101648]

Responsibility: Michael Kunz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 12 ECTS

Identifier	Course	ECTS	Responsibility
T-PHYS-103117	Geological Hazards and Risks for external students (S. 412)	4	
T-BGU-101667	Hydraulic Engineering and Water Management (S. 417)	4	Franz Nestmann
T-BGU-101693	Hydrology (S. 419)	4	Erwin Zehe
T-BGU-101636	Remote Sensing, exam (S. 522)	4	Stefan Hinz
T-BGU-101637	Systems of Remote Sensing, Prerequisite (S. 563)	1	Stefan Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite (S. 506)	1	Uwe Weidner
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 434)	3	Sven Wursthorn, Norbert Rösch
T-BGU-101814	Project in Applied Remote Sensing (S. 512)	1	Stefan Hinz
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 435)	3	Sven Wursthorn, Norbert Rösch
T-BGU-103542	Procedures of Remote Sensing (S. 505)	3	Uwe Weidner
T-PHYS-101092	Climatology (S. 344)		Peter Braesicke
T-PHYS-105594	Exam on Climatology (S. 388)	6	
T-PHYS-101557	Meteorological Hazards (S. 472)		Michael Kunz
T-PHYS-105954	Exam on Meteorological Hazards (S. 389)	3	Michael Kunz

Learning Control / Examinations
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.

Conditions
There are no singular exams for Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66]. Therefore it not possible to choose Remote Sensing [GEOD-BFB-1] and additionally the courses Remote Sensing Systems, Remote Sensing Methods or the project Angewandte Fernerkundung [20267] (because they are already included). See also "Recommendations".

Modeled Conditions
The following conditions must be met:

- Module [M-WIWI-101646] *Introduction to Natural Hazards and Risk Analysis 1* has to be started before taking this module.

Qualification Objectives
See German version

Content
See German version

Recommendations
The courses Remote Sensing Systems [20241/42] and Remote Sensing Methods [20265/66] may be chosen as a minimal combination for the exam. However, it is recommended to choose the comprehensive combination Remote Sensing [GEOD-BFB-1], which includes

Remote Sensing Systems [20241/42], Remote Sensing Methods [20265/66] and the project Angewandte Fernerkundung [20267].

Remarks
Students, who successfully completed both modules Introduction to Natural Hazards and Risk Analysis 1/2 (alternatively: one of the modules in Bachelor and Master) can get a certificate of the module coordinator (CEDIM). This certificate lists the successful completed courses within the two modules.

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

M Module: Introduction to Technical Logistics [M-MACH-101269]

Responsibility: Kai Furmans

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Einführung in die Technische Logistik
Non-Compulsory Block; min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102151	Material Flow in Logistic Systems (S. 464)	6	Kai Furmans
T-MACH-102092	Industrial Application of Material Handling Systems in Sorting and Distribution Systems (S. 420)	4	Jörg Föller
T-MACH-102128	Information Systems and Supply Chain Management (S. 425)	4	Christoph Kilger
T-MACH-102163	Basics of Technical Logistics (S. 330)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-102159	Elements and Systems of Technical Logistics (S. 376)	4	Vladimir Madzharov, Martin Mittwollen
T-MACH-102178	Elements of Technical Logistics and Project (S. 377)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-102160	Selected Applications of Technical Logistics (S. 525)	4	Vladimir Madzharov, Martin Mittwollen
T-MACH-102161	Selected Applications of Technical Logistics and Project (S. 526)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-105149	Industrial Application of Technological Logistics Instancing Crane Systems (S. 421)	4	Markus Golder
T-MACH-105174	Warehousing and Distribution Systems (S. 569)	4	Melanie Schwab, Judith Weiblen
T-MACH-105151	Energy Efficient Intralogistic Systems (S. 381)	4	Meike Braun, Frank Schönung
T-MACH-105165	Automotive Logistics (S. 327)	4	Kai Furmans
T-MACH-105175	Airport Logistics (S. 315)	4	André Richter
T-WIWI-103091	Production and Logistics Controlling (S. 509)	3	Helmut Wlcek

Conditions
One of the core courses *Material Flow in Logistic Systems* [2117051] or *Basics of Technical Logistics* [2117095] or *Elements and systems of Technical Logistics* [2117096] is mandatory. *Elements and systems of Technical Logistics* is only allowed to be examined after *Basics of Technical Logistics* is passed successfully in this or an other module. For simultaneous attending of both courses, examination dates are sequenced accordingly.

Qualification Objectives
The student aquires

- well-founded knowledge and method knowledge in the main topics of technical logistics,
- expertise and understanding about the functionality of conveyor technology,
- ability for modeling logistic systems with adequate accuracy by using simple models,
- ability to evaluate logistic systems and to identify cause-and-effects-chains within logistic systems.

Content
The module *Introduction to Technical Logistics* provides first insights into main topics of technical logistics. Within the lectures, the interaction between several components of material handling systems will be clarified. The focus will be on technical characteristics of material handling technology and basics for sizing of material handling systems. To gain a deeper understanding, the course is accompanied by exercises and further improved by case studies.

M Module: Machine Learning for Finance and Data Science [M-WIWI-102753]

Responsibility: Maxim Ulrich

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Englisch	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-105712	Probabilistic Machine Learning for Finance and Data Science (S. 503)	4,5	Maxim Ulrich
T-WIWI-105714	Solving Finance Problems using Machine Learning (S. 550)	4,5	Maxim Ulrich

Learning Control / Examinations
The assessment is carried out as a module wide exam which itself consists of several partial exams (according to Section 4 (2), 1-3 SPO). A written exam at the end of the semester (120 min) (§4(2), 1 SPO) accounts for 50% of the module-wide grade. Students who have failed the first exam are allowed to retake the exam (during the 4th lecture free week in the same summer term).
Another 25% of the module grade is accounted for by the submission of weekly programming problem sets (during the first half of the semester). The presentation and submission of a machine learning programming project (during the 2nd half of the semester) accounts for the final 25% of the module-wide grade. Interested students can in addition earn a "Seminarschein".

Conditions
A formal prerequisite for taking this module is that students successfully complete all partial exams of the module wide exam within the same semester (only).
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
1 of 2 conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
We put students into the shoes of a chief risk manager of a global quant asset management firm. Students first learn the most essential finance concepts such as Markowitz approach to portfolio management, the Capital Asset Pricing Model to determine cost of capital (and expected asset returns) of investments, linear factor models to predict expected returns and systematic and unsystematic risk of investments. After completion of this first couple of learning points, students learn modern machine learning tools to accomplish superior predictions for future returns and risks of different asset classes (such as equity, fixed-income, derivatives).
Upon completion of the module, students will have a conceptual, analytical and practical working knowledge of the following concepts and implemented these using Python:

1. Financial Concepts

A.1 Portfolio Management
- Markowitz
- Black-Litterman
A.2 Predicting an asset's expected return
- CAPM, Fama-French, linear factor models
- Fama-MacBeth
- ARMA modeling

- State Space modeling
A.3 Predicting an asset's future risk
- ARCH/GARCH
- State Space modeling

1. Machine Learning concepts

B.1 'Supervised learning' within linear and nonlinear models (e.g. least squares, maximum likelihood, Kalman Filter, MCMC)
B.2 'Unsupervised learning' (e.g. PCA, SVD)

Content
This module provides a hands-on introduction to the use of machine learning for modeling financial markets. We will cover methods on how to predict asset returns, how to estimate the risk density of returns and respective risk premiums and how to build optimal portfolios. We will make use of modern statistical machine learning algorithms and test them rigorously with risk and asset management applications. The intuitive, yet analytical combination of machine learning on the one hand and financial applications on the other hand are a key feature of this module. The revealed knowledge will be useful for quantitative industry internships and jobs as well as for quantitative and/or data driven lectures, seminars and bachelor thesis at the FBV or other KIT institutes. In addition to studying the machine learning concepts, students receive numerous opportunities use modern machine learning software in order to solve current financial problems.

Recommendations
This module is self-contained. It is recommended that students have already heard other finance courses, although this is not a formal prerequisite. Students are assumed to have earned at least good grades during the KIT Bachelor's math, stats, OR and IT courses.

Remarks
The courses of the module are held in English.

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

M Module: Machine Tools and Industrial Handling [M-MACH-101286]

Responsibility: Jürgen Fleischer

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102158	Machine Tools and Industrial Handling (S. 450)	9	Jürgen Fleischer

Conditions
None

Qualification Objectives
The students

- are capable to explain the use and application of machine tools and handling devices as well as differentiate their characteristics and structure.
- are able to name and describe the essential components (frame, main spindles, feed axis, peripheral equipment, control) of machine tools.
- Are capable to distinguish and select and describe the essential components regarding structure, characteristics advantages and disadvantages.
- are enabled to dimension the main components of machine tools.
- are able to name and describe the control principles of machine tools.
- are capable to name examples of machine tools and industrial handling as well as to deduce compare the essential components. Additionally they can allocate manufacturing processes.
- are enabled to identify drawbacks as well as derive and asses measures for improvements.
- are qualified to apply methods for selection and evaluation of machine tools.
- are experienced to deduce the particular failure characteristics of a ball screw.

Content
The module overviews the assembly, dimensioning and application of machine tools and industrial handling. A consolidated and practice oriented knowledge is imparted about the choice, dimensioning and assessment of production machines. At first, the major components of machine tools are explained systematically. At this, the characteristics of dimensioning of machine tools are described in detail. Finally, the application of machine tools is demonstrated by means of example machines of the manufacturing processes turning, milling, grinding, massive forming, sheet metal forming and toothing.

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

Responsibility: Marcus Wouters

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102800	Management Accounting 1 (S. 452)	4,5	Marcus Wouters
T-WIWI-102801	Management Accounting 2 (S. 453)	4,5	Marcus Wouters

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
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.

Remarks
Students who like this module are probably also interested in the courses

- 2530216 Financial Management
- 2530210 Management Accounting

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

M Module: Manufacturing Technology [M-MACH-101276]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each winter term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102105	Manufacturing Technology (S. 461)	9	Frederik Zanger, Volker Schulze

Conditions
None

Qualification Objectives
The students

- can name different manufacturing processes, can describe their specific characteristics and are capable to depict the general function of manufacturing processes and are able to assign manufacturing processes to the specific main groups.
- are enabled to identify correlations between different processes and to select a process depending on possible applications.
- are capable to describe the theoretical basics for the manufacturing processes they got to know within the scope of the course and are able to compare the processes.
- are able to correlate based on their knowledge in materials science the processing parameters with the resulting material properties by taking into account the microstructural effects.
- are qualified to evaluate different processes on a material scientific basis.

Content
Within this engineering sciences-oriented module the students will get to learn principle aspects of manufacturing technology. Further information can be found at the description of the lecture "Manufacturing Technology".

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

M Module: Methodical Foundations of OR [M-WIWI-101414]

Responsibility: Oliver Stein

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Operations Research
Compulsory Elective Modules/Elective Module 2/Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 3 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102726	Global Optimization I (S. 413)	4,5	Oliver Stein
T-WIWI-103062	Prerequisite for Nonlinear Optimization I (Bachelor) (S. 499)		
T-WIWI-102724	Nonlinear Optimization I (S. 480)	4,5	Oliver Stein

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102727	Global Optimization II (S. 415)	4,5	Oliver Stein
T-WIWI-103638	Global Optimization I and II (S. 414)	9	
T-WIWI-103060	Prerequisite for Nonlinear Optimization II (Bachelor) (S. 500)		Oliver Stein
T-WIWI-102725	Nonlinear Optimization II (S. 482)	4,5	Oliver Stein
T-WIWI-103637	Nonlinear Optimization I und II (S. 481)	9	
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-102710	Markov Decision Models I (S. 462)	5	Karl-Heinz Waldmann

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

Conditions
At least one of the lectures *Nonlinear Optimization I* [2550111] and *Global Optimization I* [2550134] has to be examined.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student

- names and describes basic notions for optimization methods, in particular from nonlinear and from global optimization,
- knows the indispensable methods and models for quantitative analysis,

- models and classifies optimization problems and chooses the appropriate solution methods to solve also challenging optimization problems independently and, if necessary, with the aid of a computer,
- validates, illustrates and interprets the obtained solutions.

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

Remarks
The planned lectures and courses for the next three years are announced online (http://www.ior.kit.edu).
For the lectures of Prof. Stein a grade of 30 % of the exercise course has to be fulfilled. The description of the particular lectures is more detailed.

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

M Module: Microsystem Technology [M-MACH-101287]

Responsibility: Volker Saile

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-105182	Introduction to Microsystem Technology I (S. 436)	3	Jan Gerrit Korvink, Andreas Guber

Wahlplfichtangebot
Non-Compulsory Block; min. 5 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-105183	Introduction to Microsystem Technology II (S. 437)	3	Andreas Guber
T-MACH-102164	Practical Training in Basics of Microsystem Technology (S. 497)	3	Arndt Last
T-MACH-100530	Physics for Engineers (S. 491)	6	Alexander Nesterov-Müller, Peter Gumbsch
T-MACH-102165	Selected Topics on Optics and Microoptics for Mechanical Engineers (S. 527)	3	Timo Mappes
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II (S. 332)	3	Andreas Guber
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III (S. 333)	3	Andreas Guber
T-MACH-101910	Microactuators (S. 473)	3	Manfred Kohl
T-MACH-102152	Novel Actuators and Sensors (S. 483)	4	Manfred Kohl, Martin Sommer
T-MACH-102080	Nanotechnology with Clusterbeams (S. 478)	3	Jürgen Gspann
T-MACH-102172	Bionics for Engineers and Natural Scientists (S. 334)	3	Hendrik Hölscher
T-ETIT-101907	Optoelectronic Components (S. 485)	4	Wolfgang Freude

Conditions
None

Qualification Objectives

- construction and production of e. g. mechanical, optical, fluidic and sensory microsystems.

Content
The module offers courses in microsystem technology. Knowledge is imparted in various fields like basics in construction and production of e. g. mechanical, optical, fluidic and sensory microsystems.

Remarks
If you have any questions concerning the module, please contact Prof. Dr. Andreas E. Guber.

M Module: Mobility and Infrastructure [M-BGU-101067]

Responsibility: Ralf Roos

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each summer term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-101791	Mobility and Infrastructure (S. 474)	9	Ralf Roos

Conditions
none

Qualification Objectives
Learning the fundamental terminology and methodology of spatial and transportation planning, traffic engineering as well as highway engineering

Content
Basic tasks and contents of different planning levels, for example: Land use and conflicts, provision of services and infrastructure as well as their costs, planning on local, regional, national and European level.

Fundamentals of transportation planning (convention for analyses, surveys of travel behaviour), fundamentals of traffic engineering

Design Basics in Highway Engineering: Road network layout, driving dynamics, principles of highway design; earthworks, pavements and their dimensioning

M Module: Power Network [M-ETIT-102379]

Responsibility: Thomas Leibfried, Bernd Hoferer

Organisation: KIT-Fakultät für Elektrotechnik und Informationstechnik
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Language
9	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-101923	Electric Energy Systems (S. 375)	5	Thomas Leibfried
T-ETIT-100830	Power Network (S. 495)	6	Thomas Leibfried

M Module: Product Lifecycle Management [M-MACH-101270]

Responsibility: Jivka Ovtcharova

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-105147	Product Lifecycle Management (S. 507)	6	Jivka Ovtcharova

Product Lifecycle Management
Non-Compulsory Block; min. 3 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102125	Computer Integrated Planning of New Products (S. 351)	4	Roland Kläger
T-MACH-102153	PLM-CAD Workshop (S. 493)	4	Jivka Ovtcharova
T-MACH-102181	PLM for Product Development in Mechatronics (S. 492)	4	Martin Eigner
T-MACH-102209	Information Engineering (S. 423)	3	Jivka Ovtcharova
T-MACH-105937	Information management in production (S. 424)	4	Oliver Riedel

Conditions
None

Qualification Objectives
The students should:

- have basic knowledge about the challenges in product and process data management regarding the whole product lifecycle;
- have understanding about challenges and functional concepts of product lifecycle management;
- be able to operate common PLM systems.

Content
This module describes management and organizational approaches of Product Lifecycle Management, their application in IT and the potential benefits of PLM system solutions. Optional courses of this module introduce current product development processes in the scope of enterprise PLM system solutions.

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

Responsibility: Berthold Wigger

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Economics/Specialisation program
Compulsory Elective Modules/Elective Module 1/Economics
Compulsory Elective Modules/Elective Module 2/Economics
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102739	Public Revenues (S. 518)	4,5	Berthold Wigger
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102836	Monetary and Financial Policy (S. 476)	4,5	Joachim Nagel, Berthold Wigger
T-WIWI-102877	Monetary and Financial Policy (S. 477)	4,5	Berthold Wigger

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101606] *Economics* is required before taking this module.

Qualification Objectives
See German version.

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

Recommendations
It is recommended to attend the course*Spezielle Steuerlehre*[2560129] after having completed the course*Öffentliche Einnahmen*[2560120].

Remarks
See German version.

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

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

Responsibility: Thomas Lützkendorf

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102744	Real Estate Management I (S. 520)	4,5	Thomas Lützkendorf
T-WIWI-102745	Real Estate Management II (S. 521)	4,5	Thomas Lützkendorf

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

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

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

Recommendations
The combination with the module*Design Constructions and Assessment of Green Buildings* is recommended.
Furthermore a combination with courses in the area of

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

is recommended.

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

M Module: Risk and Insurance Management [M-WIWI-101436]

Responsibility: Ute Werner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102603	Principles of Insurance Management (S. 502)	4,5	Ute Werner
T-WIWI-102608	Enterprise Risk Management (S. 385)	4,5	Ute Werner

Learning Control / Examinations
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 lectures are examined by oral presentations and related term papers in the context of the lectures. Furthermore, there is a final oral examination.

The grade of each examination consists of the oral presentation and the term paper (50 percent) and the oral examination (50 percent). 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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
See German version.

Content
See German version.

M Module: Sociology/Empirical Social Research [M-GEISTSOZ-101167]

Responsibility: Gerd Nollmann

Organisation: KIT-Fakultät für Geistes- und Sozialwissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 2/Sociology
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-GEISTSOZ-101959	Social Structures of Modern Societies (S. 546)	4	Gerd Nollmann
T-GEISTSOZ-101957	Special Sociology (S. 551)	4	Gerd Nollmann
T-GEISTSOZ-101958	Projectseminar (S. 514)	4	Gerd Nollmann

Conditions
None

Qualification Objectives
The student

- Gains theoretical and methodical knowledge of social processes and structures
- Is able to apply acquired knowledge practically
- Is able to present work results in a precise and clear way

Content
This module offers students the possibility to get to know research problems and to answer these theoretically as well as empirically. For example: Who does earn how much in his job and why? How do subcultures emerge? Why are boys' grades in school always worse than those of girls? Do divorces have negative influences on the development of children? How does mass consumption influence the individual? Is there a world society emerging?

In addition, this module contains courses on sociological methods that are essential to answer the above questions scientifically.

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

Responsibility: Andreas Geyer-Schulz

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Language	Level
9	Deutsch	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 321)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 484)	4,5	Andreas Geyer-Schulz

Ergänzungsangebot
Non-Compulsory Block; max. 1 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 347)	4,5	Kay Mitusch
T-WIWI-105771	Foundations of Digital Services A (S. 400)	4,5	Christof Weinhardt, Gerhard Satzger

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the single courses of this module, 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.

Conditions
Successful passing of the corresponding modules of the basic program.

- It is only possible to choose this module in combination with the module *CRM and Servicemanagement*. The module is passed only after the final partial exam of *CRM and Servicemanagement* is additionally passed.
- At least, one of the courses *Analytic CRM* [2540522] and *Operative CRM* [2540520] has to be taken.

Modeled Conditions
The following conditions must be met:

1. Module [M-WIWI-101460] *CRM and Service Management* has to be started before taking this module.
2. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
3. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The student

- knows the scientific methods (from business administration, statistics, informatics) which are most relevant for analytic CRM and he autonomously applies these methods to standard cases,
- gains an overview of the market for CRM software,

- designs, implements, and analyzes operative CRM processes in concrete application domains (e.g. campaign management, call center management, ...),
- is aware of the problems of protecting the privacy of customers and the implications of privacy law.

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

- Strategic marketing processes
- Operative marketing processes (campaign managament, permission marketing, ...)
- Customer service processes (sales force management, field services, call center management, ...)

Remarks
The courses *Analytical CRM* and *Operative CRM* will take place in an alternating way from winter term 14/15. Analytical CRM is offered for a last time in the summer term 14. Details on

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

M Module: Specialization in Production Engineering [M-MACH-101284]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective
Contained in: Compulsory Elective Modules/Elective Module 1/Engineering Sciences
Compulsory Elective Modules/Elective Module 2/Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration
9	Each term	2 semester

Vertiefung der Produktionstechnik
Non-Compulsory Block; min. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-MACH-102107	Quality Management (S. 519)	4	Gisela Lanza
T-MACH-105166	Materials and Processes for Body Leightweight Construction in the Automotive Industry (S. 465)	4	Stefan Kienzle, Dieter Steegmüller
T-MACH-105177	Metal Forming (S. 471)	4	Florian Herlan
T-MACH-105185	Control Technology (S. 353)	4	Christoph Gönnheimer
T-MACH-102148	Gear Cutting Technology (S. 410)	4	Markus Klaiber
T-MACH-102189	Production Technology and Management in Automotive Industry (S. 511)	4	Volker Michael Stauch
T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars (S. 427)	4	Karl-Hubert Schlichtenmayer

Qualification Objectives
Der/ die Studierende

- besitzt grundlegende Kenntnisse über die industrielle Anwendung der Informationstechnologie im Gebiet der Produktentstehung,
- versteht die gegenwärtige und zukünftige Nutzung von Informationssystemen im Produktentstehungsprozess im Kontext des Product Lifecycle Managements und des Virtual Engineering,
- ist in der Lage, gängige Cax-und PLM-Systeme im Produktentstehungsprozess einzusetzen.

Content
Dieses Modul vermittelt eine integrative lebenszyklusorientierte Betrachtung von Produkten und Prozessen. Beschrieben werden die globale Verteilung von Entwicklung, Fertigung und Vertrieb, sowie die Erschließung der Potenziale des Einsatzes neuer immersiver, interaktiver und intelligenter Technologien (Virtual Reality, Augmented Reality, Mixed Reality, Virtual Mock-Up) für funktionsbezogene Validierungstätigkeiten im Kontext des gesamten Produktes.

Remarks
Das Modul kann nicht mehr neu belegt werden. Studierende, die das Modul bereits begonnen haben, können dies noch unter den alten Bedingungen bis zum WS2011/12 abschließen oder sich auf schriftlichen Antrag beim Studienbüro auf eines der Nachfolgemodule *Virtual Engineering A* [WW4INGMB29] und *Virtual Engineering B* [WW4INGMB30] umbuchen lassen.

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

Responsibility: Melanie Schienle, Oliver Grothe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Additional Examinations

ECTS	Recurrence	Duration	Language
9	Each term	1 Semester	Deutsch

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102736	Economics III: Introduction in Econometrics (S. 371)	5	Melanie Schienle

Ergänzungsangebot
Non-Compulsory Block; min. 4, max. 5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-103063	Analysis of multivariate Data (S. 319)	4,5	Oliver Grothe
T-WIWI-103064	Financial Econometrics (S. 397)	4,5	Melanie Schienle
T-WIWI-103065	Statistical Modeling of generalized regression models (S. 559)	4,5	Wolf-Dieter Heller
T-WIWI-103066	Data Mining and Applications (S. 357)	4,5	Rheza Nakhaeizadeh

Learning Control / Examinations
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.

Conditions
None

Qualification Objectives
The student

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

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

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

M Module: Stochastic Methods and Simulation [M-WIWI-101840]

Responsibility:

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102627	Simulation I (S. 543)	4,5	Karl-Heinz Waldmann

Ergänzungsangebot
Non-Compulsory Block; min. 4,5 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102711	Markov Decision Models II (S. 463)	4,5	Karl-Heinz Waldmann
T-WIWI-102703	Simulation II (S. 544)	4,5	Karl-Heinz Waldmann
T-WIWI-103062	Prerequisite for Nonlinear Optimization I (Bachelor) (S. 499)		
T-WIWI-102724	Nonlinear Optimization I (S. 480)	4,5	Oliver Stein
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel

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

Conditions
None

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-WIWI-101418] *Introduction to Operations Research* is required before taking this module.

Qualification Objectives
The student posses profound knowledge in modelling, analyzing and optimizing stochastic systems in economy and engineering.

Content
Markov Decision Models I: Markov Chains, Poisson Processes
Markov Decision Models II: Queuing Systems, Stochastic Decision Processes
Simulation I: Generation of random numbers, Monte Carlo integration, Discrete event simulation, Discrete and continuous random variables, Statistical analysis of simulated data.
Simulation II: Variance reduction techniques, Simulation of stochastic processes, Case studies.

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

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

Responsibility: Hagen Lindstädt

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	2 semester	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102629	Management and Strategy (S. 454)	3,5	Hagen Lindstädt
T-WIWI-102630	Managing Organizations (S. 459)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 504)	2	Hagen Lindstädt

Learning Control / Examinations
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.

Conditions
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
See German version.

Content
Das Modul ist praxisnah und handlungsorientiert aufgebaut und vermittelt dem Studierenden einen aktuellen Überblick grundlegender Konzepte und Modelle des strategischen Managements und ein realistisches Bild von Möglichkeiten und Grenzen rationaler Gestaltungsansätze der Organisation.
Im Mittelpunkt stehen erstens interne und externe strategische Analyse, Konzept und Quellen von Wettbewerbsvorteilen, Formulierung von Wettbewerbs- und von Unternehmensstrategien sowie Strategiebewertung und -implementierung. Zweitens werden Stärken und Schwächen organisationaler Strukturen und Regelungen anhand systematischer Kriterien beurteilt. Dabei werden Konzepte für die Gestaltung organisationaler Strukturen, die Regulierung organisationaler Prozesse und die Steuerung organisationaler Veränderungen vorgestellt.

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

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

Responsibility: Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 1, max. 2 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-102598	Management of Business Networks (S. 455)	4,5	Christof Weinhardt
T-WIWI-102760	Management of Business Networks (Introduction) (S. 456)	3	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; max. 4 Courses

Identifier	Course	ECTS	Responsibility
T-WIWI-103061	Prerequisite for Facility Location and Strategic Supply Chain Management (S. 498)		Stefan Nickel
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 394)	4,5	Stefan Nickel
T-WIWI-105940	Prerequisite for Tactical and Operational Supply Chain Management (S. 501)		Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 564)	4,5	Stefan Nickel
T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems (S. 447)	6	Kai Furmans

Learning Control / Examinations
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.

Conditions
At least one of the courses Management of Business Networks [2590452] *and* Management of Business Networks (Introduction) [2540496] *has to be taken.*
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.

Qualification Objectives
The students

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

Content
The module "Supply Chain Management" gives an overview of the mutual dependencies of information systems and of supply chains spanning several enterprises. The specifics of supply chains and their information needs set new requirements for the operational information management. In the core lecture "Management of Business Networks" the focus is set on the strategic aspects of management and information systems. The course is held in English and teaches parts of the syllabus with the support of a case study elaborated with Prof Kersten from Concordia University, Montreal, Canada. The course MBN introduction is consisting out of the first part of the regular MBN lecture, but as it has less credits will not include the analysis of the case study.
The module is completed by an elective course addressing appropriate optimization methods for the Supply Chain Management and for modern logistic approaches.

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

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 398)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 341)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 324)	3	Andreas Sauer

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.
In addition to that it is possible to choose the module *Topics in Finance II*.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.
3. Module [M-WIWI-101435] *Essentials of Finance* has to be started before taking this module.

Qualification Objectives
The student

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

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

Recommendations
None

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

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes

Organisation: KIT-Fakultät für Wirtschaftswissenschaften
Curricular Anchorage: Compulsory Elective
Contained in: Business Administration/Specialisation program
Compulsory Elective Modules/Elective Module 1/Business Administration
Compulsory Elective Modules/Elective Module 2/Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level
9	Each term	1 semester	3

Wahlpflichtangebot
Non-Compulsory Block; min. 9, max. 9 ECTS

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 398)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 362)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 390)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 341)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 428)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 373)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 558)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 324)	3	Andreas Sauer

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Conditions
Successful passing of the corresponding modules of the basic program.
It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.
In addition to that it is possible to choose the module *Topics in Finance I*.

Modeled Conditions
The following conditions must be met:

1. Successful completion of module [M-WIWI-101494] *Fundamentals of Business Administration 1* is required before taking this module.
2. Successful completion of module [M-WIWI-101578] *Fundamentals of Business Administration 2* is required before taking this module.
3. Module [M-WIWI-101435] *Essentials of Finance* has to be started before taking this module.

Qualification Objectives
The student

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

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

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

Part VII
Differing module descriptions SPO 2007

M Module: Business Administration [WI1BWL1]

Responsibility: M. Uhrig-Homburg, M. Ruckes

ECTS	Recurrence	Duration
15	Every term	3 terms

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102819	Business Administration: Finance and Accounting (S. 337)	4,0	Marliese Uhrig-Homburg, Martin Ruckes
T-WIWI-102817	Business Administration: Strategic Management and Information Engineering and Management (S. 339)	3,0	Martin Ruckes, Petra Nieken
T-WIWI-102818	Business Administration: Production Economics and Marketing (S. 338)	4,0	Frank Schultmann, Martin Klarmann, Martin Ruckes, Thomas Lützkendorf, Wolf Fichtner
T-WIWI-102816	Financial Accounting and Cost Accounting (S. 396)	4,0	Jan-Oliver Strych

Learning Control / Examinations
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. The examinations take place at the beginning of the recess period. Re-examinations are offered at every ordinary examination date. The assessment procedures of each course of this module is defined for each course 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.

Conditions
None.

Recommendations
It is strongly recommended to attend the courses in the following sequence:
1st term: *Business Administration: Strategic Management and Information Engineering and Management [2600023]* and *Business Administration: Finance and Accounting [25026/25027]*
2nd term: *Business Administration: Production Economics and Marketing [25024/25025]*
3rd term: *Financial Accounting and Cost Accounting [25002/25003]*

Qualification Objectives
The student

- has core skills in business administration in particular with respect to decison making and model based view of corporations
- masters the fundamentals of managerial and financial accounting as well as business administration
- is able to analyse and assess the central tasks, functions and decisions in modern corporations

This module sets the base for advanced courses in the field of business administration and management science.

Content
This module provides the fundamentals of managerial and financial accounting as well as business administration and management science. Then, the module focuses on the fields of marketing, production economics, information engineering and management, management and organization, investment and finance and the german specific term controlling.

Workload
The total workload for this module is approximately 450 hours. For further information see German version.

Remarks
The title and partly the content of each lecture within this module has changed in the winter semester 2012/13.

M Module: Economics [M-WIWI-101398]

Responsibility: Clemens Puppe

ECTS	Recurrence	Duration
10	Every term	2 semester

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102708	Economics I: Microeconomics (S. 368)	5,0	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102709	Economics II: Macroeconomics (S. 370)	5,0	Berthold Wigger

Learning Control / Examinations
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. The assessment procedures of each course of this module is defined for each course separately.

Module Grade
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.

Qualification Objectives
The student

- knows and understands basic economic problems,
- understands economic policy in globalized markets,
- is able to develop elementary solution concepts.

The lectures of this module have different focuses: In Economics I, economic problems are seen as decision problems, Economics II treats the dynamics of economic processes.

Content
The basic concepts, methods and models of micro- and macroeconomics are treated. The course *Economics I: Microeconomics [2600012]* deals with micro-economic decision theory, questions of market theory and problems of imperfect competition and with basic principles of game theory and welfare economics. *Economics II: Macroeconomics [2600014]* discusses economic organization models and national accounts as well as the question of international trade and monetary policy. Furthermore, the complex growth, boom and economic speculations are dealed with.

Workload
See German version.

M Module: Introduction to Informatics [WI1INFO]

Responsibility: H. Schmeck, R. Studer, Y. Sure-Vetter, M. Zöllner

ECTS	Recurrence	Duration
15	Every term	2 terms

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102735	Introduction to Programming with Java (S. 439)	5,0	M. Zöllner
T-WIWI-102749	Foundations of Informatics I (S. 403)	5,0	York Sure-Vetter
T-WIWI-102707	Foundations of Informatics II (S. 404)	5,0	Hartmut Schmeck

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the individual courses of this module.
The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. For a successful module assessment all partial exams have to be passed:

- Introduction to Programming with Java
  Compulsory tests in the computer lab
  Written exam resp. computer-based exam (60 min)
  The successful completion of the compulsory tests in the computer lab is prerequisited for admission to the written resp. computer-based exam.
- Foundations of Informatics I
  Written exam in the first week of the recess period (60 min)
- Foundations of Informatics II
  Written exam in the first week of the recess period (90 min)
  It is possible to gain 0,3-0.4 grading points to the written exam by successfull participation in the exercises (achieving a minimum number of points received for solutions to the exercises), or by successful completion of a bonus exam (both according to Section 4 (2), 3 of the examination regulation).

When all partial exams are passed, the overall grade of the module is the average of the grades for each course weighted by the credit points and truncated after the first decimal.

Conditions
None.

Recommendations
It is strongly recommended to attend the courses in the following sequence: *Introduction to Programming with Java* [2511000], *Foundations of Informatics I* [2511010] *Foundations of Informatics II* [2511012]

Qualification Objectives
The student

- knows the main principles, methods and systems of computer science,
- can use this knowledge for applications in advanced computer science courses and other areas for situation-adequate problem solving,
- is capable of finding strategic and creative responses in the search for solutions to well defined, concrete, and abstract problems.

The student can deepen the learned concepts, methods, and systems of computer science in advanced computer science lectures.

Content
This module conveys knowledge of the widespread object-oriented programming Java language. Furthermore, the topics modeling, logic, algorithms, sorting and searching algorithms, complexity theory, problem specifications, and dynamic data structures are addressed. From the field of theoretical computer science, formal models of automata, languages and algorithms are presented and applied to the architecture of computer systems.

Workload
The total workload for this module is approximately 450 hours. For further information see German version.

M Module: Mathematics [WI1MATH]

Responsibility: G. Last

ECTS	Recurrence	Duration
21	Every 2nd term, Winter Term	3 terms

Compulsory

Identifier	Course	ECTS	Responsibility
T-MATH-102260	Mathematics I - Midterm Exam (S. 467)	3,5	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter
T-MATH-102261	Mathematics I - Final Exam (S. 466)	3,5	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter
T-MATH-102262	Mathematics II - Midterm Exam (S. 469)	3,5	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter
T-MATH-102263	Mathematics II - Final Exam (S. 468)	3,5	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter
T-MATH-102264	Mathematics III - Final Exam (S. 470)	7,0	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(2), 1 and 3 of the examination regulation) of the single courses of this module.
The overall grade of the module is the average of the grades for each course truncated after the first decimal.
The assessment procedures of each course of this module is defined for each course separately.

Conditions
The admission to the examinations carried out regardless of the evidence of the other examinations in the module.

Recommendations
It is strongly recommended to attend the courses in the following sequence: *Mathematics I* [01350], *Mathematics II* [01830] *Mathematics III* [01352]

Qualification Objectives
See German version.

Content

Workload
The total workload for this module is approximately 630 hours. For further information see German version.

M Module: Statistics [M-WIWI-101432]

Responsibility: Melanie Schienle

ECTS	Recurrence	Duration
10	Every term	2 semester

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102737	Statistics I (S. 560)	5,0	Melanie Schienle
T-WIWI-102738	Statistics II (S. 561)	5,0	Melanie Schienle

Learning Control / Examinations
The assessment of this module consists of two written examinations according to Section 4(2), 1 of the examination regulation (one for each of the courses Statistics I and II).
The overall grade of the module is the average of the grades of these two written examinations.

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

Conditions
Notice: The lecture *Statistics I* [25008/25009] is part of the preliminary examination concerning Section 8(1) of the examination regulation. This examination must be passed until the end of the examination period of the second semester. Any Re-examinations has to be passed until the end of the examination period of the third semester. Otherwise the examination claim will be lost.

Qualification Objectives
See German version.

Content
The module contains the fundamental methods and scopes of Statistics.
A. Descriptive Statistics: univariate und bivariate analysis
B. Probability Theory: probability space, conditional and product probabilities, transformation of probabilities, parameters of location and dispersion, most importand discrete and continuous distributions, covariance and correlation, convolution and limit distributions
C. Theory of estimation and testing: suffiency of statistics, point estimation (optimality, ML-method), internal estimations, theory of tests (optimality, most important examples of tests)

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

M Module: Seminar Module [WI3SEM]

Responsibility: Studiendekan (Fak. f. Wirtschaftswissenschaften)

ECTS	Recurrence	Duration
9	Every term	1 term

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-103485	Seminar in Informatics (Bachelor) (S. 534)	3,0	Andreas Oberweis, Hartmut Schmeck, Johann Marius Zöllner, Rudi Studer, York Sure-Vetter
T-WIWI-103486	Seminar in Business Administration (Bachelor) (S. 530)	3,0	Andreas Geyer-Schulz, Bruno Neibecker, Christof Weinhardt, David Lorenz, Frank Schultmann, Gerhard Satzger, Hagen Lindstädt, Hansjörg Fromm, Ju-Young Hinz, Marcus Wouters, Marion Weissenberger-Eibl, Marliese Uhrig-Homburg, Martin Klarmann, Martin Ruckes, Orestis Terzidis, Petra Nieken, Stefan Nickel, Thomas Lützkendorf, Ute Werner, Wolf Fichtner
T-WIWI-103487	Seminar in Economics (Bachelor) (S. 532)	3,0	Berthold Wigger, Clemens Puppe, Ingrid Ott, Jan Kowalski, Johannes Philipp Reiß, Kay Mitusch, Marten Hillebrand
T-WIWI-103488	Seminar in Operations Research (Bachelor) (S. 538)	3,0	Karl-Heinz Waldmann, Oliver Stein, Stefan Nickel
T-WIWI-103489	Seminar in Statistics (Bachelor) (S. 539)	3,0	Melanie Schienle, Oliver Grothe, Wolf-Dieter Heller
T-WIWI-102755	Seminar in Seminar in Engineering Science (Bachelor) (S. 533)	3,0	Martin Ruckes
T-MATH-102265	Seminar in Mathematics (Bachelor) (S. 537)	3,0	Günter Last, Martin Folkers
T-INFO-101997	Seminar: Legal Studies I (S. 540)	3,0	Thomas Dreier
SemSQ (Bachelor)	Seminar Key Skills (Bachelor)	1-3	ZAK, HoC

Learning Control / Examinations
The modul examination consists of two seminars and of at least one key qualification (KQ) course (according to §4 (3), 3 of the examintaion regulation). A detailed description of every singled assessment is given in the specific course characerization.
The final mark for the module is the average of the marks for each of the two seminars weighted by the credits and truncated after the first decimal. Grades of the KQ courses are not included.

Conditions
All modules of the core programme should have been absolved.
Furthermore the course specific preconditions must be observed.

- *Seminars*: Two 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.
- Alternatively one of the two seminars can be absolved at a engineering department or at the Department of Mathematics. The seminar has to be offered by a representative of the respective department as well. The assessment has to meet the demands of the Department of Economics and Management(active participation, term paper with a workload of at least 80 h, presentation). This alternative seminar **requires an official approval** and can be applied at the examination office of the Department of Economics and Management. Seminars at the institutes wbk and IFL do not require these approval.
- *Key Qualification (KQ)-course(s)*: One or more courses with at least 3 CP in total of additional key qualifications have to be chosen among the courses [HoC, ZAK, Sprachenzentrum].

Qualification Objectives

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

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. A detailled description o these qualifications is given in the section "Key Qualifications" of the module handbook.
Furthermore, the module also includes additional key qualifications provided by the KQ-courses.

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

Remarks
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.
The courses "Seminar Human Resource Management" [2573011] and "Seminar Human Resources and Organizations" [2573010] have both been added summer 2015.

M Module: Internship [WI3EXPRAK]

Responsibility: Der Vorsitzende des Prüfungsausschusses

ECTS	Recurrence	Duration
8		

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102611	Internship (S. **??**)	8,0	Der Vorsitzende des Prüfungsausschusses

Learning Control / Examinations
The assessment is carried out by the evidence of completed full-time internships of at least eight weeks a and a presentation of the internship in the form of a written report on the activities.

1. Information on evidence of completed full-time internships:

The internship is proofed by the certificate of the intern's office. The certificate has to be formally correct with official corporate letterhead and handwritten countersigned by a responsible employee of the company.

The certificate must at least contain the following information:

* Company / Location
* Duration: from ... to ...
* Hours of work (weakly)
* Working interruption, indicating the vacation and sick days
* Department
* Headwords to the activitis

2. Information on to the presentation:

The internship report should be at least one page (typewritten, not handwritten) for each Location. It must be countersigned by a representative of the intern's office.

Conditions
Internships, that were completed even before studying may be recognized, if the criteria for recognition are met. After recognition of the compulsory internship, there can be taken a semester off for a voluntary, student-related internship. The possibility is particularly interesting in view of the master programme, which requires internships of at least 12 weeks.
Regarding to the election of the company, in which the internship is completed, there are no specific rules. With a view to the future professional career, it is recommended to absolve the internship in a larger, possibly international company.

Qualification Objectives

- has general insight into the essential processes in a company,
- is in a position to identify operation correlations and has the knowledge and skills to facilitate a fast understanding of the processes in the company,
- in addition to practical professional experience and competences, also has key competences such as own initiative, ability to work in a team and communication skills as well as ability to integrate into corporate hierarchies and procedures,
- has the experience to accomplish complex IT and business tasks under realistic conditions within the framework of the relevant legal aspects and while applying the total acquired knowledge (interlaced thinking),
- has an idea of the professional development potential in the economy through pursuit of study-related activities,
- knows the technical and professional requirements in the individually targeted future occupation and can take this knowledge into account for the future planning of his/her studies and career,
- can assess and estimate own technical and professional strengths and weaknesses through his/her evaluation of the company.

Content
The internship may be done in economic, business and/or technical companies. At best, it is done on activities which are located at the intersection of the two fields - getting to know the specific requirements of Industrial Engineering and Management.
A commercial internship provides an insight into business or administrative processes of business transactions. Therefor departments such as controlling, organizing, marketing and planning appear particularly suitable.
Work experiences in the departments of engineering, work preparation and provision of material or IT cover more technical aspects of the internship. But work experiences in an engineering firm go with a technical internship.
It remains the companies and interns left, which stations and areas the intern will eventually go through. But the focus should always be in accordance with operational realities of the company.

Workload
The total workload for this module is approximately 240 hours. For further information see German version.

Remarks
Vacation days are not figured into the internship.
Only three sick leave days may incurred at all. Any additional sick days are not figured into the internship.
A relevant vocational education of at least two years is accepted as a performance equivalent to the internship.

Part VIII
Module component exams

T Course: Advanced Lab Informatics [T-WIWI-103523]

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis, York Sure-Vetter, Johann Marius Zöllner
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
4	deutsch/englisch/englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2513306	Event Processing: Processing of Real-Time Data and their Business Potential	Seminar / Praktikum (S/P)	2	Ljiljana Stojanovic, Rudi Studer, Suad Sejdovic, Dominik Riemer, York Sure-Vetter
WS 16/17	2512200	Praktikum Betriebliche Informationssysteme: Moderne Technologien der Softwareentwicklung im Einsatz	Praktikum (P)	3	Meike Ullrich, Andreas Fritsch, Andreas Schoknecht, Andreas Oberweis, Murat Citak
WS 16/17	2512100	Security	Praktikum (P)	4	Hartmut Schmeck, Kaibin Bao
SS 2016	2512300	Knowledge Discovery and Data Mining	Seminar / Praktikum (S/P)	3	Aditya Mogadala, Achim Rettinger, Rudi Studer, York Sure-Vetter, Andreas Thalhammer
SS 2016	2512200	Praktikum Betriebliche Informationssysteme: Softwareanwendungen im Geschäftsprozessmanagement	Praktikum (P)	3	Andreas Oberweis, Murat Citak
WS 16/17	2512307	Applications of Semantic MediaWiki	Seminar / Praktikum (S/P)	3	Tobias Weller, Matthias Frank, Achim Rettinger, Rudi Studer, Maria Maleshkova, York Sure-Vetter
SS 2016	2512100	Optimierung in der Lehre	Praktikum (P)	4	Pradyumn Kumar Shukla
SS 2016	2512101	Praktikum Betriebliche Informationssysteme: Realisierung innovativer Dienste für Studierende	Praktikum (P)	3	Michael Meier, Andreas Drescher, Andreas Oberweis, Frederic Toussaint
WS 16/17	2512101	Praktikum Betriebliche Informationssysteme: Realisierung innovativer Dienste für Studierende	Praktikum (P)	4	Michael Meier, Andreas Drescher, Andreas Oberweis, Frederic Toussaint
WS 16/17	2512301	Linked Open Data basierte Web 3.0 Anwendungen und Services	Seminar / Praktikum (S/P)	3	Tobias Christof Käfer, Rudi Studer, Maribel Acosta Deibe, Andreas Harth, York Sure-Vetter

Learning Control / Examinations
The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of:

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

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

Conditions
None

Remarks
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.

Die folgenden Informationen stammen aus der Veranstaltung Event Processing: Processing of Real-Time Data and their Business Potential (SS 2016):

Content
Topics of interest include, but are not limited to:

- Prediction of lucrative areas / routes
- Real-time visualization of event streams
- Fraud Detection
- Sales forecast

Gladly, data with other data (e.g.weather or event data for NYC) can be linked.

Die folgenden Informationen stammen aus der Veranstaltung Knowledge Discovery and Data Mining (SS 2016):

Content
Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

Literature
Detailed references are indicated together with the respective subjects. For general background information look up the following textbooks:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

Die folgenden Informationen stammen aus der Veranstaltung Applications of Semantic MediaWiki (WS 16/17):

Content
Topics of interest include, but are not limited to:

- Analysis of Medical Processes
- Correlation analysis of medical data
- Visualization of data in SMW
- Sentiment analysis of Twitter data
- Upload Interface for SMW
- Process Matching of process data

Die folgenden Informationen stammen aus der Veranstaltung Linked Open Data basierte Web 3.0 Anwendungen und Services (WS 16/17):

Workload
Topicsof interest include, but are not limited to:

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

T Course: Advanced Programming - Application of Business Software [T-WIWI-102748]

Responsibility: Stefan Klink, Andreas Oberweis
Contained in: [M-WIWI-101399] Emphasis Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511026	Advanced Programming - Application of Business Software	Vorlesung (V)	2	Stefan Klink
WS 16/17	2511027	Übungen zu Programmierung kommerzieller Systeme - Einsatz betrieblicher Standard-Software	Übung (Ü)	1	Meike Ullrich, Stefan Klink, Murat Citak

Learning Control / Examinations
The assessment consists of a written examination of 2 hours (Section 4 (2), 1 of the examination regulations) and of assignments during the course (Section 4 (2), 3 SPO 2007 respectively Section 4 (3) SPO 2015).
Successful participation to the computer lab is precondition for permission to the assessment. Further information will be given at the first lesson and via the homepage of the course.
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
This course cannot be taken together with *Advanced Programming - Java Network Programming* [2511020].

Modeled Conditions
The following conditions must be met:

- Course [T-WIWI-102747] *Advanced Programming - Java Network Programming* and this course are mutually exclusive.

Recommendations
Knowledge of the course "Grundlagen der Informatik I und II" are helpful.

Die folgenden Informationen stammen aus der Veranstaltung Advanced Programming - Application of Business Software (WS 16/17):

Students

- explain basic concepts and principles of enterprise information systems,
- describe the components of enterprise information systems,
- assess economical aspects of such systems,
- asseapply standard software for modelling busines processes and for analysing them to given criteria.

Content
Business information systems enable, support, and accelerate new forms of business processes and forms of organisation. They are the central infrastucture of the economy in the age of eBusiness. Thus, basic knowledge is given in lectures, in excersises and in the computer lab which deals with installation, configuration and parameterization of busines information systems. The course communicates profund knowledge in following topics:

- Analysis of cooperation scenarios and business process scenarios
- Selection of modelling methods according to defined criteria
- Implementation of business process modells and cooperation modells with the help of standard software
- Identification and assessment of challenges during the installation of information systems
- Economical evaluation of business information systems.

Workload
Lecture 30h
Exercise course 17h
Review and preparation of lectures 30h
Review and preparation of exercises 15h

Computer Lab 30h
Exam preparation 29h
Exam 1h
Total 150 h
Exercise courses are done by student tutors (size about 50 students)

Literature

- Schönthaler, Vossen, Oberweis, Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.
- Hasenkamp, Stahlknecht: Einführung in die Wirtschaftsinformatik. Springer 2012.
- Hansen, Neumann: Wirtschaftsinformatik I. Grundlagen betrieblicher Informationsverarbeitung. UTB 2009.
- Mertens et al.: Grundzüge der Wirtschaftsinformatik. Springer 2012.

Further literature will be given during the course.

T Course: Advanced Programming - Java Network Programming [T-WIWI-102747]

Responsibility: Dietmar Ratz
Contained in: [M-WIWI-101399] Emphasis Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511020	Advanced Programming - Java Network Programming	Vorlesung (V)	2	Dietmar Ratz

Learning Control / Examinations
The assessment consits of a written exam (90 min) according to Section 4(2), 1 of the examination regulation.
The successful completion of the compulsory tests in the computer lab is prerequisite for admission to the written exam. Further information about attendance to the exercises and practical terms will be announced in the first lecture and at the lecture homepage. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
This course cannot be taken together with *Advanced Programming - Application of Business Software* [2511026].

Modeled Conditions
The following conditions must be met:

- Course [T-WIWI-102748] *Advanced Programming - Application of Business Software* and this course are mutually exclusive.

Die folgenden Informationen stammen aus der Veranstaltung Advanced Programming - Java Network Programming (SS 2016):

see German version

Content
see German version

Workload
The total workload for this course is approximately 150 hours. For further information see German version.

Literature
D. Ratz, J. Scheffler, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. 6. aktualisierte und erweiterte Auflage, Hanser 2011.
Elective literature:

- S. Zakhour, S. Hommel, J. Royal. Das Java Tutorial. Addison Wesley 2007
- W. Eberling, J. Lessner. Enterprise JavaBeans 3. Hanser Verlag 2007.
- R. Oechsle. Parallele und verteilte Anwendungen. 2. Auflage. Hanser Verlag 2007.
- Further references will be given in the lecture.

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

Responsibility: Kay Mitusch, Marten Hillebrand
Contained in: [M-WIWI-101501] Economic Theory

ECTS	Version
4,5	1

Learning Control / Examinations
The assessment consists of a written exam (60min) (following §4(2), 1 of the examination regulation) at the beginning of the recess period or at the beginning of the following semester.

Conditions
None

Recommendations
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 Course: Airport Logistics [T-MACH-105175]

Responsibility: André Richter
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117056	Airport logistics	Vorlesung (V)	2	André Richter

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Airport logistics (WS 16/17):

Students are able to:

- Describe material handling and informations technology activities on airports,
- Evaluate processes and systems on airports as the law stands, and
- Choose appropriate processes and material handling systems for airports.

Content
Introduction
airport installations
luggage transport
passenger transport
security on the airport
legal bases of the air traffic
freight on the airport

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
None.

T Course: Algorithms for Internet Applications [T-WIWI-102658]

Responsibility: Hartmut Schmeck
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics
[M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511103	Übungen zu Algorithms for Internet Applications	Übung (Ü)	1	Hartmut Schmeck, Jan Müller, Kaibin Bao
WS 16/17	2511102	Algorithms for Internet Applications	Vorlesung (V)	2	Hartmut Schmeck

Learning Control / Examinations
The examination will be offered latest until summer term 2017 (repeaters only).
The assessment consists of a written exam (60 min) (according to Section 4(2), 1 of the examination regulation) and an additional written examination (called "bonus exam", 45 min) (according Section 4(2), 3 of the examination regulation).
The grade of this course is the achieved grade in the written examination. If this grade is at least 4.0 and at most 1.3, a passed bonus exam will improve it by one grade level (i.e. by 0.3 or 0.4).

Conditions
None

Remarks
This course will not be offered after WS 2016/17

Die folgenden Informationen stammen aus der Veranstaltung Algorithms for Internet Applications (WS 16/17):

The students will learn to master methods and concepts of essential algorithms within Internet applications and to develop capabilities for innovative improvements. The course aims at teaching advanced concepts for the design and application of algorithms with respect to the requirements in networked systems. Based on a fundamental understanding of taught concepts and methods the students should be able to select appropriate concepts and methods for problem settings in their future professional life, and - if necessary - customize and apply them in an adequate way. The students will be capable to find appropriate arguments for their chosen approach to a problem setting.
In particular, the student will

- know the structure and elementary protocols of the Internet (TCP/IP) and standard routing algorithms (distance vector and link state routing),
- know methods of information retrieval in the WWW, algorithms for searching information and be able to assess the performance of search engines,
- know how to design and use cryptographic methods and protocols to guarantee and check confidentiality, data integrity and authenticity,
- know algorithmic basics of electronic payment systems and of electronic money.

Content
Internet and World Wide Web are changing our world, this core course provides the necessary background and methods for the design of central applications of the Internet. After an introduction into Internet technology the following topics are addressed: information retrieval in the www, structure and functioning of search engines, foundations of secure communication, electronic payment systems and digital money, and - if time permits - security architectures.

Workload
The total workload for this course is approximately 150.0 hours. For further information see German version.

Literature

- Tanenbaum: Computer Networks, 4th edition, Prentice-Hall 2003.
- Baeza-Yates, Ribeiro-Neto: Modern Information Retrieval. Addison-Wesley, 1999.

- Wobst: Abenteuer Kryptologie : Methoden, Risiken und Nutzen der Datenverschlüsselung, 3rd edition. Addison-Wesley, 2001.
- Schneier: Applied Cryptography, John Wiley, 1996.
- Furche, Wrightson: Computer money : Zahlungssysteme im Internet [Übers.: Monika Hartmann]. - 1. Aufl. - Heidelberg : dpunkt, Verl. für Digitale Technologie, 1997.

Elective literature:

- Further references will be given in the course.

T Course: Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines [T-MACH-105173]

Responsibility: Marcus Gohl
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2134150	Analysis of Exhaust Gas und Lubricating Oil in Combustion Engines	Vorlesung (V)	2	Marcus Gohl

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Analysis of Exhaust Gas und Lubricating Oil in Combustion Engines (SS 2016):

The Students can point out the challenges concerning the current emission standards in engine development. They can name and explain the basic principles of measurement techniques and methods to analyse exhaust gas components and components of engine oil. Hence, the students have the ability to choose the right methods for a given Problem and to interpret the results.

Content
The students get involved in the application of different measurement techniques in the field of exhaust gas and lubricating oil analysis. The functional principles of the systems as well as the application areas of the latter are discussed. In addition to a general overview of standard applications, current specific development and research activities are introduced.

Workload
regular attendance: 24 hrs
self study: 96 hrs

Literature
The lecture documents are distributed during the courses.

T Course: Analysis of multivariate Data [T-WIWI-103063]

Responsibility: Oliver Grothe
Contained in: [M-WIWI-101420] Econometrics and Economics
[M-WIWI-101608] Statistics and Econometrics
[M-WIWI-101599] Statistics and Econometrics

ECTS	Version
4,5	1

Learning Control / Examinations
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.

Conditions
None

Recommendations
It is recommended to attend the courses*Statistics 1 [2600008]*und*Statistics 2 [2610020]*in advance.

Remarks
New course starting winter term 2015/2016.
The lecture is offered irregularly. The curriculum of the next three years is available online.

T Course: Analysis Tools for Combustion Diagnostics [T-MACH-105167]

Responsibility: Uwe Wagner
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2134134	Analysis tools for combustion diagnostics	Vorlesung (V)	2	Jürgen Pfeil

Die folgenden Informationen stammen aus der Veranstaltung Analysis tools for combustion diagnostics (SS 2016):

The students can name and explain state-of-the-art methods to analyse the process in combustion as well as special measuring techniques such as optical and laser analysis. They are able to thermodynamically model, analyse and evaluate the engine process.

Content
energy balance at the engine
energy conversion in the combustion chamber
thermodynamics of the combustion process

flow velocities

flame propagation

special measurement techniques

Workload
regular attendance: 24 hours
self-study: 96 hours

Literature
Lecture notes available in the lectures

T Course: Analytical CRM [T-WIWI-102596]

Responsibility: Andreas Geyer-Schulz
Contained in: [M-WIWI-101460] CRM and Service Management
[M-WIWI-101422] Specialization in Customer Relationship Management

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2540522	Operatives CRM	Vorlesung (V)	2	Andreas Geyer-Schulz, Andreas Sonnenbichler
WS 16/17	2540523	Übung Operatives CRM	Übung (Ü)		Victoria-Anne Schweigert, Andreas Sonnenbichler

Learning Control / Examinations
Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulations and by submitting written papers as part of the exercise (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

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.

Conditions
None

Recommendations
We expect knowledge about data models and the UML modelling language concerning information systems.

Remarks
The lecture ultimately takes place in summer term of 2014. Afterwards the lecture is hold in alternation with "2540520 - Operative CRM". The current schedule can be seen on the chair's website (http://www.em.uni-karlsruhe.de/studies/).

Die folgenden Informationen stammen aus der Veranstaltung Operatives CRM (WS 16/17):

Content
The Student

- understands the theory of methods for process and data analyses and applies them for the design and implementation of operative CRM-processes in the complex context of companies,
- takes privacy problems into account,
- evaluates existing operative CRM-processes in companies and gives recommendation for their improvement. This requires the knowledge of example processes and the ability to transform them according to the given setting.
- uses literature for the solution of case studies, communicates with professionals and summarizes his recommendations and drafts in precise and coherent texts.

T Course: Applied Informatics I - Modelling [T-WIWI-102652]

Responsibility: Andreas Oberweis, York Sure-Vetter
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511030	Applied Informatics I - Modelling	Vorlesung (V)	2	Andreas Oberweis, York Sure-Vetter
WS 16/17	2511031	Exercises to Applied Informatics I - Modelling	Übung (Ü)	1	Steffen Thoma, Andreas Schoknecht, Andreas Oberweis, York Sure-Vetter

Learning Control / Examinations
The assessment consists of a written examination (60 min) in the first week after lecture period (according to Section 4 (2),1 of the examination regulation).

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Applied Informatics I - Modelling (WS 16/17):

Students

- explain the strengths and weaknesses of various modeling approachesfor Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- model given problems in Description Logics and apply description logic rules,
- describe the main ontology concepts and languages and explain SPARQL queries,
- create and evaluate a relational database schema and express queries in relational algebra.

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

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature

- Bernhard Rumpe. Modellierung mit UML, Springer-Verlag, 2004.
- R. Elmasri, S. B. Navathe. Fundamentals of Database Systems. Pearson Education 2009.
- W. Reisig. Petrinetze, Springer-Verlag, 2010.

Additional literature:

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web - Grundlagen, Springer, 2008 (ISBN 978-3-540-33993-9)
- Staab, Studer: Handbook on Ontologies, Springer, 2003
- J.L. Peterson: Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
- Franz Baader, Diego Calvanese, Deborah McGuinness, Daniele Nardi, Peter Patel-Schneider. The Description Logic Handbook - Theory, Implementation and Applications, Cambridge 2003.

T Course: Applied Informatics II - IT Systems for eCommerce [T-WIWI-102651]

Responsibility: Johann Marius Zöllner
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics
[M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511032	Applied Informatics II - IT Systems for e-Commerce	Vorlesung (V)	2	Ingo Scholtes
SS 2016	2511033	Übungen zu Angewandte Informatik II: Informatiksysteme für eCommerce	Übung (Ü)	1	Andreas Schoknecht, Ingo Scholtes

Learning Control / Examinations
The assessment consists of a written exam (120 min) according to Section 4(2), 1 of the examination regulation.
The successful completion of the compulsory exercises is prerequisite for the admission to the written exam.
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Recommendations
Knowledge of content of the modules Foundations in Informatics [IW1INF1] and Algorithms I [IW2INF2] is expected.

Die folgenden Informationen stammen aus der Veranstaltung Applied Informatics II - IT Systems for e-Commerce (SS 2016):

The student learns about concepts and technologies for designing big, distributed application architectures. Students apply industry-relevant technology to solve application-oriented problems in lab classes.

Content
The course Applied Informatics II [2511032] covers various facets of electronic commerce which have to be supported by adequate and efficient distributed information systems. Key topics are middleware technologies and distributed application architectures. Document description and exchange (incl. XML), Java EE, Web technologies, and Web services are additional topics.

Workload
The total workload for this course is approximately 150 hours. For further information see German version.

Literature
Tba in the lecture.

T Course: Asset Management [T-WIWI-102879]

Responsibility: Andreas Sauer
Contained in: [M-WIWI-101465] Topics in Finance I
[M-WIWI-101423] Topics in Finance II

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2530219	Asset Management	Vorlesung (V)		Andreas Sauer

Learning Control / Examinations
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.

Conditions
None

Recommendations
Proficiency of the topics covered in the course "Investments" is required.

Die folgenden Informationen stammen aus der Veranstaltung Asset Management (WS 16/17):

Students are able to name the terms and definitions of professional asset management. They are able to structure, formally describe and analyze problems of professional asset management. Students are in a position to apply the instruments and methods of asset management.

Content
The course familiarizes students with the instruments, methods and terms of professional asset management. It conveys the knowledge of applying the relevant methods to students via practical exercises.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Investments and Portfolio Management,
Zvi Bodie, Alex Kane, Alan J. Marcus,
Mcgraw-Hill Publ.Comp., 9. Auflage (2011)
The Theory and Practice of Investment Management: Asset Allocation, Valuation, Portfolio Construction, and Strategies
Frank J. Fabozzi, Harry Markowitz
John Wiley & Sons; 2. Auflage (2011)

T Course: Auction & Mechanism Design [T-WIWI-102876]

Responsibility: Nora Szech
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101501] Economic Theory

ECTS	Language	Version
4,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2560550	Auction and Mechanism Design	Vorlesung (V)	2	Nora Szech
SS 2016	2560551	Übung zu Auction and Mechanism Design	Übung (Ü)	1	Nora Szech

Learning Control / Examinations
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.
Students can earn a bonus to the final grade by successfully participating in the exercises.

Conditions
None

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

Remarks
The lecture will be held in English.

Die folgenden Informationen stammen aus der Veranstaltung Auction and Mechanism Design (SS 2016):

The students

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

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

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

Literature
Krishna, V.: Auction Theory, Academic Press, 2009.
Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2010.
Mathews, S.: A Technical Primer on Auction Theory I: Independent Private Values No. 1096. Northwestern University, Center for Mathematical Studies in Economics and Management Science, 1995.

T Course: Automation of Power Grids [T-ETIT-101927]

Responsibility: N.N.
Contained in: [M-ETIT-101165] Energy Generation and Network Components

ECTS	SWS	Version
3	2	1

Conditions
none

T Course: Automotive Logistics [T-MACH-105165]

Responsibility: Kai Furmans
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2118085	Automotive Logistics	Vorlesung (V)	2	Kai Furmans

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Automotive Logistics (SS 2016):

Students are able to:

- Describe essential logistic questions, in a complex production network. As an example the automobile industry is used.
- Choose and apply solution possibilities for logistic problems in this area.

Content

- Logistic questions within the automobile industry
- basic model of automobile production and distribution
- relation with the suppliers
- Disposition and physical execution
- Vehicle production in the interaction of shell, paint shop and assembly
- Sequence planning
- Assembly supply
- vehicle distribution and linkage with selling processes
- Physical execution, planning and control

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
None.

T Course: Bachelor Thesis [T-WIWI-103096]

Responsibility: Martin Ruckes
Contained in: [M-WIWI-101612] Module Bachelor Thesis

ECTS	Version
12	1

Learning Control / Examinations
See module description

Conditions
See module description

Recommendations
See module description

Remarks
See module description

T Course: Basic Principles of Economic Policy [T-WIWI-103213]

Responsibility: Ingrid Ott
Contained in: [M-WIWI-101668] Economic Policy I

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2560281	Übungen zur Einführung in die Wirtschaftspolitik	Übung (Ü)	1	Ingrid Ott, David Bälz
SS 2016	2560280	Basic Principles of Economic Policy	Vorlesung (V)	2	Ingrid Ott

Learning Control / Examinations
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.

Conditions
None

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

Die folgenden Informationen stammen aus der Veranstaltung Basic Principles of Economic Policy (SS 2016):

Students shall be given the ability to

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

Content

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

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

Literature
See announcements to the lecture

T Course: Basics of Technical Logistics [T-MACH-102163]

Responsibility: Vladimir Madzharov, Martin Mittwollen
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
6	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117095	Basics of Technical Logistics	Vorlesung / Übung (VÜ)	4	Jan Oellerich, Martin Mittwollen

Die folgenden Informationen stammen aus der Veranstaltung Basics of Technical Logistics (WS 16/17):

Students are able to:

- Describe processes and machines of technical logistics,
- Model the fundamental structures and the impacts of material handling machines with mathematical models,
- Refer to industrially used machines and
- Model real machines applying knowledge from lessons and calculate their dimensions.

Content
Bases effect model of conveyor machines made for the change of position and orientation; conveyor processes; identification systems; drives; mechanical behaviour of conveyors; structure and function of conveyor machines; elements of intralogistics
sample applications and calculations in addition to the lectures inside practical lectures

Workload
presence: 42h
rework: 198h

Literature
Recommendations during lessons

T Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I [T-MACH-100966]

Responsibility: Andreas Guber
Contained in: [M-WIWI-101404] Extracurricular Module in Engineering

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2141864	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I	Vorlesung (V)	2	Andreas Guber

Die folgenden Informationen stammen aus der Veranstaltung BioMEMS - Microsystems Technologies for Life-Sciences and Medicine I (WS 16/17):

The lecture will first address relevant microtechnical manufacturing methods. Then,
selected biomedical applications will be presented, as the increasing use of
microstructures and microsystems in Life-Sciences und in medicine leads to improved medico-technical
products, instruments, and operation and analysis systems.

Content
Introduction into various microtechnical manufacturing methods: LIGA, Micro milling, Silicon Micromachining, Laser Microstructuring, µEDM, Metal-Etching
Biomaterials, Sterilisation.
Examples of use in the life science sector: basic micro fluidic strucutures: micro channels, micro filters, micromixers, micropumps, microvalves, Micro and nanotiter plates, Microanalysis systems (µTAS),
Lab-on-chip applications.

Workload
Literature: 20 h
Lessions: 21 h
Preparation and Review: 50 h
Exam preparation: 30 h

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005
M. Madou
Fundamentals of Microfabrication
Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II [T-MACH-100967]

Responsibility: Andreas Guber
Contained in: [M-WIWI-101404] Extracurricular Module in Engineering
[M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2142883	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II	Vorlesung (V)	2	Andreas Guber

Die folgenden Informationen stammen aus der Veranstaltung BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II (SS 2016):

The lecture will first shortly address some relevant microtechnical manufacturing methods. Then, selected biomedical applications will be presented, as the increasing use of microstructures and microsystems in Life-Sciences und in medicine leads to improved medico-technical products, instruments, and operation and analysis systems.

Content
Examples of use in Life-Sciences and biomedicine: Microfluidic Systems:
LabCD, Protein Cristallisation
Microarrys
Tissue Engineering
Cell Chip Systems
Drug Delivery Systems
Micro reaction technology
Microfluidic Cells for FTIR-Spectroscopy
Microsystem Technology for Anesthesia, Intensive Care and Infusion
Analysis Systems of Person´s Breath
Neurobionics and Neuroprosthesis
Nano Surgery

Workload
Literature: 20 h
Lessions: 21 h
Preparation and Review: 50 h
Exam preparation: 30 h

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005

Buess, G.: Operationslehre in der endoskopischen Chirurgie, Band I und II;
Springer-Verlag, 1994
M. Madou
Fundamentals of Microfabrication

T Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III [T-MACH-100968]

Responsibility: Andreas Guber
Contained in: [M-WIWI-101404] Extracurricular Module in Engineering
[M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2142879	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III	Vorlesung (V)	2	Andreas Guber

Die folgenden Informationen stammen aus der Veranstaltung BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III (SS 2016):

The lecture will first shortly address some relevant microtechnical manufacturing methods. Then, selected biomedical applications will be presented, as the increasing use of microstructures and microsystems in Life-Sciences und in medicine leads to improved medico-technical products, instruments, and operation and analysis systems.

Content
Examples of use in minimally invasive therapy
Minimally invasive surgery (MIS)
Endoscopic neurosurgery
Interventional cardiology
NOTES
OP-robots and Endosystems
License of Medical Products and Quality Management

Workload
Literature: 20 h
Lessions: 21 h
Preparation and Review: 50 h
Exam preparation: 30 h

Literature
Menz, W., Mohr, J., O. Paul: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 2005
Buess, G.: Operationslehre in der endoskopischen Chirurgie, Band I und II;
Springer-Verlag, 1994
M. Madou
Fundamentals of Microfabrication

T Course: Bionics for Engineers and Natural Scientists [T-MACH-102172]

Responsibility: Hendrik Hölscher
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2142140	Bionics for Engineers and Natural Scientists	Vorlesung (V)	2	Hendrik Hölscher, Stefan Walheim, Christian Greiner

Die folgenden Informationen stammen aus der Veranstaltung Bionics for Engineers and Natural Scientists (SS 2016):

The students should be able analyze, judge, plan and develop biomimetic strategies and products.

Content
Bionics focuses on the design of technical products following the example of nature. For this purpose we have to learn from nature and to understand its basic design rules. Therefore, the lecture focuses on the analysis of the fascinating effects used by many plants and animals. Possible implementations into technical products are discussed in the end.

Workload
lectures 30 h
self study 30 h
preparation for examination 30 h

Literature
Werner Nachtigall: Bionik – Grundlagen und Beispiele für Ingenieure und Naturwissenschaftler. Springer-Verlag Berlin (2002), 2. Aufl.

T Course: Brand Management [T-WIWI-102798]

Responsibility: Bruno Neibecker
Contained in: [M-WIWI-101424] Foundations of Marketing

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2572178	Übungen zu Markenmanagement	Übung (Ü)	1	Bruno Neibecker
WS 16/17	2572177	Brand Management	Vorlesung (V)	2	Bruno Neibecker

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).
The examination will be offered latest until winter term 2016/2017 (repeaters only).

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Brand Management (WS 16/17):

Students have learned the following outcomes and competences:

- To specify the key terms in brand management
- To identify and define theoretical constructs in marketing management to build brand value
- To identify the main research trends
- To analyze and interpret high level academic articles
- To learn interactive skills to work in teams and to follow a goal-oriented approach
- To gain understanding of methodological research to develop concrete plans for marketing decision-making

Content
The students should learn the essential scientific and practical principles of Marketing, especially branding. Branding consists of any name, design, style, words or symbols, singly or in any combination that distinguish one product from another in the eyes of the consumer. Brand positioning, brand loyalty and brand equity are discussed as important elements of a management concept. The focus of the course is not limited to short-term ROI, but also long-term benefits of communication strategies facing company's responsibilities to all of its stakeholders, e.g. consumers, investors and public. The strategies and techniques in branding are broaden by several case studies. English as an international technical language in marketing is practiced with course readings and scientific papers. Content:
The course brand management starts with the development of the corporate objectives as the heart of the brand planning process followed by definitions of brand. Setting up on the psychological and social bases of consumer behavior, aspects of an integrated marketing communication are discussed. The students should acquire the particular value of branding strategies. The concept of brand personality is considered in two perspectives, from a practical point of view and the challenging position of the theoretical construct. Methods for the measurement of a consumer-based brand equity are compared with the financial valuation of the brand. The information provided by this equity measurements are related to the equity drivers in brand management. The marketers perspective will be accomplish with the analysis of several case studies. Within the limits of a knowledge based system for advertising evaluation many of the issues accomplished in the course are summarized. At the same time it is discussed as a tool to use marketing knowledge systematically.

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

Literature

- Aaker, J. L.: Dimensions of Brand Personality. In: Journal of Marketing Research 34, 1997, 347-356.
- BBDO-Düsseldorf (Hrsg.): Brand Equity Excellence. 2002.BBDO-Düsseldorf (Hrsg.): Brand Equity Drivers Modell. 2004.
- Bruhn, M. und GEM: Was ist eine Marke? Gräfelfing: Albrecht (voraussichtlich 2003).
- Esch, F.-R.: Strategie und Technik der Markenführung. München: Vahlen 2010.
- Himmel, H. und A. Krostewitz: Bewertung immaterieller Ressourcen als Teil der Unternehmenssteuerung: Herausforderungen für das Controlling. In: ZfCM: Controlling & Management, 2012, 30-39.
- Kotler, P.; V. Wong; J. Saunders und G. Armstrong: Principles of Marketing (European Edition). Harlow: Pearson 2005.

- Krishnan, H. S.: Characteristics of memory associations: A consumer-based brand equity perspective. In: Internat. Journal of Research in Marketing 13, 1996, 389-405.
- Management-Tools: 10 Grundsätze der monetären Markenbewertung. http://www.management-tools.ch (12.09.2012) (basierend auf Franzen: 2006)
- Meffert, H.; C. Burmann und M. Koers (Hrsg.): Markenmanagement. Grundfragen der identitätsorientierten Markenführung. Wiesbaden: Gabler 2002.
- Neibecker, B.: Tachometer-ESWA: Ein werbewissenschaftliches Expertensystem in der Beratungspraxis. In: Computer Based Marketing, H. Hippner, M. Meyer und K. D. Wilde (Hrsg.), Vieweg: 1998, 149-157.
- Riesenbeck, H. und J. Perrey: Mega-Macht Marke. McKinsey&Company, Frankfurt/Wien: Redline 2004.
- Solomon, M., G. Bamossy, S. Askegaard und M. K. Hogg: Consumer Behavior, 4rd ed., Harlow: Pearson 2010.

T Course: Business Administration: Finance and Accounting [T-WIWI-102819]

Responsibility: Marliese Uhrig-Homburg, Martin Ruckes
Contained in: [M-WIWI-101494] Fundamentals of Business Administration 1

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2610026	Business Administration: Finance and Accounting	Vorlesung (V)	2	Marcus Wouters, Martin Ruckes

Learning Control / Examinations
The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation.
The assessment takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Remarks
Key qualifications can be shown in an active participation through presentations of solutions and discussions in the tutorials which accompany the course. Each part of the course is taught by instructors specialised in the field of that part.

Die folgenden Informationen stammen aus der Veranstaltung Business Administration: Finance and Accounting (WS 16/17):

Students

- are able to valuate bonds and cash flows in general,
- can valuate stocks,
- can make investment decisions,
- can analyse portfolios,
- are able to recognise business events in financial reports,
- can determine depreciation expenses,
- are able to valuate inventories,
- can analyse costs,
- knows the difference between financial and management accounting,
- knows cost center accounting,
- can estimate product costs.

Content

- **Investment and Finance:**
  - Valuation of Bonds and Stocks
  - Capital Budgeting
  - Portfolio Theory
- **Financial Accounting**
- **Management Accounting**

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

Literature
Extensive bibliographic information will be given in the materials to the lecture.

T Course: Business Administration: Production Economics and Marketing [T-WIWI-102818]

Responsibility: Martin Klarmann, Thomas Lützkendorf, Wolf Fichtner, Frank Schultmann, Martin Ruckes
Contained in: [M-WIWI-101578] Fundamentals of Business Administration 2

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2600024	Business Administration: Production Economics and Marketing	Vorlesung (V)		Martin Klarmann, Wolf Fichtner
SS 2016	2500025	Tutorien zu BWL PM	Tutorium (Tu)		Martin Klarmann, Assistenten, Jan-Oliver Strych

Learning Control / Examinations
The assessment consists of a written exam (90 minutes) according to Section 4(2), 1 of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Business Administration: Production Economics and Marketing (SS 2016):

Students

- are able to analyse and implement the marketing strategy and marketing measures (marketing mix: 4 Ps),
- can analyse, implement and manage procurement and production processes,
- are able to plan projects, and
- have skills about selected issues in energy economics.

Content
The course is made up of the following topics:
Marketing

- Foundations of marketing
- Strategic marketing
- Cosumer behaviour
- Product
- Price
- Promotion
- Sales
- Marketing Metrics

Production economics
In the part of production economics the student will learn basics in the field of production theory, procurement and resource aquisitions, production and operations management and industrial engineering.
Aspects of energy economics, technological foresights, construction industry and real estate markets will be treated.

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

Literature
Further literature references are announced in the materials to the lecture.

T Course: Business Administration: Strategic Management and Information Engineering and Management [T-WIWI-102817]

Responsibility: Petra Nieken, Martin Ruckes
Contained in: [M-WIWI-101494] Fundamentals of Business Administration 1

ECTS	Version
3	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2600023	Betriebswirtschaftslehre: Unternehmensführung und Informationswirtschaft	Vorlesung (V)	2	Christof Weinhardt, Hagen Lindstädt, Jan-Oliver Strych

Learning Control / Examinations
The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation.
The assessment takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

T Course: Business Process Modelling [T-WIWI-102697]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511210	Business Process Modelling	Vorlesung (V)	2	Andreas Oberweis

Learning Control / Examinations
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.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Business Process Modelling (WS 16/17):

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.

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.

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam 1h

Total: 150h

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.

Further Literature will be given in the lecture.

T Course: Business Strategies of Banks [T-WIWI-102626]

Responsibility: Wolfgang Müller
Contained in: [M-WIWI-101465] Topics in Finance I
[M-WIWI-101423] Topics in Finance II

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2530299	Business Strategies of Banks	Vorlesung (V)	2	Wolfgang Müller

Learning Control / Examinations
See German version.

Conditions
None

Recommendations
None

Die folgenden Informationen stammen aus der Veranstaltung Business Strategies of Banks (WS 16/17):

Students are are in a position to discuss the principles of commercial banking. They are familiar with fundamental concepts of bank management and are able to apply them.

Content
The management of a bank is in charge of the determination and implementation of business policy - taking into account all relevant endogenous and exogenous factors - that assures the bank's success in the long run. In this context, there exists a large body of banking models and theories which are helpful in describing the success and risk of a bank. This course is meant to be the bridging of banking theory and practical implementation. In the course of the lectures students will learn to take on the bank management's perspective.
The first chapter deals with the development of the banking sector. Making use of appropriate assumptions, a banking policy is developed in the second chapter. The design of bank services (ch. 3) and the adequate marketing plan (ch. 4) are then built on this framework. The operational business of banks must be guided by appropriate risk and earnings management (ch. 5 and 6), which are part of the overall (global) bank management (ch. 7). Chapter eight, at last, deals with the requirements and demands of bank supervision as they have significant impact on a bank's corporate policy.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Elective literature:

- A script is disseminated chapter by chapter during the course of the lecture.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2000, Bankbetriebslehre, 6th edition, Springer

T Course: Civil Law for Advanced [T-INFO-101994]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101216] Private Business Law

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24650	Civil Law for Advanced	Vorlesung (V)	2	Benjamin Raue

Die folgenden Informationen stammen aus der Veranstaltung Civil Law for Advanced (SS 2016):

Der/die Studierende besitzt vertiefte, über die Vorlesungen *BGB für Anfänger* [24012] und *BGB für Fortgeschrittene* [24504] sowie *HGB und Gesellschaftsrecht* [24011] hinausgehende Kenntnisse im deutschen Gesellschaftsrecht, im Handelsrecht sowie im Bürgerlichen Recht. Er kennt die wesentlichen Auslegungsgrundsätze und Maximen, an denen sich die Rechtsprechung und herrschende Meinung orientieren und auch auf neue Problemfelder anzwenden. Der/die Studierende ist in der Lage, insbesondere im Recht der Schuldverhältnisse (vertraglich/gesetzlich), auch komplexere rechtliche und wirtschaftliche Zusammenhänge zu durchdenken und Probleme zu lösen.

Content
Die Vorlesung befasst sich vertieft mit einzelnen Problemfeldern aus den Bereichen des Gesellschaftsrechts, des Handelsrechts und des Rechts der vertraglichen und gesetzlichen Schuldverhältnisse. Es werden rechtliche und wirtschaftliche Zusammenhänge anhand konkreter Beispiele eingehend und praxisnah besprochen.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt 90 h, davon 22,5 h Präsenz, 45 h Vor- und Nachbereitungszeit sowie 22,5 h für die Klausurvorbereitung.

Literature
Klunzinger, Eugen: Übungen im Privatrecht, Verlag Vahlen, ISBN 3-8006-3291-8, in der neuesten Auflage

T Course: Civil Law for Beginners [T-INFO-103339]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101190] Introduction to Civil Law

ECTS	Version
5	1

T Course: Climatology [T-PHYS-101092]

Responsibility: Peter Braesicke
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
	1

Conditions
none

T Course: Combustion Engines I [T-MACH-102194]

Responsibility: Thomas Koch, Heiko Kubach
Contained in: [M-MACH-101275] Combustion Engines I

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2133113	Combustion Engines I	Vorlesung / Übung (VÜ)	4	Thomas Koch

Learning Control / Examinations
oral examination, Duration: 25 min., no auxiliary means

Die folgenden Informationen stammen aus der Veranstaltung Combustion Engines I (WS 16/17):

The student can name and explain the working princile of combustion engines. He is able to analyse and evaluate the combustion process. He is able to evaluate influences of gas exchange, mixture formation, fuels and exhaust gas aftertreatment on the combustion performance. He can solve basic research problems in the field of engine development.

Content
Introduction, History, Concepts
Working Principle and Termodynamics
Characteristic Parameters
Air Path
Fuel Path
Energy Conversion
Fuels
Emissions
Exhaust Gas Aftertreatment

Workload
regular attendance: 32 hours
self-study: 88 hours

T Course: Combustion Engines II [T-MACH-104609]

Responsibility: Heiko Kubach
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2134151	Combustion Engines II	Vorlesung / Übung (VÜ)	3	Thomas Koch

Learning Control / Examinations
oral examination, duration: 25 minutes, no auxiliary means

Recommendations
Fundamentals of Combustion Engines I helpful

Die folgenden Informationen stammen aus der Veranstaltung Combustion Engines II (SS 2016):

The students deepen and complement their knowledgement from the lecture combustion engines A. they can name and explain construction elements, development tools and latest development trends. They are be able to analyse and evaluate powertrain concepts which are subject of the lecture.

Content
Emissions
Fuels
Drive Train Dynamics
Engine Parts
Boosting
Alternative Powertrain Concepts

Special Engine Concepts

Power Transmission

Workload
regular attendance: 31,5 hours
self-study: 90 hours

T Course: Competition in Networks [T-WIWI-100005]

Responsibility: Kay Mitusch
Contained in: [M-WIWI-101422] Specialization in Customer Relationship Management
[M-WIWI-101499] Applied Microeconomics
[M-WIWI-101668] Economic Policy I

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2561204	Competition in Networks	Vorlesung (V)	2	Kay Mitusch

Learning Control / Examinations
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.

Recommendations
Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required. Useful, but not necessary, are basic knowledge of industrial economics, prinicpal agent theory, and contract theory.

Die folgenden Informationen stammen aus der Veranstaltung Competition in Networks (WS 16/17):

The Students

- will get a vivid idea of the special characteristics of network industries like telecom, utilities, IT and transport sectors.
- will acquire the basic economic understanding of network industries concerning competition, competitive distortion, state intervention, pricing and financing
- will be able to apply abstract concepts and formal methods to use in these fields

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 of industrial policy. All these issues are brought up, analyzed formally (in part) and illustrated by several examples in the lecture.

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

Literature
Will be announced in the lecture.

T Course: Computational Economics [T-WIWI-102680]

Responsibility: Simon Caton, Pradyumn Kumar Shukla
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
4,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2590459	Übungen zu Computational Economics	Übung (Ü)	1	Pradyumn Kumar Shukla
WS 16/17	2590458	Computational Economics	Vorlesung (V)	2	Pradyumn Kumar Shukla

Learning Control / Examinations
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulation). 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). The bonus only applies to the first and second exam of the semester in which it was obtained.

Conditions
None

Remarks
This course is offered in cooperation with the Institute of Applied Informatics and Formal Description Models (AIFB).

Die folgenden Informationen stammen aus der Veranstaltung Computational Economics (WS 16/17):

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.

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.

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.

Elective literature:

- 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 Course: Computer Contract Law [T-INFO-102036]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101215] Intellectual Property Law

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24671	Law of Contracts	Vorlesung (V)	2	Alexander Hoff

Die folgenden Informationen stammen aus der Veranstaltung Law of Contracts (SS 2016):

Der/die Studierende kennt sich aus in den Grundfragen der Vertragsgestaltung. Er/sie kennt typische Vertragsgestaltungen. Der/die Studierende kann einfach gelagerte Problemfälle lösen und einfache Vertragsentwürfe formulieren. Er/sie hat ein Problembewusstsein entwickelt, welche Schwierigkeiten auftreten können bei der Gestaltung komplexerer Sachverhalte. Er/sie ist in der Lage, auch im internationalen Kontext Bezüge herzustellen.

Content
Die Vorlesung befasst sich mit den Grundfragen der Vertragsgestaltung im Wirtschaftsrecht. Anhand ausgewählter Beispiele aus der Praxis wird ein Überblick über typische Vertragsgestaltungen vermittelt. Insbesondere werden die GmbH, die OHG, die KG, Die EWIV, der Verein und die Aktiengesellschaft behandelt. Dabei werden auch internationale und rechtsvergleichende Bezüge hergestellt.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt ca. 90 Stunden davon 22,5 h Präsenz, 45 h Vor- und Nachbereitungszeit sowie 22,5 h für die Klausurvorbereitung.

Literature
Wird in der Vorlesung bekannt gegeben.

T Course: Computer Integrated Planning of New Products [T-MACH-102125]

Responsibility: Roland Kläger
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2122387	Computer Integrated Planning of New Products	Vorlesung (V)	2	Roland Kläger

Die folgenden Informationen stammen aus der Veranstaltung Computer Integrated Planning of New Products (SS 2016):

Der/ die Studierende

- versteht die Standardabläufe im Produktplanungsbereich,
- besitzt grundlegende Kenntnisse über Zusammenhänge, Vorgänge und Strukturelemente als Handlungsleitfaden bei der Planung neuer Produkte,
- besitzt grundlegende Kenntnisse über die Grundlagen und Merkmale der Rapid Prototyping Verfahrenstechnologien,
- versteht die simultane Unterstützung des Produktplanungsprozesses durch entwicklungsbegleitend einsetzbare Rapid Prototyping (RP)-Systeme.

Content
Die Steigerung der Kreativität und Innovationsstärke bei der Planung und Entwicklung neuer Produkte wird u.a. durch einen verstärkten Rechnereinsatz für alle Unternehmen zu einer der entscheidenden Einflussgrößen für die Wettbewerbsfähigkeit der Industrie im globalen Wettbewerb geworden ist.

Entsprechend verfolgt die Vorlesung folgende Ziele:

- Das Grundverständnis für Standardabläufe im Produktplanungsbereich erlangen, Kenntnis über Zusammenhänge, Vorgänge und Strukturelemente erwerben und als Handlungsleitfaden bei der Planung neuer Produkte benutzen lernen;
- Kenntnis über die Anforderungen und Möglichkeiten der Rechnerunterstützung erhalten, um die richtigen Methoden und Werkzeuge für die effiziente und sinnvolle Unterstützung eines spezifischen Anwendungsfalles auszuwählen;
- mit den Elementen und Methoden des rechnerunterstützten Ideenmanagements vertraut gemacht werden;
- die Möglichkeiten der simultanen Unterstützung des Produktplanungsprozesses durch entwicklungsbegleitend einsetzbare Rapid Prototyping (RP)-Systeme kennen lernen;

Kenntnis über die Grundlagen und Merkmale dieser RP-Verfahrenstechnologien erwerben und - in Abhängigkeit des zu entwickelnden Produkts - anhand von Beispielen effizient und richtig zur Anwendung bringen können.

Workload
Gesamtaufwand bei 3 Leistungspunkten: ca. 100 Stunden.

- Präsenszeit: 26 Stunden
- Vor- /Nachbereitung: 26 Stunden
- Prüfung und Prüfungsvorbereitung: 48 Stunden

T Course: Construction Technology [T-BGU-101691]

Responsibility: Shervin Haghsheno
Contained in: [M-BGU-101004] Fundamentals of construction

ECTS	Version
6	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	6200410	Übungen zu Baubetriebstechnik (bauiBFP6-TMB)	Übung (Ü)	1	Harald Schneider, Shervin Haghsheno, Sascha Gentes
SS 2016	6200409	Baubetriebstechnik (bauiBFP6-TMB)	Vorlesung (V)	3	Harald Schneider, Shervin Haghsheno, Sascha Gentes

Conditions
none

T Course: Control Technology [T-MACH-105185]

Responsibility: Christoph Gönnheimer
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2150683	Control Technology	Vorlesung (V)	2	Christoph Gönnheimer

Die folgenden Informationen stammen aus der Veranstaltung Control Technology (SS 2016):

The students ...

- are able to name the electrical controls which occur in the industrial environment and explain their function.
- can explain fundamental methods of signal processing. This involves in particular several coding methods, error protection methods and analog to digital conversion.
- are able to choose and to dimension control components, including sensors and actors, for an industrial application, particularly in the field of plant engineering and machine tools. Thereby, they can consider both, technical and economical issues.
- can describe the approach for projecting and writing software programs for a programmable logic control named Simatic S7 from Siemens. Thereby they can name several programming languages of the IEC 1131.

Content
The lecture control technology gives an integral overview of available control components within the field of industrial production systems. The first part of the lecture deals with the fundamentals of signal processing and with control peripherals in the form of sensors and actors which are used in production systems for the detection and manipulation of process states. The second part handles with the function of electric control systems in the production environment. The main focus in this chapter is laid on programmable logic controls, computerized numerical controls and robot controls. Finally the course ends with the topic of cross-linking and decentralization with the help of bus systems.
The lecture is very practice-oriented and illustrated with numerous examples from different branches.
The following topics will be covered

- Signal processing
- Control peripherals
- Programmable logic controls
- Numerical controls
- Controls for industrial robots
- Process control systems
- Field bus
- Trends in the area of control technology

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Lecture Notes

T Course: Copyright [T-INFO-101308]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101215] Intellectual Property Law

ECTS	Version
3	1

T Course: Current Topics on BioMEMS [T-MACH-102176]

Responsibility: Andreas Guber
Contained in: [M-WIWI-101404] Extracurricular Module in Engineering

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2143873	Actual topics of BioMEMS	Seminar (S)	2	Andreas Guber, Giorgio Cattaneo
WS 16/17	2143873	Actual topics of BioMEMS	Seminar (S)	2	Andreas Guber

Die folgenden Informationen stammen aus der Veranstaltung Actual topics of BioMEMS (WS 16/17):

Knwolede in the actual activities in bio-medical and biological technologies under the view of micro technology. The student gets an overview on actual examples of new applications in BioMEMS.
After successfull participation of this seminar the student is able to prepare a new topic in BioMEMS and to present it to an audience.

Workload
Active participation on the seminary and preparation of an own presentation of a topic in BioMEMS.
Lecture time: 21 h
Preparation: 40 h
Preparation of own preparation: 60 h

T Course: Customer Relationship Management [T-WIWI-102595]

Responsibility: Andreas Geyer-Schulz
Contained in: [M-WIWI-101460] CRM and Service Management

ECTS	Language	Version
4,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2540509	Übung zu CRM	Übung (Ü)	1	Victoria-Anne Schweigert, Andreas Sonnenbichler
WS 16/17	2540508	Customer Relationship Management	Vorlesung (V)	2	Andreas Geyer-Schulz, Andreas Sonnenbichler

Learning Control / Examinations
Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulations and by submitting written papers as part of the exercise (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015) 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.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Customer Relationship Management (WS 16/17):

The students

- understand service management as an economic basis for Customer Relationship Management and learn the resulting consequences for the management, the organisation itself and their departments,
- design and develop service concepts and service systems at a conceptual level,
- work on case studies in the CRM-area in small groups with limit time,
- learn English as the technical language in the area of CRM and consult internationale literature from this field for the case studies.

Content
The course begins with an introduction into Service Management as the strategic concept which also covers all CRM applications. The course is divided in the basics of Service Management as well as different topics within this concept like external and internal marketing, quality management and organizational requirements.

Workload
The total workload for this course is approximately 135 hours (4.5 credits).
The integration of learningoutcomes (Content (content), Skills (skills) with levels and the estimated workload for an average student is intended.

Literature
Christian Grönroos. Service Management and Marketing : A Customer Relationship Management Approach. Wiley, Chichester, 2nd edition, 2000.
Elective literature:
Jill Dyché. The CRM Handbook: A Business Guide to Customer Relationship Management. Addison-Wesley, Boston, 2nd edition, 2002.
Ronald S. Swift. Accelerating Customer Relationships: Using CRM and RelationshipTechnologies. Prentice Hall, Upper Saddle River, 2001.
Stanley A. Brown. Customer Relationship Management: A Strategic Imperative in theWorld of E-Business. John Wiley, Toronto, 2000.

T Course: Data Mining and Applications [T-WIWI-103066]

Responsibility: Rheza Nakhaeizadeh
Contained in: [M-WIWI-101608] Statistics and Econometrics
[M-WIWI-101599] Statistics and Econometrics

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2520375	Data Mining and Applications	Vorlesung (V)	2/4	Rheza Nakhaeizadeh

Learning Control / Examinations

- Oral examination 70%
- Conduction of a small empirical study 30%

Conditions
None

T Course: Data Protection Law [T-INFO-101303]

Responsibility: Matthias Bäcker
Contained in: [M-INFO-101217] Public Business Law

ECTS	Version
3	1

T Course: Database Systems [T-WIWI-102660]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511201	Übungen zu Datenbanksysteme	Übung (Ü)	1	Daniel Sommer
SS 2016	2511200	Database Systems	Vorlesung (V)	2	Daniel Sommer

Learning Control / Examinations
The assessment consists of an 1h written exam in the first week after lecture period.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Database Systems (SS 2016):

Students

- are familiar with the concepts and principles of data base models, languages and systems and their applications and explain it,
- design and model relational data bases on the basis of theoretical foundations,
- create queries for relational databases,
- know how to handle enhanced data base problems occurring in the enterprises.

Content
Database systems (DBS) play an important role in today's companies. Internal and external data is stored and processed in databases in every company. The proper management and organization of data helps to solve many problems, enables simultaneous queries from multiple users and is the organizational and operational base for the entire working procedures and processes of the company. The lecture leads in the area of the database theory, covers the basics of database languages and database systems, considers basic concepts of object-oriented and XML databases, conveys the principles of multi-user control of databases and physical data organization. In addition, it gives an overview of business problems often encountered in practice such as:

- Correctness of data (operational, semantic integrity)
- Restore of a consistent database state
- Synchronization of parallel transactions (phantom problem).

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam &1h

Total: 150h

Literature

- Schlageter, Stucky. Datenbanksysteme: Konzepte und Modelle. Teubner 1983.
- S. M. Lang, P. C. Lockemann. Datenbankeinsatz. Springer-Verlag 1995.
- Jim Gray, Andreas Reuter. Transaction Processing: Concepts and Techniques. Morgan Kaufmann 1993.

Further literature will be given individually.

T Course: Database Systems and XML [T-WIWI-102661]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511202	Database Systems and XML	Vorlesung (V)	2	Andreas Oberweis
WS 16/17	2511203	Übungen zu Datenbanksysteme und XML	Übung (Ü)	1	Andreas Fritsch, Andreas Oberweis, Timm Caporale

Learning Control / Examinations
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.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Database Systems and XML (WS 16/17):

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.

Content
Databases are a proven technology for managing large amounts of data. The oldest database model, the hierarchical model, was replaced by different models such as the relational or the object-oriented data model. The hierarchical model became particularly more important with the emergence of the extensible Markup Language XML. XML is a data format for structured, semi-structured, and unstructured data. In order to store XML documents consistently and reliably, databases or extensions of existing data base systems are required. Among other things, this lecture covers the data model of XML, concepts of XML query languages, aspects of storage of XML documents, and XML-oriented database systems.

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam 1h

Total: 150h

Literature

- M. Klettke, H. Meyer: XML & Datenbanken: Konzepte, Sprachen und Systeme. dpunkt.verlag 2003
- H. Schöning: XML und Datenbanken: Konzepte und Systeme. Carl Hanser Verlag 2003
- W. Kazakos, A. Schmidt, P. Tomchyk: Datenbanken und XML. Springer-Verlag 2002
- R. Elmasri, S. B. Navathe: Grundlagen der Datenbanksysteme. 2009
- G. Vossen: Datenbankmodelle, Datenbanksprachen und Datenbankmanagementsysteme. Oldenbourg 2008

Further literature will be given individually.

T Course: Decision Theory [T-WIWI-102792]

Responsibility: Karl-Martin Ehrhart
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101420] Econometrics and Economics

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2520366	Übungen zu Entscheidungstheorie	Übung (Ü)	2	Karl-Martin Ehrhart
SS 2016	2520365	Decision Theory	Vorlesung (V)	2	Karl-Martin Ehrhart

Learning Control / Examinations
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
The exam is offered each semester.

Conditions
None

Recommendations
Knowledge in mathematics and statistics is required.

Die folgenden Informationen stammen aus der Veranstaltung Decision Theory (SS 2016):

The student will be made familiar with the basics in modern decision making particularly under uncertainty so that she will be able to analyze concrete decision problems and to develop simple solution procedures. By being confronted with experimental results in decision making the student should also be able to evaluate the behavioral part of decision making.

Content
This course deals with problems of decision making particularly under uncertainty. We introduce the expected utility theory of Neumann/Morgenstern and the prospect theory of Kahnemann/Tversky and discuss the concepts of stochastic dominance, risk aversion, loss aversion, reference points etc. We also consider the empirical validity of the different approaches. Additionally, the lecture provides an introduction to the theory of findings (epistemology), particularly with respect to decision theory.

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

Literature

- Ehrhart, K.-M. und S.K. Berninghaus (2012): Decision Theory, Script, KIT.
- Hirshleifer und Riley (1997): The Analytics of Uncertainty and Information. London: Cambridge University Press, 4. Edtion.
- Berninghaus, S.K., K.-M. Ehrhart und W. Güth (2006): Strategische Spiele. Berlin u.a.: Springer, 3., Edtion

T Course: Derivatives [T-WIWI-102643]

Responsibility: Marliese Uhrig-Homburg
Contained in: [M-WIWI-101402] eFinance
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101423] Topics in Finance II

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2530551	Übungen zu Derivate	Übung (Ü)	1	Marliese Uhrig-Homburg, Stefan Fiesel
SS 2016	2530550	Derivatives	Vorlesung (V)	2	Marliese Uhrig-Homburg

Learning Control / Examinations
See German version.

Conditions
None

Recommendations
None

Die folgenden Informationen stammen aus der Veranstaltung Derivatives (SS 2016):

The objective of the Derivatives lecture is to become familiar with financial markets, especially derivatives markets. Traded securities and frequently used trading strategies will be introduced. Furthermore the pricing of derivatives will be derived and their use in risk management will be discussed.

Content
The lecture deals with the application areas and valuation of financial derivatives. After an overview of the most important derivatives and their relevance, forwards and futures are analysed. Then, an introduction to the Option Pricing Theory follows. The main emphasis is on option valuation in discrete and continuous time models. Finally, construction and usage of derivatives are discussed, e.g. in the context of risk management.

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

Literature

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

Elective literature:
Cox/Rubinstein (1985): Option Markets, Prentice Hall

T Course: Design and Operation of Power Transformers [T-ETIT-101925]

Responsibility: N. N., Mitarbeiter
Contained in: [M-ETIT-101165] Energy Generation and Network Components

ECTS	SWS	Version
3	2	1

T Course: Design, Construction and Sustainability Assessment of Buildings I [T-WIWI-102742]

Responsibility: Thomas Lützkendorf
Contained in: [M-WIWI-101467] Design, Construction and Sustainability Assessment of Buildings

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2586405	Übung zu Bauökologie I	Übung (Ü)		Benjamin Ströbele
WS 16/17	2586404	Design and Construction of Buildings	Vorlesung (V)	2	Thomas Lützkendorf

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Conditions
None

Recommendations
A combination with the module *Real Estate Management* and with engineering science modules in the area of building physics and structural design is recommended.

Die folgenden Informationen stammen aus der Veranstaltung Design and Construction of Buildings (WS 16/17):

The student

- has an in-depth knowledge of aspects of energy-saving, resource-saving and health-oriented design, construction and operation of buildings (design for environment)
- has a critical understanding of the essential requirements, concepts and technical solutions for green buildings
- is able to integrate aspects of energy-saving, resource-saving and health-conscious construction into a holistic environmental design approach and to assess the advantages and disadvantages of different individual solutions.

Content
Taking low-energy buildings as an example the course is an introduction to cheap, energy-efficient, resource-saving and health-supporting design, construction and operation of buildings. Questions of the implementation of the principles of a sustainable development within the building sector are discussed on the levels of the whole building, its components, building equipment as well as the materials. Besides technical interrelationships basics dimensioning and various approaches to ecological and economical assessment play a role during the lectures, as well as the different roles of people involved into the building process. Topics are the integration of economical and ecological aspects into the design process, strategies of energy supply, low-energy and passive buildings, active and passive use of solar energy, selection and assessment of construction details, selection and assessment of insulation materials, greened roofs plus health and comfort.

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

Literature
Elective literature:
See german version.

T Course: Design, Construction and Sustainability Assessment of Buildings II [T-WIWI-102743]

Responsibility: Thomas Lützkendorf
Contained in: [M-WIWI-101467] Design, Construction and Sustainability Assessment of Buildings

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2585404	Sustainability Assessment of Buildings	Vorlesung (V)	2	Benjamin Ströbele, Thomas Lützkendorf
SS 2016	2585403	Übung zu Bauökologie II	Übung (Ü)		Benjamin Ströbele

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Re-examinations are offered at every ordinary examination date.

Conditions
None

Recommendations
A combination with the module *Real Estate Management* and with engineering science modules from the areas building physics and structural designis recommended.

Die folgenden Informationen stammen aus der Veranstaltung Sustainability Assessment of Buildings (SS 2016):

The student

- has an in-depth knowledge of the classification of environmental design and construction of buildings within the overall context of sustainability
- has a critical understanding of the main theories and methods of assessing the environmental performance of buildings
- is able to use methods and tools to evaluate the environmental performance in design and decision processes or to interpret existing results

Content
The course identifies problems concerning the economical and environmental assessment of buildings along their lifecycle and discusses suitable procedures and tools supporting the decision making process. For example, the course addresses topics like operating costs, heat cost allocation, comparisons of heating costs, applied economical assessment methods, life cycle assessment as well as related design and assessment tools (e.g. element catalogues, databases, emblems, tools) and assessment procedures (e.g. carbon footprint, MIPS, KEA), which are currently available.

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

Literature
Elective literature:
See german version.

T Course: Document Management and Groupware Systems [T-WIWI-102663]

Responsibility: Stefan Klink
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511212	Document Management and Groupware Systems	Vorlesung (V)	2	Stefan Klink

Learning Control / Examinations
The assessment consists of an 1h written exam in the first week after lecture period according to Section 4(2), 1 of the examination regulation).

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Document Management and Groupware Systems (SS 2016):

Students master the basics of integration and structure of document management systems (DMS) and know the complete DMS process - from document capture of the archiving until retrieval. Students know how to realize operative workflows. They know which activities are needed to carry out the conceptual design and installation of DMS and they are able to apply a DMS as an archive system, workflow system and retrieval system. Furthermore, they know groupware systems exemplarily and can use them for collaborative tasks.

Content
The lecture gives basics of document management and groupware systems. It covers different system categories, their interaction and their use areas and illustrates this with concrete examples. These include document management in the strict sense, scanning, Document Imaging (acquisition and visualization of scanned documents), indexing, electronic archiving, retrieval of relevant documents, workflow, groupware, and office communications.

Workload
Workload: 120h overall,
Lecture 30h
Review and preparation of lectures 60h
Exam preparation 29h
Exam 1h

Literature

- Klaus Götzer, Udo Schneiderath, Berthold Maier, Torsten Komke: Dokumenten-Management. Dpunkt Verlag, 2004, 358 Seiten, ISBN 3-8986425-8-5
- Jürgen Gulbins, Markus Seyfried, Hans Strack-Zimmermann: Dokumenten-Management. Springer, Berlin, 2002, 700 Seiten, ISBN 3-5404357-7-8
- Uwe M. Borghoff, Peter Rödig, Jan Scheffcyk, Lothar Schmitz: Langzeitarchivierung – Methoden zur Erhaltung digitaler Dokumente. Dpunkt Verlag, 2003, 299 Seiten, ISBN 3-89864-258-5

Further literature is given in each lecture individually.

T Course: Economics and Behavior [T-WIWI-102892]

Responsibility: Nora Szech
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101501] Economic Theory

ECTS	Language	Version
4,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2560137	Economics and Behavior	Vorlesung (V)	2	Nora Szech
WS 16/17	2560138	Übung zu Economics and Behavior	Übung (Ü)	1	Nora Szech

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
The grade will be determined in a final written exam. Students can earn a bonus to the final grade by successfully participating in the exercises.

Conditions
None

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

Remarks
The lecture will be held in English.

Die folgenden Informationen stammen aus der Veranstaltung Economics and Behavior (WS 16/17):

The students

- gain insight into fundamental topics in behavioral economics;
- get to know different research methods in the field of behavioral economics;
- learn to critically evaluate experimental designs;
- get introduced to current research papers in behavioral economics;
- become acquainted with the technical terminology in English.

Content
The course covers topics from behavioral economics with regard to contents and methods. In addition, the students gain insight into the design of economic experiments. Furthermore, the students will become acquainted with reading and critically evaluating current research papers in the field of behavioral economics.

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

Literature
Kahnemann, Daniel: Thinking, Fast and Slow. Farrar, Straus and Giroux, 2011.
Ariely, Dan: Predictably irrational. New York: Harper Collins, 2008.
Ariely, Dan: The Upside of Irrationality. New York: HarperCollins, 2011.

T Course: Economics I: Microeconomics [T-WIWI-102708]

Responsibility: Clemens Puppe, Johannes Philipp Reiß
Contained in: [M-WIWI-101726] Preliminary Exam
[M-WIWI-101606] Economics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2610012	Economics I: Microeconomics	Vorlesung (V)	3	Johannes Philipp Reiß

Learning Control / Examinations
The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation.
There may be offered a practice exam in the middle of the semester. The results of this exam may be used to improve the grade of the main exam. A detailed descritpion of the examination modalities will be given by the respective lecturer.
The main exam takes place subsequent to the lectur. The re-examination is offered at the same examination period. As a rule, only repeating candidates are entitled for taking place the re-examination. For a detailed description on the exam regulations see the information of the respective chair.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Economics I: Microeconomics (WS 16/17):

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

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

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

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

Content
The students learn the basic concepts in Microeconomics and some basics in game theory. The student will understand the working of markets in modern economies and the role of decision making. Furthermore, she should be able to understand simple game theoretic argumentation in different fields of Economics.
In the two main parts of the course, problems of microeconomic decision making (household behavior, firm behavior) and problems of commodity allocation on markets (market equilibria and efficiency of markets) are discussed. In the final part of the course, basics of imperfect competition (oligopolistic markets) and of game theory as well as welfare economics are presented.

Workload
see German version.

Literature

- H. Varian, Grundzüge der Mikroökonomik, 5. edition (2001), Oldenburg Verlag
- Pindyck, Robert S./Rubinfeld, Daniel L., Mikroökonomie, 6. Aufl., Pearson. Münschen, 2005
- Frank, Robert H., Microeconomics and Behavior, 5. Aufl., McGraw-Hill, New York, 2005

Elective literature:

- Offer for interested and top students: detailed top articles with proofs, algorithms, ... state-of-the-art surveys, industrial magazines and scientific journals, pointers to recent developments related to the course.
- Tutorials and perhaps simpler literature alternatives for students to fill in gaps in prerequisites (or to fresh up their memory). Alternatives with a different mode of explanation to help students understand ...

T Course: Economics II: Macroeconomics [T-WIWI-102709]

Responsibility: Berthold Wigger
Contained in: [M-WIWI-101606] Economics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2600014	Economics II: Macroeconomics	Vorlesung (V)	4	Berthold Wigger

Learning Control / Examinations
The assessment consists of a written exam (120 min) according to Section 4(2), 1 of the examination regulation.
The assessment takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Economics II: Macroeconomics (SS 2016):

See German version.

Content
The lecture deals with the following topics:
Chapter 1: Macroeconomic targets
Chapter 2: Gross domestic product: a classical model
Chapter 3: Economic growth
Chapter 4: Money and inflation
Chapter 5: The open economy
Chapter 6: IS-LM model and business cycles
Chapter 7: Mundell-Fleming Model
Chapter 8: Macroeconomic equilibrium
Chapter 9: Unemployment

Workload
The total workload for this course is approximately 150 hours. For further information see German version.

Literature
Elective literature:
Sieg, G. (2008): *Volkswirtschaftslehre*; 2nd ed., Oldenbourg.

T Course: Economics III: Introduction in Econometrics [T-WIWI-102736]

Responsibility: Melanie Schienle
Contained in: [M-WIWI-101606] Economics
[M-WIWI-101499] Applied Microeconomics
[M-WIWI-101599] Statistics and Econometrics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2520016	Economics III: Introduction in Econometrics	Vorlesung (V)	2	Melanie Schienle
SS 2016	2520017	Übungen zu VWL III	Übung (Ü)	2	Melanie Schienle, Rebekka Gätjen

Learning Control / Examinations
The assessment consists of an 1h written exam according to Section 4(2), 1 of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Economics III: Introduction in Econometrics (SS 2016):

Familiarity with the basic concepts and methods of econometrics
Preparation of simple econometric surveys

Content
Simple and multiple linear regression (estimating parameters, confidence interval, testing, prognosis, testing assumptions)
Multi equation models
Dynamic models

Workload
180 hours (6.0 Credits)

Literature

- Von Auer: Ökonometrie ISBN 3-540-00593-5
- Goldberger: A course in Econometrics ISBN 0-674-17544-1
- Gujarati. Basic Econometrics ISBN 0-07-113964-8
- Schneeweiß: Ökonometrie ISBN 3-7908-0008-2

Elective literature:
Additional literature will be suggested in course

T Course: Efficient Algorithms [T-WIWI-102655]

Responsibility: Hartmut Schmeck
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics
[M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511101	Übungen zu Effiziente Algorithmen	Übung (Ü)	1	Hartmut Schmeck, Marlon Braun
SS 2016	2511100	Efficient Algorithms	Vorlesung (V)	2	Hartmut Schmeck

Learning Control / Examinations
The examination will be offered latest until winter term 2016/2017 (repeaters only).
The assessment consists of assignments or of a bonus exam (wrt §4 (2), 3 SPO), and a written exam (60 min.) in the week after the end of the lecturing periodwrt (§4 (2), 1 SPO).
If the mark obtained in the written exam is in between 1.3 and 4.0, a successful completion of the assignments or the bonus exam will improve the mark by one level (i.e. by 0.3 or 0.4).
Deviations from this type of assessment are announced at the beginning of this course.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Efficient Algorithms (SS 2016):

The student will learn how to use methods and concepts of efficient algorithms and how to demonstrate adequate innovative capabilities with respect to the used methods.
This course emphasizes the teaching of advanced concepts for the design and application of algorithms, data structures, and computer infrastructures in relation to their applicability in the real world. Based on a fundamental understanding of the covered concepts and methods, students should know how to select appropriate concepts and methods for problem settings in their professional life, and, if necessary, to extend and apply them in an adequate form. The students should be enabled to find adequate arguments for justifying their chosen problem solutions.

Content
In a problem oriented way the course presents systematic approaches to the design and analysis of efficient algorithms using standard tasks of information processing as generic examples. Special emphasis is put on the influence of data structures and computer architectures on the performance and cost of algorithms.In particular, the course emphasizes the design and analysis of algorithms on parallel computers and in hardware, which is increasingly important considering the growing presence of multicore architectures.

Workload
The total workload for this course is approximately 150.0 hours. For further information see German version.

Literature
Akl, S.G.: The Design and Analysis of Parallel Algorithms. Prentice-Hall, Englewood Cliffs, New Jersey,1989.
Borodin, Munro: The Computational Complexity of Algebraic and Numeric Problems (Elsevier 1975)
Cormen, Leiserson, Rivest: Introduction to Algorithms (MIT Press)
Sedgewick: Algorithms (Addison-Wesley) (many different versions available)
Elective literature:
will be announced in class

T Course: eFinance: Information Engineering and Management for Securities Trading [T-WIWI-102600]

Responsibility: Christof Weinhardt
Contained in: [M-WIWI-101434] eBusiness and Service Management
[M-WIWI-101402] eFinance
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101423] Topics in Finance II

ECTS	Language	Version
4,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2540455	Übungen zu eFinance: Informationswirtschaft für den Wertpapierhandel	Übung (Ü)	1	Christof Weinhardt, Felix Fritz
WS 16/17	2540454	eFinance: Information Engineering and Management for Securities Trading	Vorlesung (V)	2	Christof Weinhardt, Felix Fritz

Learning Control / Examinations
The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations) and by submitting written essays as part of the exercise (§4(2), 3 SPO 2007 respectively §4(3) SPO 2015). 70% of the final grade is based on the written exam and 30% is based on assignments from the exercises. The points obtained in the exercises only apply to the first and second exam of the semester in which they were obtained.

Conditions
None

Recommendations
None

Die folgenden Informationen stammen aus der Veranstaltung eFinance: Information Engineering and Management for Securities Trading (WS 16/17):

The students

- are able to understand the theoretical and pracitical aspects of securitites trading,
- are able to handle the relevant electronic tools for the evaluation of financial data,
- are able to identify the incentives of the traders for participation in different market plattforms,
- are able to analyse capital marketplaces concerning their efficiency, weaknesses and technical configuration,
- are able to apply theoretical methods of econometrics,
- are able to understand, criticize and present articles with a finance-scientific background,
- learn to elaborate solutions in a team.

Content
The theoretical part of the course examines the New Institutions Economics which provides a theoretically found explanation for the existence of markets and intermediaries. Building upon the foundations of the market micro structure, several key parameters and factors of electronic trading are examined. These insights gained along a structured securities trading process are complemented and verified by the analysis of prototypical trading systems developed at the institute as well as selected trading systems used by leading exchanges in the world. In the more practical-oriented second part of the lecture, speakers from practice will give talks about financial trading systems and link the theoretical findings to real-world systems and applications.

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

Literature

- Picot, Arnold, Christine Bortenlänger, Heiner Röhrl (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners"". Oxford University Press, New York

Elective literature:

- Gomber, Peter (2000): "Elektronische Handelssysteme - Innovative Konzepte und Technologien". Physika Verlag, Heidelberg
- Schwartz, Robert A., Reto Francioni (2004): "Equity Markets in Action - The Fundamentals of Liquidity, Market Structure and Trading". Wiley, Hoboken, NJ

T Course: Electric Energy Systems [T-ETIT-101923]

Responsibility: Thomas Leibfried
Contained in: [M-ETIT-102379] Power Network

ECTS	Version
5	1

Conditions
none

T Course: Elements and Systems of Technical Logistics [T-MACH-102159]

Responsibility: Vladimir Madzharov, Martin Mittwollen
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117096	Elements and systems of Technical Logistics	Vorlesung / Übung (VÜ)	3	Vladimir Madzharov, Martin Mittwollen

Conditions
none

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-MACH-102163] *Basics of Technical Logistics* is required before taking this course.

Die folgenden Informationen stammen aus der Veranstaltung Elements and systems of Technical Logistics (WS 16/17):

Students are able to:

- Describe elements and systems of technical logistics,
- Model and calculate structures and functions of special conveying machines,
- Describe interdependence of material flow systems and technique quantitatively and qualitatively and
- Equip material flow systems with appropriate machines.

Content
material flow systems and their (conveying) technical components
mechanical behaviour of conveyors;
structure and function of conveyor machines; elements of intralogistics (belt conveyor, racks, automatic guided vehicles, fan-in, bifurcation, and etc.)
sample applications and calculations in addition to the lectures inside practical lectures

Workload
presence: 31,5h
rework: 148,5h

Literature
recommendations during lectures

T Course: Elements of Technical Logistics and Project [T-MACH-102178]

Responsibility: Vladimir Madzharov, Martin Mittwollen
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
6	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117097	Elements and systems of Technical Logistics plus project	Vorlesung / Übung (VÜ)	4	Vladimir Madzharov, Martin Mittwollen

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Elements and systems of Technical Logistics plus project (WS 16/17):

Students are able to:

- Describe elements and systems of technical logistics,
- Model and calculate structures and functions of special conveying machines,
- Describe interdependence of material flow systems and technique quantitatively and qualitatively,
- Equip material flow systems with appropriate machines and
- Judge about systems in place and justify it in front of subject related persons.

Content
mechanical behaviour of conveyors;
structure and function of conveyor machines; elements of intralogistics (belt conveyor, racks, automatic guided vehicles, fan-in, bifurcation, and etc.)
sample applications and calculations in addition to the lectures inside practical lectures
Self manufacturing of a project report to recesses the topic.

Workload
presence: 42h
rework: 198h

Literature
recommendations during lectures

T Course: Employment Law I [T-INFO-101329]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101216] Private Business Law

ECTS	Version
3	1

T Course: Employment Law II [T-INFO-101330]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101216] Private Business Law

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24668	Employment Law II	Vorlesung (V)	2	Alexander Hoff

Die folgenden Informationen stammen aus der Veranstaltung Employment Law II (SS 2016):

Aufbauend auf den in *Arbeitsrecht I* erworbenen Kenntnissen sollen die Studenten einen vertieften Einblick in das Arbeitsrecht erhalten.

Content
Aufbauend auf den in *Arbeitsrecht I* erworbenen Kenntnissen sollen die Studenten einen vertieften Einblick in das Arbeitsrecht erhalten.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt bei 3 Leistungspunkten 90 h, davon 22,5 Präsenz.

Literature
Literaturempfehlung wird in der Vorlesung bekanntgegeben.

T Course: Energy Conversion and Increased Efficiency in Internal Combustion Engines [T-MACH-105564]

Responsibility: Thomas Koch, Heiko Kubach
Contained in: [M-MACH-101275] Combustion Engines I

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2133121	Energy Conversion and Increased Efficiency in Internal Combustion Engines	Vorlesung (V)	2	Thomas Koch

Die folgenden Informationen stammen aus der Veranstaltung Energy Conversion and Increased Efficiency in Internal Combustion Engines (WS 16/17):

The students can name all important influences on the combustion process. They can analyse and evaluate the engine process considering efficiency, emissions and potential.

Content
1. Introduction
2. Thermodynamics of combustion engines
3. Fundamentals
4. gas exchange
5. Flow field
6. Wall heat losses
7. Combustion in gasoline engines
8. APR und DVA
9. Combustion in Diesel engines
10. Emissions
11. Waste heat recovery
12. Measures to increase efficiency

Workload
regular attendance: 24 hours, self-study: 96 hours

T Course: Energy Efficient Intralogistic Systems [T-MACH-105151]

Responsibility: Meike Braun, Frank Schönung
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117500	Energy efficient intralogistic systems	Vorlesung (V)	2	Meike Braun, Frank Schönung

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Energy efficient intralogistic systems (WS 16/17):

Students are able to:

- Describe and choose basic measures to enhance energy efficency,
- Specify this measures considering material handling processes like
  - steady conveyors,
  - unsteady conveyors,
  - as well as the necassary drives,
- Model based on this material handling systems and calculate their energy efficiency and
- Choose ressource efficient material handling systems.

Content
The main focuses of the course are:

- green supply chain
- processes in Intralogistic systems
- evaluation of energy consumption of conveyors
- modeling of conveying systems
- methods for energy savings
- approaches for energy efficiency increasing of continuous and discontinuous conveyors
- dimensioning energy efficient drives
- new approaches for resource efficient conveying systems.

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
None.

T Course: Energy Policy [T-WIWI-102607]

Responsibility: Martin Wietschel
Contained in: [M-WIWI-101464] Energy Economics

ECTS	Language	Version
3,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2581959	Energy Policy	Vorlesung (V)	2	Martin Wietschel

Learning Control / Examinations
The assessment consists of a written exam 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.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Energy Policy (SS 2016):

See German version.

Content
The course deals with material and energy policy of policy makers and includes the effects of such policies on the economy as well as the involvement of industrial and other stakeholders in the policy design. At the beginning the neoclassical environment policy is discussed. Afterwards the Sustainable Development concept is presented and strategies how to translate the concept in policy decision follows. In the next part of the course an overview about the different environmental instruments classes, evaluation criteria for these instruments and examples of environmental instruments like taxes or certificates will be discussed. The final part deals with implementation strategies of material and energy policy.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature
Will be anounced in the lecture.

T Course: Engine Measurement Techniques [T-MACH-105169]

Responsibility: Sören Bernhardt
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2134137	Engine measurement techniques	Vorlesung (V)	2	Sören Bernhardt

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-MACH-102194] *Combustion Engines I* is required before taking this course.

Die folgenden Informationen stammen aus der Veranstaltung Engine measurement techniques (SS 2016):

The students are able to explain the principles of modern measuring devices and are able to determin the right device for a certain measuring problem. The are able to analyse and evaluate the results.

Content
Students get to know state-of-the-art measurement techniques for combustion engines. In particular basic techniques for measuring engine operating parameters such as torque, speed, power and temperature.

Possible measurement errors and abberations are discussed.

Furthermore techniques for measuring exhaust emissions, air/fuel ratio, fuel consumption as well as pressure indication for thermodynamic analysis are covered.

Workload
regular attendance: 21 hours
self-study: 100 hours

Literature
Lecture notes available in the lectures or in the 'Studentenhaus'

1. Grohe, H.:Messen an Verbrennungsmotoren
2. Bosch: Handbuch Kraftfahrzeugtechnik
3. Veröffentlichungen von Firmen aus der Meßtechnik
4. Hoffmann, Handbuch der Meßtechnik
5. Klingenberg, Automobil-Meßtechnik, Band C

T Course: Enterprise Architecture Management [T-WIWI-102668]

Responsibility: Thomas Wolf
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511600	Enterprise Architecture Management	Vorlesung (V)	2	Thomas Wolf
WS 16/17	2511601	Übungen zu Enterprise Architecture Management	Übung (Ü)	1	Thomas Wolf

Learning Control / Examinations
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Enterprise Architecture Management (WS 16/17):

Students understand the connection between enterprise strategy, business processes and business objects and IT architecture; they know methods to depict these connections and how they can be developed based on each other.

Content
The following topics will be covered: components of enterprise architecture, enterprise strategy including methods to develop strategies, business process (re)engineering, methods to implement changes within enterprises (management of change)

Literature

- Nolan, R., Croson, D.: Creative Destruction: A Six-Stage Process for Transforming the Organization. Harvard Business School Press, Boston Mass. 1995
- Doppler, K., Lauterburg, Ch.: Change Management. Campus Verlag 1997
- Jacobson, I.: The Object Advantage, Business Process Reengineering with Object Technology. Addison-Wesley Publishing Company, Wokingham England 1994
- Keller, G., Teufel, Th.: SAP R/3 prozessorientiert anwenden. Addison Wesley 1998
- Österle, H.: Business Engineering Bd. 1 und 2. Springer Verlag, Berlin 1995

T Course: Enterprise Risk Management [T-WIWI-102608]

Responsibility: Ute Werner
Contained in: [M-WIWI-101436] Risk and Insurance Management

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2530326	Enterprise Risk Management	Vorlesung (V)	3	Ute Werner

Learning Control / Examinations
The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).
The overall grade consists of the assessment of the oral presentations incl. term papers (50 percent) and the assessment of the oral exam (50 percent).

Conditions
None

Recommendations
None

Die folgenden Informationen stammen aus der Veranstaltung Enterprise Risk Management (WS 16/17):

Learning to identify, to analyse and to assess business risks; this serves as a basis for strategy and policy design regarding risks and opportunities of an enterprise. Introduction to approaches that allow to consider area-specific risk objectives, risk-bearing capacity and risk acceptance.

Content

1. Concepts and practice of risk management, based on decision theory
2. Goals, strategies and policies for the identification, analysis, assessment and management of risks
3. Insurance as an instrument for loss-financing
4. Selected aspects of risk management: e.g. environmental protection, organizational failure and D&O-coverage, development of a risk management culture
5. Organisation of risk management
6. Approaches for determining optimal combinations of risk management measures considering their investment costs and outcomes.

Workload
The overall amount of work necessary for this course is approx. 135 hours (4.5 ECTS-Credits).

Literature

- K. Hoffmann. Risk Management - Neue Wege der betrieblichen Risikopolitik. 1985.
- R. Hölscher, R. Elfgen. Herausforderung Risikomanagement. Identifikation, Bewertung und Steuerung industrieller Risiken. Wiesbaden 2002.
- W. Gleissner, F. Romeike. Risikomanagement - Umsetzung, Werkzeuge, Risikobewertung. Freiburg im Breisgau 2005.
- H. Schierenbeck (Hrsg.). Risk Controlling in der Praxis. Zürich 2006.

Elective literature:
Additional literature is recommended during the course.

T Course: Environmental Law [T-INFO-101348]

Responsibility: Matthias Bäcker
Contained in: [M-INFO-101217] Public Business Law

ECTS	Version
3	1

T Course: European and International Law [T-INFO-101312]

Responsibility: Matthias Bäcker
Contained in: [M-INFO-101217] Public Business Law

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24666	Europäisches und Internationales Recht	Vorlesung (V)	2	Ulf Brühann

Die folgenden Informationen stammen aus der Veranstaltung Europäisches und Internationales Recht (SS 2016):

Die Europäisierung des nationalen Rechts macht eine Auseinandersetzung mit dem Europarecht für jeden, der juristische Grundkenntnisse erwerben will, unabdingbar. Kaum eine nationale Handlung ist ohne die Berücksichtigung gemeinschaftsrechtliche Vorgaben denkbar. Der Einfluss des internationalen Rechts ist dagegen von noch geringerer Bedeutung. Vor diesem Hintergrund setzt sich die Vorlesung vorrangig mit dem Europarecht auseinander und vermittelt dem Studenten die notwendigen europarechtlichen Kenntnisse, um die Überformung des nationalen Rechts durch gemeinschaftsrechtliche Vorgaben zu verstehen. Der Student soll anschließend in der Lage sein, europarechtliche Fragestellungen problemorientiert zu lösen. Da der Rechtsstoff teilweise im Diskurs mit den Studierenden erarbeitet werden soll, ist die Anschaffung einer Gesetzessammlung unabdingbar (z.B. Beck-Texte "Europarecht").

Content
Die Vorlesung setzt sich vorrangig mit dem Europarecht auseinander: Dazu gehört im Ausgangspunkt eine Analyse der Geschichte von der EWG zur EG und EU, der Akteure (Parlament, Kommission, Rat, Gerichtshof der Europäischen Gemeinschaften), der Rechtsquellen (Verordnung, Richtlinie, Entscheidung, Stellungnahme, Empfehlung) und des Gesetzgebungsverfahrens. Einen weiteren Schwerpunkt der Vorlesung bilden sodann die Grundfreiheiten, die einen freien innergemeinschaftlichen Fluss der Waren (etwa von Bier, das nicht dem deutschen Reinheitsgebot entspricht), Personen (wie dem Fußballspieler Bosman), Dienstleistungen (wie unternehmerischen Tätigkeiten) sowie von Zahlungsmitteln ermöglichen. Zudem werden auch die Grundrechte der EG und die Wettbewerbsregeln behandelt. Dies geschieht jeweils vor dem Hintergrund konkreter Rechtsfälle. Ferner werden die Grundrechte der Europäischen Menschenrechtskonvention (EMRK) vorgestellt. Abschließend wird ein knapper Überblick über das Völkerrecht insbesondere der Welthandelsorganisation (WTO) gegeben.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt bei 3 Leistungspunkten 90 h, davon 22,5 Präsenz.

Literature
Literatur wird in der Vorlesung angegeben.
Weiterführende Literatur
Erweiterte Literaturangaben werden in der Vorlesung bekannt gegeben.

T Course: Exam on Climatology [T-PHYS-105594]

Responsibility:
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
6	1

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-PHYS-101092] *Climatology* is required before taking this course.

T Course: Exam on Meteorological Hazards [T-PHYS-105954]

Responsibility: Michael Kunz
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
3	1

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-PHYS-101557] *Meteorological Hazards* is required before taking this course.

T Course: Exchanges [T-WIWI-102625]

Responsibility: Jörg Franke
Contained in: [M-WIWI-101402] eFinance
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101423] Topics in Finance II

ECTS	Language	Version
1,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2530296	Exchanges	Vorlesung (V)	1	Jörg Franke

Learning Control / Examinations
See German version.

Conditions
None

Recommendations
None

Die folgenden Informationen stammen aus der Veranstaltung Exchanges (SS 2016):

Students are in a position to discuss and evaluate current developments regarding the organisation of exchanges and securities trading.

Content

- Organisation of exchanges: Changing Zeitgeist - Corporates instead of cooparative structures
- Market models: order driven vs. market maker - Liquidity provision for less frequently traded securities
- Trading systems: The end of an era? - No more need for running traders?
- Clearing: Diversity instead of uniformity - Safety for all?
- Settlement: Increasing importance - Does efficient settlement assure the "value added" of exchanges in the long run?

Workload
The total workload for this course is approximately 45.0 hours. For further information see German version.

Literature
Elective literature:
Educational material will be offered within the lecture.

T Course: Exercises in Civil Law [T-INFO-102013]

Responsibility: Yvonne Matz, Thomas Dreier
Contained in: [M-INFO-101191] Commercial Law

ECTS	Language	Version
9	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24506	Exercises in Civil Law	Vorlesung (V)	2	Benjamin Raue
SS 2016	24926	Case Studies in Civil Law	Übung (Ü)	2	Eva-Maria Bauer, Franziska Brinkmann, Cornelius Kleiner
SS 2016	24504	Advanced Civil Law	Vorlesung (V)	2	Yvonne Matz

Modeled Conditions
The following conditions must be met:

- Successful completion of module [M-INFO-101190] *Introduction to Civil Law* is required before taking this course.

Die folgenden Informationen stammen aus der Veranstaltung Exercises in Civil Law (SS 2016):

Der/die Studierende hat vertiefte Kenntnisse in der juristischen Falllösungstechnik (Anspruchsaufbau, Gutachtenstil, Subsumtion). Er/sie ist in der Lage, juristische Problemfälle der Praxis mit juristischen Mitteln methodisch sauber zu lösen.

Content
In 5 Übungsterminen wird der Stoff der Veranstaltungen "BGB für Fortgeschrittene" und "Handels- und Gesellschaftsrecht" wiederholt und die juristische Falllösungsmethode vertiefend eingeübt. Weiterhin werden im Rahmen der Übung 5 Klausuren geschrieben, die sich über den gesamten bisher im Privatrecht erlernten Stoff erstrecken. Weitere Termine sind für die Klausurrückgabe und die Besprechungen der einzelnen Klausuren reserviert.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt ca. 90 Stunden, davon 22,5 h Präsenz und 67,5 h Klausurvor- und nachbereitungszeit..
\begintabular|l|c|r|
\hline
Aktivität & & Arbeitsaufwand \\
\hline
\itshape Präsenzzeit & & \\
Besuch der Vorlesung (darin 5 Klausuren) & 15 x 90min & 22h 30m \\
\hline
Vor- / Nachbereitung der Vorlesung & 15 x 120min & 30h 00m \\
Skript 2x wiederholen & 2 x 10h & 20h 00m \\
Prüfung vorbereiten & & 17h 30m \\
\hline
Summe & & 90h 00m \\
\hline
\endtabular

Die folgenden Informationen stammen aus der Veranstaltung Advanced Civil Law (SS 2016):

Der/die Studierende hat vertiefte Kenntnisse des allgemeinen und des besonderen Schuldrechts sowie des Sachenrechts. Er/sie kennt die gesetzlichen Grundregelungen von Leistungsort und Leistungszeit einschließlich der Modalitäten der Leistungsabwicklung sowie die gesetzliche Regelung des Rechts der Leistungsstörungen (Unmöglichkeit, Nichtleistung, verspätete Leistung, Schlechtleistung). Der/die Studierende ist vertraut mit den Grundzügen der gesetzlichen Vertragstypen und der Verschuldens- wie auch der Gefährdungshaftung. Der/die Studierende kann aus dem Sachenrecht die unterschiedlichen Arten der Übereignung unterscheiden und hat einen Überblick über die dinglichen Sicherungsrechte

Content
Aufbauend auf den in der Vorlesung BGB für Anfänger erworbenen Grundkenntnissen des Zivilrechts und insbesondere des allge-

meinen Teils des Bürgerlichen Gesetzbuches (BGB) behandelt die Vorlesung die gesetzlichen Regelungen des allgemeinen und des besonderen Schuldrechts, also zum einen die gesetzlichen Grundregelungen von Leistungsort und Leistungszeit einschließlich der Modalitäten der Leistungsabwicklung und des Rechts der Leistungsstörungen (Unmöglichkeit, Nichtleistung, verspätete Leistung, Schlechtleistung). Zum anderen werden die gesetzlichen Vertragstypen (insbesondere Kauf, Miete, Werk- und Dienstvertrag, Leihe, Darlehen), vorgestellt und Mischtypen besprochen (Leasing, Factoring, neuere Computerverträge). Darüber hinaus wird das Haftungsrecht in den Formen der Verschuldens- und der Gefährdungshaftung besprochen. Im Sachenrecht geht es um Besitz und Eigentum, um die verschiedenen Übereignungstatbestände sowie um die wichtigsten dinglichen Sicherungsrechte.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt ca. 90 Stunden, davon 22,5 h Präsenz, 45 h Vor- und Nachbereitungszeit sowie 22,5 h für die Klausurvorbereitung.
\begintabular|l|c|r|
\hline
Aktivität & & Arbeitsaufwand \\
\hline
\itshape Präsenzzeit & & \\
Besuch der Vorlesung & 15 x 90min & 22h 30m \\
\hline
Vor- / Nachbereitung der Vorlesung & 15 x 120min & 30h 00m \\
Skript 2x wiederholen & 2 x 10h & 20h 00m \\
Prüfung vorbereiten & & 17h 30m \\
\hline
Summe & & 90h 00m \\
\hline
\endtabular
\captionArbeitsaufwand für die Lerneinheit "BGB für Fortgeschrittene"

Literature
Wird in der Vorlesung bekannt gegeben.
Weiterführende Literatur
Wird in der Vorlesung bekannt gegeben.

T Course: Experimental Physics [T-PHYS-100278]

Responsibility: Thomas Schimmel
Contained in: [M-PHYS-100283] Experimental Physics

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14	1

Conditions
none

T Course: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

Responsibility: Stefan Nickel
Contained in: [M-WIWI-101421] Supply Chain Management
[M-WIWI-101413] Applications of Operations Research
[M-WIWI-101414] Methodical Foundations of OR

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550487	Übungen zu Standortplanung und strategisches SCM	Übung (Ü)	1	Brita Rohrbeck
WS 16/17	2550486	Facility Location and Strategic Supply Chain Management	Vorlesung (V)	2	Stefan Nickel

Learning Control / Examinations
The assessment consists of a written exam (120 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.

Conditions
Prerequisite for admission to examination is the succesful completion of the online assessments.

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-WIWI-103061] *Prerequisite for Facility Location and Strategic Supply Chain Management* is required before taking this course.

Recommendations
None

Remarks
The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

Die folgenden Informationen stammen aus der Veranstaltung Facility Location and Strategic Supply Chain Management (WS 16/17):

The student

- knows and describes basic quantitative methods in location planning in the context of strategic Supply Chain Planning,
- applies several criteria for the evaluation of the locations of facilities in the context of classical location planning models (planar models, network models and discrete models) and advanced location planning models designed for Supply Chain Management (single-period and multi-period models),
- implements the considered models in practical problems.

Content
Since the classical work "Theory of the Location of Industries" of Weber from 1909, the determination of an optimal location of a new facility with respect to existing customers is strongly connected to strategical logistics planning. Strategic decisions concerning the location of facilities as production plants, distribution centers or warehouses are of high importance for the rentability of supply chains. Thoroughly carried out, location planning allows an efficient flow of materials and leads to lower costs and increased customer service.
Subject of the course is an introduction to the most important terms and definitions in location planning as well as the presentation of basic quantitative location planning models. Furthermore, specialized location planning models for Supply Chain Management will be addressed as they are part in many commercial SCM tools for strategic planning tasks.

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

Literature
Elective literature:

- Daskin: Network and Discrete Location: Models, Algorithms, and Applications, Wiley, 1995
- Domschke, Drexl: Logistik: Standorte, 4. Auflage, Oldenbourg, 1996
- Francis, McGinnis, White: Facility Layout and Location: An Analytical Approach, 2nd Edition, Prentice Hall, 1992
- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
- Thonemann: Operations Management - Konzepte, Methoden und Anwendungen, Pearson Studium, 2005

T Course: Financial Accounting and Cost Accounting [T-WIWI-102816]

Responsibility: Jan-Oliver Strych
Contained in: [M-WIWI-101578] Fundamentals of Business Administration 2

ECTS	Version
4	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2600002	Rechnungswesen I	Vorlesung (V)	2	Jan-Oliver Strych
WS 16/17	2600003	Übung zu Rechnungswesen	Übung (Ü)	2	Jan-Oliver Strych

Learning Control / Examinations
The assessment consists of a written exam following §4, Abs. 2, 1 of the examination regulation.
The examination takes place in every semester. Re-examinations are offered at eyery ordinary examination date.

Conditions
None

T Course: Financial Econometrics [T-WIWI-103064]

Responsibility: Melanie Schienle
Contained in: [M-WIWI-101608] Statistics and Econometrics
[M-WIWI-101599] Statistics and Econometrics

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2520022	Financial Econometrics I	Vorlesung (V)	2	Melanie Schienle
SS 2016	2520023	Übungen zu Financial Econometrics I	Übung (Ü)	2	Melanie Schienle, Chong Liang

Learning Control / Examinations
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Conditions
None

Recommendations
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

Remarks
The course is offered in summer term 2016, in winter term 2017/18 and afterwards every second term

T Course: Financial Intermediation [T-WIWI-102623]

Responsibility: Martin Ruckes
Contained in: [M-WIWI-101465] Topics in Finance I
[M-WIWI-101423] Topics in Finance II

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2530233	Übung zu Finanzintermediation	Übung (Ü)		Daniel Hoang, Martin Ruckes
WS 16/17	2530232	Financial Intermediation	Vorlesung (V)		Martin Ruckes

Learning Control / Examinations
The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
The exam is offered each semester.

Conditions
None

Recommendations
None

Die folgenden Informationen stammen aus der Veranstaltung Financial Intermediation (WS 16/17):

Students

- are in a position to describe the arguments for the existence of financial intermediaries,
- are able of discuss and analyze both static and dynamic aspects of contractual relationships between banks and borrowers,
- are able to discuss the macroeconomic role of the banking system,
- are in a position to explain the fundamental principles of the prudential regulation of banks and are able to recognize and evaluate the implications of specific regulations.

Content

- Arguments for the existence of financial intermediaries
- Bank loan analysis, relationship lending
- Stability of the financial system
- The macroeconomic role of financial intermediation
- Principles of the prudential regulation of banks

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

Literature
Elective literature:

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6th edition, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2nd edition, MIT Press.

T Course: Financial Management [T-WIWI-102605]

Responsibility: Martin Ruckes
Contained in: [M-WIWI-101435] Essentials of Finance

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2530216	Financial Management	Vorlesung (V)	2	Martin Ruckes
SS 2016	2530217	Übung zu Financial Management	Übung (Ü)	1	Martin Ruckes

Learning Control / Examinations
The assessment consists of a written exam (60 min.) according to Section 4 (2), 1 of the examination regulation.
The exam takes place at every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Recommendations
Knowledge of the content of the course Business Administration: Finance and Accounting [25026/25027] is recommended.

Die folgenden Informationen stammen aus der Veranstaltung Financial Management (SS 2016):

Students

- are able to characterize the central questions of financial management,
- are in a position to explain the role of liquidity, compute important liquidity ratios and explain their meaning,
- are able to describe and discuss the basic principles of working capital management,
- know different types of corporate financing as well as their pros and cons,
- are in a position to analyze firms' capital strucures and to identify possible improvements,
- are familiar with basic questions of corporate distribution policy.

Content
Analytical methods and theories in the field of corporate finance with the main focus on:

- Liquidity and Working Capital Management
- Sources of short term/ long term finance
- Capital Structure
- Dividend policy

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

Literature
Elective literature:

- Ross, Westerfield, Jaffe, Jordan (2009): Modern Financial Management, McGraw-Hill International Edition
- Berk, De Marzo (2014): Corporate Finance, Pearson Addison Wesley

T Course: Foundations of Digital Services A [T-WIWI-105771]

Responsibility: Christof Weinhardt, Gerhard Satzger
Contained in: [M-WIWI-101434] eBusiness and Service Management
[M-WIWI-102752] Fundamentals of Digital Service Systems
[M-WIWI-101422] Specialization in Customer Relationship Management

ECTS	Language	Version
4,5	englisch	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2595466	Foundations of Digital Services A	Vorlesung (V)	2	Christof Weinhardt, Niklas Kühl, York Sure-Vetter, Gerhard Satzger

Learning Control / Examinations
The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations). By successful completion of the exercises (§4(2), 3 SPO 2007 respectively §4(3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4). The bonus only applies to the first and second exam of the semester in which it was obtained.

Conditions
None

Remarks
Der Titel der Lehrveranstaltung und Teilleistung wurde zum WS 2015/16 von "eServices" in "Foundations of Digital Services" umbenannt.

Die folgenden Informationen stammen aus der Veranstaltung Foundations of Digital Services A (SS 2016):

This course conveys the fundamental knowledge to understand the importance of services in our economy and the impact of information and communication technology (ICT) on existing and emerging service industries. Combining theoretical models with multiple case studies and application scenarios, this course will enable students:

- to understand different service perspectives and apply the general concept of "value co-creation"
- to know and to be able to apply concepts, methods and tools used for the design, engineering and management of eServices
- to be familiar with current research topics
- to gain experience in group work and to improve their presentation skills
- to be exposed to English language in preparation for working in international environments

Content
The world is moving more and more towards "service-led" economies: in developed countries services already account for around 70% of gross value added. In order to design, engineer, and manage services, traditional "goods-oriented" models are often inappropriate. In addition, the rapid development of information and communication technology (ICT) pushes the economic importance of services that are rendered electronically (eServices) and, thus, drives competitive changes: increased interaction and individualization open up new dimensions of "value co-creation" between providers and customers; dynamic and scalable service value networks replace static value chains; digital services can be globally delivered and exchanged across today's geographic boundaries;

Building on a systematic categorization of (e)Services and on the general notion of "value co-creation", we cover concepts and foundations for engineering and managing IT-based services, allowing for further specialization in subsequent KSRI courses. Topics include service innovation, service economics, service modeling as well as the transformation and coordination of service value networks.

In addition, case studies, hands-on exercises and guest lectures will illustrate the applicability of the concepts. English language is used throughout the course to acquaint students with international environments.

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature

- Anderson, J./ Nirmalya, K. / Narus, J. (2007), Value Merchants.
- Lovelock, C. / Wirtz, J. (2007) Services Marketing, 6th ed.
- Meffert, H./Bruhn, M. (2006), Dienstleistungsmarketing, 5. Auflage,
- Spohrer, J. et al. (2007), Steps towards a science of service systems. In: IEEE Computer, 40 (1), p. 70-77
- Stauss, B. et al. (Hrsg.) (2007), Service Science – Fundamentals Challenges and Future Developments.
- Teboul, (2007), Services is Front Stage.
- Vargo, S./Lusch, R. (2004) Evolving to a New Dominant Logic for Marketing, in: Journal of Marketing 68(1): 1–17.
- Shapiro, C. / Varian, H. (1998), Information Rules - A Strategic Guide to the Network Economy

T Course: Foundations of Digital Services B [T-WIWI-105775]

Responsibility: Stefan Nickel, Stefan Morana, Alexander Mädche
Contained in: [M-WIWI-102752] Fundamentals of Digital Service Systems

ECTS	Version
4,5	1

Conditions
None

Remarks
The course will start from winter term 2016/17.

T Course: Foundations of Informatics I [T-WIWI-102749]

Responsibility: York Sure-Vetter
Contained in: [M-WIWI-101417] Foundations of Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511010	Foundations of Informatics I	Vorlesung (V)	2	Achim Rettinger, York Sure-Vetter
SS 2016	2511011	Exercises to Foundations of Informatics I	Übung (Ü)		Patrick Philipp, Tobias Weller, Achim Rettinger, York Sure-Vetter

Learning Control / Examinations
The assessment consists of an 1h written exam according to Section 4 (2), 1 of the examination regulation.
The exam takes place every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Foundations of Informatics I (SS 2016):

The student

- is able to formalise tasks in the domain of informatics and is able to identify solution methods
- knows the basic terminology of computer science and is capable of applying these terms to different problems.
- knows basic programming structures and is able to apply them (particularly simple data structures, object interaction and implementation of basic algorithms).

Content
The following topics are covered:

- Object Oriented Modeling
- Logic (Propositional Calculus, Predicate Logic, Boolean Algebra)
- Algorithms and Their Properties
- Sort-and Search-Algorithms
- Complexity Theory
- Problem Specification
- Dynamic Data Structures

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature

- H. Balzert. Lehrbuch Grundlagen der Informatik. Spektrum Akademischer Verlag 2004.
- U. Schöning. Logik für Informatiker. Spektrum Akademischer Verlag 2000.
- T. H. Cormen, C. E. Leiserson. Introduction to Algorithms, MIT Press 2001.

Additional literature will be announced in the lecture.

T Course: Foundations of Informatics II [T-WIWI-102707]

Responsibility: Hartmut Schmeck
Contained in: [M-WIWI-101417] Foundations of Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511012	Foundations of Informatics II	Vorlesung (V)	3	Hartmut Schmeck
WS 16/17	2511014	Tutorien zu Grundlagen der Informatik II	Tutorium (Tu)		Micaela Wünsche, Hartmut Schmeck, Friederike Pfeiffer-Bohnen, Marlon Braun, Lukas König

Learning Control / Examinations
The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation.
If the grade obtained in the written exam is in between 1.3 and 4.0, a successful bonus exam will improve the grade by one level.
The examination takes place every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Recommendations
It is recommended to attend the course*Foundations of Informatics I*[2511010] beforehand.
Active participation in the practical lessons is strongly recommended.

Die folgenden Informationen stammen aus der Veranstaltung Foundations of Informatics II (WS 16/17):

See German version.

Content
Die Vorlesung beschäftigt sich mit formalen Modellen für Automaten, Sprachen und Algorithmen sowie mit realen Ausprägungen dieser Modelle, d.h. mit Rechnerarchitektur und -organisation (Hardware-Entwurf, Rechnerarithmetik, Architektur-Konzepte), Programmiersprachen (verschiedene Sprachebenen von Mikroprogrammierung bis zu höheren Programmiersprachen, sowie Programmübersetzung und -ausführung), Betriebssystemeng und Betriebsarten (Aufbau und Eigenschaften von Betriebssystemen, konkrete Betriebssystem-Aufgaben, Client-Server Systeme), Dateiorganisation und Datenverwaltung (Dateiorganisationsformen, Primär-/Sekundärorganisation).

Workload
The total workload for this course is approximately 150 hours. For further information see German version.

Literature
Elective literature:
Will be announced in the lecture.

T Course: Foundations of mobile Business [T-WIWI-104679]

Responsibility: Andreas Oberweis, Gunther Schiefer
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511227	Übungen zu Grundlagen für mobile Business	Übung (Ü)	1	Gunther Schiefer
SS 2016	2511226	Grundlagen für mobile Business	Vorlesung (V)	2	Gunther Schiefer

Learning Control / Examinations
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Grundlagen für mobile Business (SS 2016):

Wenn Sie im Beruf mit einer Fragestellung konfrontiert werden, welche „Mobile Business“ tangiert, sollen Sie in der Lage sein, schnell und kompetent entsprechende Antworten zu geben.
Dazu ist ein breiter Überblick über das Themenfeld nötig:

- Marktstrukturen
- Technik
- Möglichkeiten für Anwendungen
- Prozesse
- Probleme

Content
Die Vorlesung behandelt die Grundlagen für Mobile Business mit Schwerpunkt auf den (informations-)technischen Grundlagen. Diese werden mit dem wirtschaftlichen Hintergrund in Deutschland verzahnt.
Geplanter Inhalt:
1. Organisatorisches
2. Einführung & Definitionen
3. Mobile Geräte
4. Mobilfunkmarkt
5. Mobilfunktechnologien
6. Digitale Funktechnologien
7. Mobile Anwendungen
8. Ortung & Kontext
9. Problemfelder
Anmerkung: Die oben angegebenen Lehreinheiten haben jeweils einen unterschiedlichen Umfang.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt ca. 150 Stunden (5.0 Credits).
Vorlesung 24h
Übungseinheiten 12h

Vor- bzw. Nachbereitung der Vorlesung 36h
Vor- bzw. Nachbereitung der Übungen 24h
Prüfungsvorbereitung 53h
Prüfung 1h
Summe: 150h

T Course: Fuels and Lubricants for Combustion Engines [T-MACH-105184]

Responsibility: Bernhard Kehrwald
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2133108	Fuels and Lubricants for Combustion Engines	Vorlesung (V)	2	Bernhard Kehrwald

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Fuels and Lubricants for Combustion Engines (WS 16/17):

The students can name and explain composition and meaning of fuels, lubricants and coolants as important components in the system of todays Otto and Diesel engines as well as definition and chemical composition of fuels and lubricants, the meanig of crude oil as basic primary product, production processes, major properties, standards and specifications, testing methods.
They can point out future worldwide trends in the field of conventional and alternative fuels regarding emission standards and energy conservation

Content
Introduction and basics

Fuels for Gasoline and Diesel engines

Hydrogen

Lubricants for Gasoline and Diesel engines

Coolants for combustion engines

Workload
regular attendance: 24 hours
self-study: 96 hours

Literature
Lecturer notes

T Course: Fundamentals of Catalytic Exhaust Gas Aftertreatment [T-MACH-105044]

Responsibility: Egbert Lox
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2134138	Fundamentals of catalytic exhaust gas aftertreatment	Vorlesung (V)	2	Olaf Deutschmann, Jan-Dierk Grunwaldt, Egbert Lox

Die folgenden Informationen stammen aus der Veranstaltung Fundamentals of catalytic exhaust gas aftertreatment (SS 2016):

The students can name and explain the scientific fundamentals of the catalytic exhaust gas aftertreatment, as well as the technical, political and economical parameters of its application in engines for passenger cars and HD vehicles.

The students are able to point out and explain which emissions are formed in combustion engines, why these emissions are helth-related critical and which measures the legislator has established to reduce the emissions.

Content
1. kind and source of emissions
2. emission legislation
3. principal of catalytic exhaust gas aftertreatment (EGA)
4. EGA at stoichiometric gasoline engines
5. EGA at gasoline engines with lean mixtures
6. EGA at diesel engines
7. economical basic conditions for catalytic EGA

Workload
regular attendance: 36 hours
self-study: 84 hours

Literature
Lecture notes available in the lectures

1. ''Environmental Catalysis'' Edited by G.Ertl, H. Knötzinger, J. Weitkamp Wiley-VCH Verlag GmbH, Weinheim, 1999 ISBN 3-527-29827-4
2. ''Cleaner Cars- the history and technology of emission control since the 1960s'' J. R. Mondt Society of Automotive Engineers, Inc., USA, 2000 Publication R-226, ISBN 0-7680-0222-2
3. ''Catalytic Air Pollution Control - commercial technology'' R. M. Heck, R. J. Farrauto John Wiley & Sons, Inc., USA, 1995 ISBN 0-471-28614-1
4. ''Automobiles and Pollution'' P. Degobert Editions Technic, Paris, 1995 ISBN 2-7108-0676-2
5. ''Reduced Emissions and Fuel Consumption in Automobile Engines'' F. Schaeder, R. van Basshuysen, Springer Verlag Wien New York, 1995 ISBN 3-211-82718-8
6. ''Autoabgaskatalysatoren : Grudlagen - Herstellung - Entwicklung - Recycling - Ökologie'' Ch. Hagelüken und 11 Mitautoren, Expert Verlag, Renningen, 2001 ISBN 3-8169-1932-4

T Course: Fundamentals of Production Management [T-WIWI-102606]

Responsibility: Frank Schultmann
Contained in: [M-WIWI-101437] Industrial Production I

ECTS	Language	Version
5,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2581951	Übungen Grundlagen der Produktionswirtschaft	Übung (Ü)	2	Felix Hübner, Elias Naber
SS 2016	2581950	Fundamentals of Production Management	Vorlesung (V)	2	Frank Schultmann

Learning Control / Examinations
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Fundamentals of Production Management (SS 2016):

- Students should describe the tasks of strategic corporate planning.
- Students should be able to use general approaches in order to solve these problems.

Content
This lecture focuses on strategic production management with respect to various economic aspects. Interdisciplinary approaches of systems theory will be used to describe the challenges of industrial production. This course will emphasize the importance of R&D as the central step in strategic corporate planning to ensure future long-term success.
In the field of site selection and planning for firms and factories, attention will be drawn upon individual aspects of existing and greenfield sites as well as existing distribution and supply centres. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

Workload
Total effort required will account for approximately 165h (5.5 credits).

Literature
will be announced in the course

T Course: Gas Engines [T-MACH-102197]

Responsibility: Rainer Golloch
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Version
4	1

T Course: Gear Cutting Technology [T-MACH-102148]

Responsibility: Markus Klaiber
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149655	Gear Cutting Technology	Vorlesung (V)	2	Markus Klaiber

Die folgenden Informationen stammen aus der Veranstaltung Gear Cutting Technology (WS 16/17):

The students . . .

- can describe the basic terms of gearings and are able to explain the imparted basics of the gearwheel and gearing theory.
- are able to specify the different manufacturing processes and machine technologies for producing gearings. Furthermore they are able to explain the functional principles and the dis-/advantages of these manufacturing processes.
- can apply the basics of the gearing theory and manufacturing processes on new problems.
- are able to read and interpret measuring records for gearings.
- are able to make an appropriate selection of a process based on a given application
- can describe the entire process chain for the production of toothed components and their respective influence on the resulting workpiece properties.

Content
Based on the gearing theory, manufacturing processes and machine technologies for producing gearings, the needs of modern gear manufacturing will be discussed in the lecture. For this purpose, various processes for various gear types are taught which represent the state of the art in practice today. A classification in soft and hard machining and furthermore in cutting and non-cutting technologies will be made. For comprehensive understanding the processes, machine technologies, tools and applications of the manufacturing of gearings will be introduced and the current developments presented. For assessment and classification of the applications and the performance of the technologies, the methods of mass production and manufacturing defects will be discussed. Sample parts, reports from current developments in the field of research and an excursion to a gear manufacturing company round out the lecture.
The following topics will be covered:

- Sample applications
- Basics of gearing geometry
- Need of gearboxes
- Soft machining processes
- Hardening processes
- Hard machining processes
- Bevel gear production
- Measurement and testing
- Manufacturing of gearbox components
- Special gearings

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Lecture Slides

T Course: General and Inorganic Chemistry [T-CHEMBIO-101866]

Responsibility: Mario Ruben
Contained in: [M-CHEMBIO-102335] General and Inorganic Chemistry

ECTS	Version
7	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	5007	Seminar zur Vorlesung Allgemeine und Anorganische Chemie (für Studierende des Chemieingenieurwesens)	Seminar (S)	2	Frieder Scheiba
WS 16/17	5006	Allgemeine und Anorganische Chemie (für Studierende des Chemieingenieurwesens)	Vorlesung (V)	3	Mario Ruben

Conditions
none

T Course: Geological Hazards and Risks for external students [T-PHYS-103117]

Responsibility:
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
4	1

T Course: Global Optimization I [T-WIWI-102726]

Responsibility: Oliver Stein
Contained in: [M-WIWI-101413] Applications of Operations Research
[M-WIWI-101414] Methodical Foundations of OR

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2550144	Rechnerübung zu Globale Optimierung I+II	Übung (Ü)		Oliver Stein, Marcel Sinske
SS 2016	2550135	Übungen zu Globale Optimierung I+II	Übung (Ü)	1	Tomás Bajbar, Oliver Stein

Learning Control / Examinations
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.
The examination is held in the semester of the lecture and in the following semester.
Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.
The examination can also be combined with the examination of *Global Optimization II* [2550136]. In this case, the duration of the written examination takes 120 minutes.

Conditions
None

Modeled Conditions
The following conditions must be met:

- Course [T-WIWI-103638] *Global Optimization I and II* and this course are mutually exclusive.

Recommendations
None

Remarks
Part I and II of the lecture are held consecutively in the *same* semester.

T Course: Global Optimization I and II [T-WIWI-103638]

Responsibility:
Contained in: [M-WIWI-101414] Methodical Foundations of OR

ECTS	Version
9	1

Learning Control / Examinations
The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation.
The examination is held in the semester of the lecture and in the following semester.
Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration for the written examination is subject to fulfilling the prerequisite.

Conditions
None

Modeled Conditions
The following conditions must be met:

1. Course [T-WIWI-102726] *Global Optimization I* and this course are mutually exclusive.
2. Course [T-WIWI-102727] *Global Optimization II* and this course are mutually exclusive.

Recommendations
None

Remarks
Part I and II of the lecture are held consecutively in the *same* semester.

T Course: Global Optimization II [T-WIWI-102727]

Responsibility: Oliver Stein
Contained in: [M-WIWI-101414] Methodical Foundations of OR

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2550144	Rechnerübung zu Globale Optimierung I+II	Übung (Ü)		Oliver Stein, Marcel Sinske
SS 2016	2550135	Übungen zu Globale Optimierung I+II	Übung (Ü)	1	Tomás Bajbar, Oliver Stein

Learning Control / Examinations
The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.
The examination is held in the semester of the lecture and in the following semester.
Prerequisite for admission to the written examination is attaining at least 30% of the exercise points. Therefore the online-registration to the written examinationen is subject to fulfilling the prerequisite.
The examination can also be combined with the examination of *Global Optimization I* [2550134]. In this case, the duration of the written examination takes 120 minutes.

Conditions
None

Modeled Conditions
The following conditions must be met:

- Course [T-WIWI-103638] *Global Optimization I and II* and this course are mutually exclusive.

Remarks
Part I and II of the lecture are held consecutively in the *same*semester.

T Course: Human Resource Management [T-WIWI-102909]

Responsibility: Petra Nieken
Contained in: [M-WIWI-101513] Human Resources and Organizations

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2573003	Personalmanagement	Vorlesung (V)	2	Petra Nieken
WS 16/17	2573004	Übung zu Personalmanagement	Übung (Ü)	1	Petra Nieken, Mitarbeiter

Learning Control / Examinations
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Conditions
None

Recommendations
Completion of module Business Administration is recommended.
Basic knowledge of microeconomics, game theory, and statistics is recommended.

T Course: Hydraulic Engineering and Water Management [T-BGU-101667]

Responsibility: Franz Nestmann
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
4	1

Conditions
none

T Course: Hydro Power Engineering [T-BGU-100139]

Responsibility: Peter Oberle
Contained in: [M-WIWI-101404] Extracurricular Module in Engineering

ECTS	Version
6	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	6222802	Übungen zu Energiewasserbau	Übung (Ü)	1	Peter Oberle
SS 2016	6222801	Energiewasserbau	Vorlesung (V)	3	Peter Oberle

T Course: Hydrology [T-BGU-101693]

Responsibility: Erwin Zehe
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
4	1

Conditions
none

Recommendations
None

Remarks
None

T Course: Industrial Application of Material Handling Systems in Sorting and Distribution Systems [T-MACH-102092]

Responsibility: Jörg Föller
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2118089	Application of technical logistics in sorting- and distribution technology	Block-Vorlesung (BV)	2	Jörg Föller

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Application of technical logistics in sorting- and distribution technology (SS 2016):

Students are able to:

- Describe and classify basics and characteristics of application of sorting and distribution of goods,
- Solve drive and control tasks with appropriate concept selection,
- Design systems with appropriate calculation methods and evaluate them financially, and
- Judge about the confirmity of the system by using relevant standards and set of rules.

Content
Basics of goods sorting and distribution technology, employment characteristics, classification, interpretation, dimensioning, costs considerations. Relevant control, modern sets of rules and propulsion principles

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
None.

T Course: Industrial Application of Technological Logistics Instancing Crane Systems [T-MACH-105149]

Responsibility: Markus Golder
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Version
4	1

Conditions
none

T Course: Industrial Organization [T-WIWI-102844]

Responsibility: Johannes Philipp Reiß
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101420] Econometrics and Economics
[M-WIWI-101501] Economic Theory

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2560239	Übung zu Industrieökonomie	Übung (Ü)	2	Markus Fels, Johannes Philipp Reiß
SS 2016	2560238	Industrial Organization	Vorlesung (V)	2	Markus Fels, Johannes Philipp Reiß

Learning Control / Examinations
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.

Conditions
None

Recommendations
Completion of the module Economics [WW1VWL] is assumed.

Die folgenden Informationen stammen aus der Veranstaltung Industrial Organization (SS 2016):

The student

- understands the basic problems relating to imperfect competition and its policy implications,
- has basic skills of the game-theoretic and microeconomic modeling used in the field of Industrial Organization,
- applies these skills in the analysis of typical problems of Industrial Organization,
- understands the scope and implications of strategic behavior of firms in various market settings.

Content
This course introduces the theory of industrial organization using game theoretical models. The course is divided into two parts: The first part reviews standard market forms (monopoly, oligopoly, perfect competition). The second part discusses more advanced topics including price discrimination, strategic product differentiation, cartel formation, market entry, and research and development.

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

Literature
Compulsory Textbook:
H. Bester (2012): Theorie der Industrieökonomik, Springer-Verlag.
Additional Literature:
J. Tirole (1988): Theory of Industrial Organization, MIT Press.
D. Carlton / J. Perloff (2005): Modern Industrial Organization, Pearson.
P. Belleflamme / M. Peitz (2010): Industrial Organization

T Course: Information Engineering [T-MACH-102209]

Responsibility: Jivka Ovtcharova
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Version
3	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2122014	Information Engineering	Seminar (S)	2	Jivka Ovtcharova, Mitarbeiter

T Course: Information management in production [T-MACH-105937]

Responsibility: Oliver Riedel
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Version
4	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2122400	Information Management in Production	Block-Vorlesung (BV)	2	Oliver Riedel

T Course: Information Systems and Supply Chain Management [T-MACH-102128]

Responsibility: Christoph Kilger
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2118094	Information Systems in Logistics and Supply Chain Management	Vorlesung (V)	2	Christoph Kilger

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Information Systems in Logistics and Supply Chain Management (SS 2016):

Students are able to:

- Describe requirements of logistical processes regarding IT systems,
- Choose information systems to support logistical processes and use them according to the requirements of a supply chain.

Content
1) Overview of logistics systems and processes
2) Basic concepts of information systems and information technology
3) Introduction to IS in logistics: Overview and applications
4) Detailed discussion of selected SAP modules for logistics support

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Stadtler, Kilger: Supply Chain Management and Advanced Planning, Springer, 4. Auflage 2008

T Course: Integrated Production Planning [T-MACH-102106]

Responsibility: Gisela Lanza
Contained in: [M-MACH-101272] Integrated Production Planning

ECTS	Language	Version
9	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2150660	Integrated production planning	Vorlesung / Übung (VÜ)	6	Gisela Lanza

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Integrated production planning (SS 2016):

The students ...

- can discuss basic questions of production technology.
- are able to apply the methods of integrated production planning they have learned about to new problems.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques they have learned about for a specific problem.
- can apply the learned methods of integrated production planning to new problems.
- can use their knowledge targeted for efficient production technology.

Content
As part of this lecture further engineering aspects of production technology are taught. This includes content from the manufacturing technology, machine tools and handling techniques as well as the organization and planning.
Planning factories within the context of value networks and integrated production systems (Toyota etc.) requires an integrated perspective for the consideration of all functions included in the "factory" system. This includes the planning of manufacturing systems including the product, the value network and factory production, and the examination of SOPs, the running of a factory and maintenance. Content and theory covered by this lecture are completed with many examples from industry and exercises based on real-life situations and conditions.
Main topics covered by the lecture:

- The basic principles of production planning
- Links between product planning and production planning
- Integrating a production site into a production network
- Steps and methods of factory planning
- Approach to the integrated planning of manufacturing and assembly plants
- Layout of production sites
- Maintenance
- Material flow
- Digital factory
- Process simulation for material flow optimisation
- Start-up

Workload
regular attendance: 63 hours
self-study: 177 hours

Literature
Lecture Notes

T Course: Integrative Strategies in Production and Development of High Performance Cars [T-MACH-105188]

Responsibility: Karl-Hubert Schlichtenmayer
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2150601	Integrative Strategies in Production and Development of High Performance Cars	Vorlesung (V)	2	Karl-Hubert Schlichtenmayer

Die folgenden Informationen stammen aus der Veranstaltung Integrative Strategies in Production and Development of High Performance Cars (SS 2016):

The students ...

- are capable to specify the current technological and social challenges in automotive industry.
- are qualified to identify interlinkages between development processes and production systems.
- are able to explain challenges and solutions of global markets and global production of premium products.
- are able to explain modern methods to identify key competences of producing companies.

Content
The lecture deals with the technical and organizational aspects of integrated development and production of sports cars on the example of Porsche AG. The lecture begins with an introduction and discussion of social trends. The deepening of standardized development processes in the automotive practice and current development strategies follow. The management of complex development projects is a first focus of the lecture. The complex interlinkage between development, production and purchasing are a second focus. Methods of analysis of technological core competencies complement the lecture. The course is strongly oriented towards the practice and is provided with many current examples.
The main topics are:

- Introduction to social trends towards high performance cars
- Automotive Production Processes
- Integrative R&D strategies and holistic capacity management
- Management of complex projects
- Interlinkage between R&D, production and purchasing
- The modern role of manufacturing from a R&D perspective
- Global R&D and production
- Methods to identify core competencies

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Lecture Slides

T Course: International Finance [T-WIWI-102646]

Responsibility: Marliese Uhrig-Homburg
Contained in: [M-WIWI-101402] eFinance
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101423] Topics in Finance II

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2530570	International Finance	Vorlesung (V)	2	Marliese Uhrig-Homburg, Ulrich Walter

Learning Control / Examinations
See German version.

Conditions
None

Recommendations
None

Remarks
See German version.

Die folgenden Informationen stammen aus der Veranstaltung International Finance (SS 2016):

The objective of this course is to become familiar with the basics of investment decisions on international markets and to manage foreign exchange risks.

Content
The main aspects of this course are the chances and the risks which are associated with international transactions. We carry out our analysis from two distinct perspectives: First the point of view of an international investor second that, of an international corporation. Several alternatives to the management of foreign exchange risks are shown. Due to the importance of foreign exchange risks, the first part of the course deals with currency markets. Furthermore current exchange rate theories are discussed.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Elective literature:

- Eiteman, D. et al., Multinational Business Finance, 13. edition, 2012.
- Solnik, B. and D. McLeavey, Global Investments, 6. edition, 2008.

T Course: International Marketing [T-WIWI-102807]

Responsibility: Martin Klarmann
Contained in: [M-WIWI-101424] Foundations of Marketing

ECTS	Language	Version
1,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2572155	International Marketing	Vorlesung (V)	1	Sven Feurer

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Conditions
None

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

Die folgenden Informationen stammen aus der Veranstaltung International Marketing (WS 16/17):

Students
- know the characteristics of international marketing
- are familiar with the Hofstede's cultural dimensions theory
- understand basic concepts of cultural learning (the concept of acculturation, the psychic distance paradox)
- know different concepts that explain international buying behavior (e.g. country-of-origin effects)
- comprehend different concepts for market entries in an international context ("waterfall"-strategy, "sprinkler"-strategy, method of analogy, chain ratio method)
- understand what needs to be considered regarding international market research (dealing with ethical dilemmas, challenges regarding primary and secondary data sources, testing measurement equivalence, linguistic equivalence, differences in the response styles of questionnaires)
- know the particularities of international product policy (standardization vs. differentiation, challenge of branding, fight against product plagiarism, brand counterfeiting and product piracy, protection of intellectual property)
- are familiar with the particularities in the international price policy (BigMac Index, how to deal with price demand functions to achieve profit maximization, arbitrage, price corridor, standardization vs. differentiation of prices, how to deal with currency risks, inflation, exchange rates and different willingness to pay)
- know the characteristics of the international communication policy (different laws, problems regarding international standardized campaigns)
- know particularities of the international sales policy (international channels, differences of contract negotiations)
- are able to organize international marketing departments and subsidiaries
- know the problems of marketing in emerging markets

Content
Doing marketing abroad creates a number of significant new challenges for firms. This class is intended to prepare you for meeting these challenges. In the first session, we will discuss the peculiarities of international marketing. The next five sessions will then be dedicated to methods that can be used to address them. For instance, we will look at the following issues:

- Internationalization strategies
- Market entry strategies
- Standardization vs. individualization (e.g. regarding products, prices, and communication)
- Measurement equivalence in international market research

In the final session, we will apply this knowledge to the case of Wal Mart. In particular, Wal Mart, despite being the largest retailing company worldwide, failed to successfully enter the German Market. We will discuss Wal Mart's failure using the methods taught in the weeks before.

Workload
The total workload for this course is approximately 45.0 hours. For further information see German version.

Literature
Homburg, Christian (2012), Marketingmanagement, 4. Aufl., Wiesbaden.

T Course: Internet Law [T-INFO-101307]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101215] Intellectual Property Law

ECTS	Version
3	1

T Course: Internship [T-WIWI-102756]

Responsibility: Martin Ruckes
Contained in: [M-WIWI-101610] Internship

ECTS	Version
10	1

Learning Control / Examinations
See module description

Conditions
See module description

Recommendations
See module description

Remarks
See module description

T Course: Introduction to Energy Economics [T-WIWI-102746]

Responsibility: Wolf Fichtner
Contained in: [M-WIWI-101464] Energy Economics

ECTS	Language	Version
5,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2581010	Introduction to Energy Economics	Vorlesung (V)	2	Wolf Fichtner
SS 2016	2581011	Übungen zu Einführung in die Energiewirtschaft	Übung (Ü)	2	Hannes Schwarz, Patrick Jochem

Learning Control / Examinations
The assessment consists of a written exam according to Section 4(2), 1 of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Introduction to Energy Economics (SS 2016):

The student is able to

- characterize and judge the different energy carriers and their peculiarities,
- understand contexts related to energy economics.

Content
1. Introduction: terms, units, conversions
2. The energy carrier gas (reserves, resources, technologies)
3. The energy carrier oil (reserves, resources, technologies)
4. The energy carrier hard coal (reserves, resources, technologies)
5. The energy carrier lignite (reserves, resources, technologies)
6. The energy carrier uranium (reserves, resources, technologies)
7. The final carrier source electricity
8. The final carrier source heat
9. Other final energy carriers (cooling energy, hydrogen, compressed air)

Workload
The total workload for this course is approximately 165.0 hours. For further information see German version.

Literature
Complementary literature:
Pfaffenberger, Wolfgang. Energiewirtschaft. ISBN 3-486-24315-2
Feess, Eberhard. Umweltökonomie und Umweltpolitik. ISBN 3-8006-2187-8
Müller, Leonhard. Handbuch der Elektrizitätswirtschaft. ISBN 3-540-67637-6
Stoft, Steven. Power System Economics. ISBN 0-471-15040-1
Erdmann, Georg. Energieökonomik. ISBN 3-7281-2135-5

T Course: Introduction to Game Theory [T-WIWI-102850]

Responsibility: Clemens Puppe, Johannes Philipp Reiß
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101501] Economic Theory

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2520526	Übungen zu Einführung in die Spieltheorie	Übung (Ü)	1	Clemens Puppe, Jana Rollmann
SS 2016	2520525	Introduction to Game Theory	Vorlesung (V)	2	Clemens Puppe, Jana Rollmann

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) according to Section 4(2),1 of the examination regulation.
The exam takes place in the recess period and can be resited at every ordinary examination date.

Conditions
None

Recommendations
Basic knowledge of mathematics and statistics is assumed.

Die folgenden Informationen stammen aus der Veranstaltung Introduction to Game Theory (SS 2016):

This course offers an introduction to the theoretical analysis of strategic interaction situations. At the end of the course, students shall be able to analyze situations of strategic interaction systematically and to use game theory to predict outcomes and give advice in applied economics settings.

Content
The course focusses on non-cooperative game theory. It discusses models, solution concepts, and applications for simultaneous games as well as sequential games. Various solution concepts, e.g., Nash equilibrium and subgame-perfect equilibrium, are introduced along with more advanced concepts. A short introduction to cooperative game theory is given if there is sufficient time.

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

Literature
Compulsory textbook:
Gibbons (1992): A Primer in Game Theory, Harvester-Wheatsheaf.
Additional Literature:
Berninghaus/Ehrhart/Güth (2010): Strategische Spiele, Springer Verlag.
Binmore (1991): Fun and Games, DC Heath.
Fudenberg/Tirole (1991): Game Theory, MIT Press.
Heifetz (2012): Game Theory, Cambridge Univ. Press.

T Course: Introduction to GIS for Students of Natural, Engineering and Geo Sciences [T-BGU-101681]

Responsibility: Sven Wursthorn, Norbert Rösch
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
3	1

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-BGU-103541] *Introduction to GIS for Students of Natural, Engineering and Geo Sciences* is required before taking this course.

T Course: Introduction to GIS for Students of Natural, Engineering and Geo Sciences [T-BGU-103541]

Responsibility: Sven Wursthorn, Norbert Rösch
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
3	1

T Course: Introduction to Microsystem Technology I [T-MACH-105182]

Responsibility: Jan Gerrit Korvink, Andreas Guber
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2141861	Introduction to Microsystem Technology I	Vorlesung (V)	2	Jan Gerrit Korvink

Die folgenden Informationen stammen aus der Veranstaltung Introduction to Microsystem Technology I (WS 16/17):

The lecture gives an introduction into the basics of microsystems technology. In analogy to processes employed in fabrication of microelectronics circuits the core technologies as well as materials for producing microstructures and components are presented. Finally, various techniques for Silicon micromachining are explained and illustrated with examples for micro-components and micro-systems.

Content
- Introduction in Nano- and Microtechnologies
- Silicon and processes for fabricating microelectronics circuits
- Basic physics background and crystal structure
- Materials for micromachining
- Processing technologies for microfabrication
- Silicon micromachining
- Examples

Workload
Literature: 20 h
Lessions: 21 h
Preparation and Review: 50 h
Exam preparation: 30 h

Literature
M. Madou
Fundamentals of Microfabrication
Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T Course: Introduction to Microsystem Technology II [T-MACH-105183]

Responsibility: Andreas Guber
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2142874	Introduction to Microsystem Technology II	Vorlesung (V)	2	Jan Gerrit Korvink, Oliver Gruschke

Die folgenden Informationen stammen aus der Veranstaltung Introduction to Microsystem Technology II (SS 2016):

The lecture gives an introduction into the basics of microsystems technology. In the first part, methods for lithographic pattern transfer are summarized. Then specific techniques such as the LIGA process, micro-machining, and laser-patterning are explained and examples are given. Finally assembly and packaging methods are presented leading into a discussion of entire microsystems.

Content
- Introduction in Nano- and Microtechnologies
- Lithography
- LIGA-technique
- Mechanical microfabrication
- Patterning with lasers
- Assembly and packaging
- Microsystems

Workload
Literature: 20 h
Lessions: 21 h
Preparation and Review: 50 h
Exam preparation: 30 h

Literature
M. Madou
Fundamentals of Microfabrication
Taylor & Francis Ltd.; Auflage: 3. Auflage. 2011

T Course: Introduction to Operations Research I and II [T-WIWI-102758]

Responsibility: Oliver Stein, Karl-Heinz Waldmann, Stefan Nickel
Contained in: [M-WIWI-101418] Introduction to Operations Research

ECTS	Language	Version
9	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2550040	Introduction to Operations Research I	Vorlesung (V)	2+2	Oliver Stein

Learning Control / Examinations
The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.
In each term (usually in March and July), one examination is held for both courses.
The overall grade of the module is the grade of the written examination.

Conditions
None

Recommendations
Mathematics I und II. Programming knowledge for computing exercises.
It is strongly recommended to attend the course *Introduction to Operations Research I* [2550040] before attending the course*Introduction to Operations Research II* [2530043].

Die folgenden Informationen stammen aus der Veranstaltung Introduction to Operations Research I (SS 2016):

The student

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

Content
Examples for typical OR problems.
Linear Programming: Basic notions, simplex method, duality, special versions of the simplex method (dual simplex method, three phase method), sensitivity analysis, parametric optimization, multicriteria optimization.
Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal flows in networks.

Workload
Berechnung des Arbeitsaufwands eines durchschnittlichen Studenten um die Lernziele zu erreichen. (Intern)
Eine Vernetzung von learningoutcomes (Wissen (content), Kompetenzen (skills) und levels mit dem dafür geschätzten Arbeitsaufwand eines durchschnittlichen Studenten ist anzustreben.

Literature

- Nickel, Stein, Waldmann: Operations Research, 2nd edition, Springer, 2014
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

T Course: Introduction to Programming with Java [T-WIWI-102735]

Responsibility: Johann Marius Zöllner, N.N.
Contained in: [M-WIWI-101581] Introduction to Programming

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511000	Introduction to Programming with Java	Vorlesung (V)	3	N.N.
WS 16/17	2511004	Tutorien zu Programmieren I: Java	Tutorium (Tu)	1	Jonas Lehner, Niklas Kühl, N. N.

Learning Control / Examinations
The assessment consists of a written resp. computer-based exam (60 min) according to Section 4 (2),1 of the examination regulation. The successful completion of the compulsory tests in the computer lab is prerequisited for admission to the written resp. computer-based exam.
The examination takes place every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Remarks
see german version

Die folgenden Informationen stammen aus der Veranstaltung Introduction to Programming with Java (WS 16/17):

see German version

Content
see German version

Workload
The total workload for this course is approximately 150 hours. For further information see German version.

Literature
D. Ratz, J. Scheffler, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. 6. aktualisierte und erweiterte Auflage, Hanser 2011.

T Course: Introduction to Track Guided Transport Systems [T-BGU-104580]

Responsibility: Eberhard Hohnecker
Contained in: [M-BGU-102283] Introduction to Track Guided Transport Systems

ECTS	Version
9	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	6234803	Übungen zu Anlagen und Fahrzeuge des öffentlichen Verkehrs	Übung (Ü)	1	Mitarbeiter/innen, Eberhard Hohnecker
SS 2016	6234801	Betrieb spurgeführter Systeme	Vorlesung (V)	2	Eberhard Hohnecker
SS 2016	6234802	Anlagen und Fahrzeuge des öffentlichen Verkehrs	Vorlesung (V)	1	Eberhard Hohnecker

Conditions
none

T Course: Investments [T-WIWI-102604]

Responsibility: Marliese Uhrig-Homburg
Contained in: [M-WIWI-101435] Essentials of Finance

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2530576	Übung zu Investments	Übung (Ü)	1	Marliese Uhrig-Homburg, Marcel Müller
SS 2016	2530575	Investments	Vorlesung (V)	2	Marliese Uhrig-Homburg

Learning Control / Examinations
The assessment consits of a written exam (75 min) according to Section 4(2), 1 of the examination regulation.
The examination takes place in every semester. Re-examinations are offered at eyery ordinary examination date.
By submitting the excercises (according to Section 4(2), 3 of the examination regulation) up to 4 bonus points can be aquired.

Conditions
None

Recommendations
Knowledge of Business Administration: Finance and Accounting [2610026] is recommended.

Die folgenden Informationen stammen aus der Veranstaltung Investments (SS 2016):

The objective of this course is to become familiar with the basics of investment decisions on stock and bond markets. Basic economic concepts and models are discussed and applied on introductionary level. Interlinkages between markets, different decision makings concepts and models are demonstrated.

Content
The lecture deals with investment decisions under uncertainty, where the main emphasis is on investment decisions on stock markets. After a discussion of the basic questions of corporate valuation, the lecture focuses on portfolio theory. After that, risk and return in equilibrium are derived using the Capital Asset Pricing Model and the Arbitrage Pricing Theory. The lecture concludes with investments on bond markets.

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

Literature
Elective literature:
Bodie/Kane/Marcus (2010): Essentials of Investments, Eighth Edition, McGraw-Hill Irwin, Boston

T Course: Knowledge Discovery [T-WIWI-102666]

Responsibility: Rudi Studer
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511303	Exercises to Knowledge Discovery	Übung (Ü)	1	Aditya Mogadala, Achim Rettinger, Rudi Studer
WS 16/17	2511302	Knowledge Discovery	Vorlesung (V)	2	Achim Rettinger, Rudi Studer

Learning Control / Examinations
The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation.
Students can be awarded a bonus on their final grade if they successfully complete special assignments.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Knowledge Discovery (WS 16/17):

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.

Content
Topics of the lectures comprise the whole Machine Learning and Data Mining process like CRISP, data warehousing, OLAP-techniques, learning algorithms, visualization and empircial evaluation. Covered learning techniques range from traditional approaches like decision trees, neural networks and support vector machines to selected approaches resulting from current research. Discussed learning problems are amongst others feauturevector-based learning, text mining and social network analysis.

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature

- T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning: Data Mining, Inference, and Prediction (http://www-stat.stanford.edu/~tibs/ElemStatLearn/)
- T. Mitchell. Machine Learning. 1997
- M. Berhold, D. Hand (eds). Intelligent Data Analysis - An Introduction. 2003
- P. Tan, M. Steinbach, V. Kumar: Introduction to Data Mining, 2005, Addison Wesley

T Course: Knowledge Management [T-WIWI-102664]

Responsibility: Rudi Studer
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511301	Exercises to Knowledge Management	Übung (Ü)	1	Rudi Studer, Sebastian Bader, Andreas Harth, Stefan Zander, Andreas Thalhammer
WS 16/17	2511300	Knowledge Management	Vorlesung (V)	2	Rudi Studer, Andreas Harth, Stefan Zander

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

Conditions
None

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

Die folgenden Informationen stammen aus der Veranstaltung Knowledge Management (WS 16/17):

Students

- know different application domains of knowledge management
- know different (specifically semantic and social) technologies of knowledge management
- are able to judge the applicability of business software with regard to aspects of knowledge management
- are able to judge the long term value of knowledge management in organisations and compare it to possible costs

Content
The lecture will emphasize computer-based support for knowledge management, such as:

- Ontology-based Knowledge Management
- Communities of Practice, Collaboration Tools, Social Software
- Business-process Oriented Knowledge Management
- Personal Knowledge Management
- Case Based Reasoning (CBR)
- Linked Open Data

Workload

- The total workload for this course is approximately 120 hours
- Time of presentness: 30 hours
- Time of preperation and postprocessing: 90 hours

Literature

- I. Nonaka, H. Takeuchi: The Knowledge Creating Company. Oxford University Press 1995.
- G. Probst, S. Raub, K. Romhardt: Wissen managen: Wie Unternehmen ihre wertvollste Ressource optimal nutzen. Gabler, Wiesbaden, 5. überarb. Auflage, 2006.
- S. Staab, R. Studer (eds.): Handbook on Ontologies, ISBN 3-540-70999-1, Springer Verlag, 2009.
- A. Back, N. Gronau, K. Tochtermann: Web 2.0 in der Unternehmenspraxis - Grundlagen, Fallstudien und Trends zum Einsatz von Social Software. Oldenbourg Verlag München 2008.

- C. Beierle, G. Kern-Isberner: Methoden wissensbasierter Systeme, Vieweg, Braunschweig/Wiesbaden, 2. überarb. Auflage, 2005

Additional literature:

1. P. Hitzler, M Krötzsch, S. Rudolph, Y. Sure: Semantic Web: Grundlagen, ISBN 3-540-33993-0, Springer Verlag, 2008
2. Abecker, A., Hinkelmann, K., Maus, H., Müller, H.J., (Ed.): Geschäftsprozessorientiertes Wissensmanagement, Mai 2002.VII, 472 S. 70 Abb. Geb. ISBN 3-540-42970-0, Springer Verlag
3. Dieter Fensel. Spinning the Semantic Web. 2003 (ISBN 0262062321).
4. Tim Berners-Lee. Weaving the Web. Harper 1999 geb. 2000 Taschenbuch.

T Course: Laboratory Work in General and Inorganic Chemistry [T-CHEMBIO-104638]

Responsibility:
Contained in: [M-CHEMBIO-102336] Laboratory Work in Inorganic Chemistry

ECTS	Version
7	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	5043	Anorganisch-chemisches Praktikum für Technische Volkswirte	Praktikum (P)	6	Christopher Anson, Claus Feldmann, Frank Breher, Mario Ruben, Annie Powell, Assistenten, Peter Roesky

Conditions
none

T Course: Law of Contracts [T-INFO-101316]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101216] Private Business Law

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24671	Law of Contracts	Vorlesung (V)	2	Alexander Hoff

Die folgenden Informationen stammen aus der Veranstaltung Law of Contracts (SS 2016):

Der/die Studierende kennt sich aus in den Grundfragen der Vertragsgestaltung. Er/sie kennt typische Vertragsgestaltungen. Der/die Studierende kann einfach gelagerte Problemfälle lösen und einfache Vertragsentwürfe formulieren. Er/sie hat ein Problembewusstsein entwickelt, welche Schwierigkeiten auftreten können bei der Gestaltung komplexerer Sachverhalte. Er/sie ist in der Lage, auch im internationalen Kontext Bezüge herzustellen.

Content
Die Vorlesung befasst sich mit den Grundfragen der Vertragsgestaltung im Wirtschaftsrecht. Anhand ausgewählter Beispiele aus der Praxis wird ein Überblick über typische Vertragsgestaltungen vermittelt. Insbesondere werden die GmbH, die OHG, die KG, Die EWIV, der Verein und die Aktiengesellschaft behandelt. Dabei werden auch internationale und rechtsvergleichende Bezüge hergestellt.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt ca. 90 Stunden davon 22,5 h Präsenz, 45 h Vor- und Nachbereitungszeit sowie 22,5 h für die Klausurvorbereitung.

Literature
Wird in der Vorlesung bekannt gegeben.

T Course: Logistics - Organisation, Design and Control of Logistic Systems [T-MACH-102089]

Responsibility: Kai Furmans
Contained in: [M-WIWI-101421] Supply Chain Management

ECTS	Language	Version
6	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2118078	Logistics - Organisation, Design, and Control of Logistic Systems	Vorlesung (V)	3	Kai Furmans

Learning Control / Examinations
The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation. The grade of the exam may be improved by passing case studies.

Conditions
None

Recommendations
Requied are lectures on "Linear Algebra" and "Stochastic".

Die folgenden Informationen stammen aus der Veranstaltung Logistics - Organisation, Design, and Control of Logistic Systems (SS 2016):

Students are able to:

- Describe logistical tasks,
- Design logistical systems suitable to the respective task,
- Dimension stocastical stock models,
- Determine essential influencing parameters on the bullwhip effect and
- Use optimizing solution methods.

Content
Introduction

- historical overview
- lines of development

Structure of logistics systems
Distribution logistics

- location planning
- Vehicle Routing Planning
- distribution centers

Inventory management

- demand forecasting
- Inventory management policies
- Bullwhip effect

Production logistics

- layout planning
- material handling
- flow control

Supply Managament

- information flow
- transportation organization
- controlling and development of a logistics system

- co-operation mechanisms
- Lean SCM
- SCOR model

Identification Technologies

Workload
180 hrs

Literature
Elective literature:

- Arnold/Isermann/Kuhn/Tempelmeier. Handbuch Logistik, Springer Verlag, 2002 (Neuauflage in Arbeit)
- Domschke. Logistik, Rundreisen und Touren, Oldenbourg Verlag, 1982
- Domschke/Drexl. Logistik, Standorte, Oldenbourg Verlag, 1996
- Gudehus. Logistik, Springer Verlag, 2007
- Neumann-Morlock. Operations-Research, Hanser-Verlag, 1993
- Tempelmeier. Bestandsmanagement in Supply Chains, Books on Demand 2006
- Schönsleben. Integrales Logistikmanagement, Springer, 1998

T Course: Logistics and Supply Chain Management [T-WIWI-102870]

Responsibility: Marcus Wiens
Contained in: [M-WIWI-101437] Industrial Production I

ECTS	Version
3,5	1

Learning Control / Examinations
The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

T Course: Machine Tools and Industrial Handling [T-MACH-102158]

Responsibility: Jürgen Fleischer
Contained in: [M-MACH-101286] Machine Tools and Industrial Handling

ECTS	Language	Version
9	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149902	Machine Tools and Industrial Handling	Vorlesung / Übung (VÜ)	6	Jürgen Fleischer

Learning Control / Examinations
Allgemein
The assessment is carried out as an oral exam. The examination is offered every semester. Reexaminations are offered at every ordinary examination date.
TVWL (B.Sc.)
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
TVWL (M.Sc.)
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
TVWL (B.Sc.)
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
TVWL (M.Sc.)
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
WiIng (B.Sc.)
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
WiIng (M.Sc.)
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
WiIng (B.Sc.)
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
WiIng (M.Sc.)
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Machine Tools and Industrial Handling (WS 16/17):

The students . . .

- are capable to explain the use and application of machine tools and handling devices as well as differentiate their characteristics and structure.
- are able to name and describe the essential components (frame, main spindles, feed axis, peripheral equipment, control) of machine tools.
- Are capable to distinguish and select and describe the essential components regarding structure, characteristics advantages and disadvantages.
- are enabled to dimension the main components of machine tools.
- are able to name and describe the control principles of machine tools.
- are capable to name examples of machine tools and industrial handling as well as to deduce compare the essential components. Additionally they can allocate manufacturing processes.
- are enabled to identify drawbacks as well as derive and asses measures for improvements.

- are qualified to apply methods for selection and evaluation of machine tools.
- are experienced to deduce the particular failure characteristics of a ball screw.

Content
The lecture provides an overview of machine tool and handling devices structures, use and application areas. Within the lecture based and industrially oriented knowledge for selection, dimensioning and evaluation is conveyed. First the components of machine tools are explained systematically. Here the distinctive features of dimensioning machine tools are deduced followed by the integral dimensioning of machine tools. Subsequently the use of machine tools is shown in exemplary application areas e.g. turning, milling, grinding, metal forming, sheet metal forming and gear cutting.
The lecture provides an inside view of industrial application and is illustrated with current examples.
The topics are as follows:

- Frame and frame components
- Main drives and main spindles
- Requirements for feed axes
- Electro-mechanical feed axis
- Fluidic feed axes
- Control technologies
- Peripheral components
- Metrological assessment
- Machine maintenance
- Process-diagnosis
- Machinery Directiv
- Machine tool examples

Workload
regular attendance: 63 hours
self-study: 177 hours

Literature
Lecture Notes

T Course: Management Accounting 1 [T-WIWI-102800]

Responsibility: Marcus Wouters
Contained in: [M-WIWI-101498] Management Accounting

ECTS	Language	Version
4,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2579901	Übung zu Management Accounting I	Übung (Ü)	2	Michael Pelz, Marcus Wouters
SS 2016	2579900	Management Accounting 1	Vorlesung (V)	2	Marcus Wouters

Learning Control / Examinations
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation) at the end of each semester.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Management Accounting 1 (SS 2016):

Students have an understanding of theory and applications of management accounting topics. They can use financial information for various purposes in organizations.

Content
The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA1 are: short-term planning, investment decisions, budgeting and activity-based costing.
We will use international material written in English.
We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).
The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

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

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Publisher: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- In addition, several papers that will be available on ILIAS.

T Course: Management Accounting 2 [T-WIWI-102801]

Responsibility: Marcus Wouters
Contained in: [M-WIWI-101498] Management Accounting

ECTS	Language	Version
4,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2579903	Übung zu Management Accounting II	Übung (Ü)	2	Marcus Wouters, Ana Mickovic
WS 16/17	2579902	Management Accounting 2	Vorlesung (V)	2	Marcus Wouters

Learning Control / Examinations
The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation) at the end of each semester.

Conditions
None

Recommendations
It is recommended to take part in the course "Management Accounting 1" before this course.

Die folgenden Informationen stammen aus der Veranstaltung Management Accounting 2 (WS 16/17):

Students have an understanding of theory and applications of management accounting topics. They can use financial information for various purposes in organizations.

Content
The course covers topics in management accounting in a decision-making framework. Some of these topics in the course MA2 are: cost estimation, product costing and cost allocation, financial performance measures, transfer pricing, strategic performance measurement systems and customer value propositions.
We will use international material written in English.
We will approach these topics primarily from the perspective of the users of financial information (not so much from the controller who prepares the information).
The course builds on an introductory level of understanding of accounting concepts from Business Administration courses in the core program. The course is intended for students in Industrial Engineering.

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

Literature

- Marc Wouters, Frank H. Selto, Ronald W. Hilton, Michael W. Maher: Cost Management – Strategies for Business Decisions, 2012, Publisher: McGraw-Hill Higher Education (ISBN-13 9780077132392 / ISBN-10 0077132394)
- In addition, several papers that will be available on ILIAS.

T Course: Management and Strategy [T-WIWI-102629]

Responsibility: Hagen Lindstädt
Contained in: [M-WIWI-101425] Strategy and Organization

ECTS	Language	Version
3,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2577900	Management and Strategy	Vorlesung (V)	2	Bettina Widmann, Hagen Lindstädt

Learning Control / Examinations
The assessment consists of a written exam (60 min) taking place at the beginn of the recess period (according to §4 (2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Management and Strategy (SS 2016):

After passing this course students are able to

- prepare strategic decisions along the ideal-typical strategy process in practice ("strategic analysis").
- assess strategic options.
- explain the portfolio management (Parental advantage and best owner of business entities).
- discuss price and capacity decisions in oligopolies and explain them in examples.

Content
The participants learn about central concepts of strategic management along the ideal-typical strategy process: internal and external strategic analysis, concept and sources of competitive advantages, their importance when establishing competitive and corporate strategies as well as strategy assessment and implementation. This aims in particular to provide a summary of the basic concepts and models of strategic management, i.e. to provide in particular an action-oriented integration. Thereby a focus is on imparting knowledge about how price developments in oligopolistic markets can be understood, modeled and forecasted based on game theory.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature

- Grant, R.M.: *Contemporary Strategy Analysis.* Blackwell, 5. Aufl. Massachusetts 2005.
- Lindstädt, H.; Hauser, R.: *Strategische Wirkungsbereiche von Unternehmen.* Gabler, Wiesbaden 2004.

The relevant excerpts and additional sources are made known during the course.

T Course: Management of Business Networks [T-WIWI-102598]

Responsibility: Christof Weinhardt
Contained in: [M-WIWI-101434] eBusiness and Service Management
[M-WIWI-101421] Supply Chain Management

ECTS	Language	Version
4,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2590453	Übungen zu Management of Business Networks	Übung (Ü)	1	Christoph Flath, Christof Weinhardt
WS 16/17	2590452	Management of Business Networks	Vorlesung (V)	2	Christoph Flath, Christof Weinhardt

Learning Control / Examinations
The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations) and by submitting written essays as part of the exercise (§4(2), 3 SPO 2007 respectively §4(3) SPO 2015). 65% of the final grade is based on the written exam and 35% is based on assignments from the exercises. Successful completion of the exercises is a prerequisite for admission to the written exam. The points obtained in the exercises only apply to the first and second exam of the semester in which they were obtained.

Conditions
None

Recommendations
None

Die folgenden Informationen stammen aus der Veranstaltung Management of Business Networks (WS 16/17):

The student

- indentifes the coordination problems in a business network,
- explains the theorie of strategic and operative management,
- analyses case studies in logistics considering the organization theory and network analysis,
- argues and constructs new solutions for the case studies by means of electronic tools.

Content
The significant and lasting impact of web-based business-to-business (B2B) networks has just recently become apparent. The exploratory phase during the first Internet hype bred a variety of approaches which were often bold in business nature, yet simple and unfounded in system architecture. Only very few survived and proved sustainable. Nowadays web-based B2B networks are increasingly reappearing and even promoted by major traditional companies and governments. However, this new wave of networks is more mature and more powerful in functionality than their predecessors. As such they provide not only auction systems but also facilities for electronic negotiation. This implies a shift from price-focused to relationship-oriented trading. But what motivates this shift? Why do firms enter business networks? How can these networks be best supported by IT? The course intends to resolve these questions. Firstly, an introduction in organization theory will be given. Secondly, the problems of networks will be addressed. Thirdly, an analysis of how IT can alleviate those problems will be undertaken.

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

Literature

- Milgrom, P., Roberts, J., Economics, Organisation and Management. Prentice-Hall, 1992.
- Shy, O., The Economics of Network Industries. Cambridge, Cambridge University Press, 2001.
- Bichler, M. The Future of e-Markets - Multi-Dimensional Market Mechanisms. Cambridge, Cambridge University Press, 2001.

T Course: Management of Business Networks (Introduction) [T-WIWI-102760]

Responsibility: Christof Weinhardt
Contained in: [M-WIWI-101421] Supply Chain Management

ECTS	Language	Version
3	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2540496	Management of Business Networks (Introduction)	Vorlesung (V)	2	Christoph Flath, Christof Weinhardt

Learning Control / Examinations
The assessment consists of a written exam (60 min) (according to §4(2), 1 of the examination regulation).

Conditions
None

Recommendations
None

Remarks
This version of the MBN course does not include the case study in the second part of the lecture, so that it is worth less credits.

Die folgenden Informationen stammen aus der Veranstaltung Management of Business Networks (Introduction) (WS 16/17):

The student

- indentifes the coordination problems in a business network,
- explains the theorie of strategic and operative management,
- analyses case studies in logistics considering the organization theory and network analysis,
- argues and constructs new solutions for the case studies by means of electronic tools.

Content
The significant and lasting impact of web-based business-to-business (B2B) networks has just recently become apparent. The exploratory phase during the first Internet hype bred a variety of approaches which were often bold in business nature, yet simple and unfounded in system architecture. Only very few survived and proved sustainable. Nowadays web-based B2B networks are increasingly reappearing and even promoted by major traditional companies and governments. However, this new wave of networks is more mature and more powerful in functionality than their predecessors. As such they provide not only auction systems but also facilities for electronic negotiation. This implies a shift from price-focused to relationship-oriented trading. But what motivates this shift? Why do firms enter business networks? How can these networks be best supported by IT? The course intends to resolve these questions. Firstly, an introduction in organization theory will be given. Secondly, the problems of networks will be addressed. Thirdly, an analysis of how IT can alleviate those problems will be undertaken.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature

- Milgrom, P., Roberts, J., Economics, Organisation and Management. Prentice-Hall, 1992.
- Shy, O., The Economics of Network Industries. Cambridge, Cambridge University Press, 2001.
- Bichler, M. The Future of e-Markets - Multi-Dimensional Market Mechanisms. Cambridge, Cambridge University Press, 2001.

T Course: Management of IT-Projects [T-WIWI-102667]

Responsibility: Roland Schätzle
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511214	Management of IT-Projects	Vorlesung (V)	2	Roland Schätzle
SS 2016	2511215	Übungen zu Management von Informatik-Projekten	Übung (Ü)	1	Roland Schätzle

Learning Control / Examinations
The assessment of this course is a written examination (60 min) in the first week after lecture period according to Section 4(2), 1 of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Management of IT-Projects (SS 2016):

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.

Content
The lecture deals with the general framework, impact factors and methods for planning, handling, and controlling of IT projects. Especially following topics are addressed:

- project environment
- project organisation
- project planning including the following items:
  - plan of the project structure
  - flow chart
  - project schedule
  - plan of resources
- effort estimation
- project infrastructur
- project controlling
- risk management
- feasibility studies
- decision processes, conduct of negotiations, time management.

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam &1h

Total: 150h

Literature

- B. Hindel, K. Hörmann, M. Müller, J. Schmied. Basiswissen Software-Projektmanagement. dpunkt.verlag 2004
- Project Management Institute Standards Committee. A Guide to the Project Management Body of Knowledge (PMBoK guide). Project Management Institute. Four Campus Boulevard. Newton Square. PA 190733299. U.S.A.

Further literature is given in each lecture individually.

T Course: Managing Organizations [T-WIWI-102630]

Responsibility: Hagen Lindstädt
Contained in: [M-WIWI-101513] Human Resources and Organizations
[M-WIWI-101425] Strategy and Organization

ECTS	Language	Version
3,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2577902	Managing Organizations	Vorlesung (V)	2	Bettina Widmann, Hagen Lindstädt

Learning Control / Examinations
The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Managing Organizations (WS 16/17):

After passing this course students are able to

- evaluate strengths and weaknesses of existing organisational structures and rules.
- compare alternatives of organisational structure in practice and assess and interpret them regarding their effectiveness and efficiency.
- assess the management of organisational changes.

Content
The course should enable the participants to assess the strengths and weaknesses of existing organisational structures and rules using systematic criteria. Here concepts and models for designing organisation structures, regulating organizational processes and managing organisational changes are presented and discussed using case studies. The course is structured to relate to actions and aims to give students a realistic view of the opportunities and limits of rational design approaches.

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature

- Laux, H.; Liermann, F.: *Grundlagen der Organisation*, Springer. 6. Aufl. Berlin 2005.
- Lindstädt, H.: *Organisation*, in Scholz, C. (Hrsg.): Vahlens Großes Personallexikon, Verlag Franz Vahlen. 1. Aufl. München, 2009.
- Schreyögg, G.: *Organisation. Grundlagen moderner Organisationsgestaltung*, Gabler. 4. Aufl. Wiesbaden 2003.

The relevant excerpts and additional sources are made known during the course.

T Course: Managing the Marketing Mix [T-WIWI-102805]

Responsibility: Martin Klarmann
Contained in: [M-WIWI-101424] Foundations of Marketing

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2571153	Übung zu Marketing Mix (Bachelor)	Übung (Ü)	1	Maximilian Lüders, Verena Rieger
SS 2016	2571152	Managing the Marketing Mix	Vorlesung (V)	2	Martin Klarmann

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Conditions
None

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

Die folgenden Informationen stammen aus der Veranstaltung Managing the Marketing Mix (SS 2016):

See German version.

Content
The content of this course concentrates on the four elements of the marketing mix. Therefore the four main chapters are:

- Product management
- Pricing
- Promotion
- Sales management

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

Literature
Homburg, Christian (2012), Marketingmanagement, 4. Aufl., Wiesbaden.

T Course: Manufacturing Technology [T-MACH-102105]

Responsibility: Frederik Zanger, Volker Schulze
Contained in: [M-MACH-101276] Manufacturing Technology

ECTS	Language	Version
9	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149657	Manufacturing Technology	Vorlesung / Übung (VÜ)	6	Frederik Zanger, Volker Schulze

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Manufacturing Technology (WS 16/17):

The students ...

- are capable to specify the different manufacturing processes and to explain their functions.
- are able to classify the manufacturing processes by their general structure and functionality according to the specific main groups.
- have the ability to perform a process selection based on their specific characteristics.
- are enabled to identify correlations between different processes and to select a process regarding possible applications.
- are qualified to evaluate different processes regarding specific applications based on technical and economic aspects.
- are experienced to classify manufacturing processes in a process chain and to evaluate their specific influence on surface integrity of workpieces regarding the entire process chain.

Content
The objective of the lecture is to look at manufacturing technology within the wider context of production engineering, to provide an overview of the different manufacturing processes and to impart detailed process knowledge of the common processes. The lecture covers the basic principles of manufacturing technology and deals with the manufacturing processes according to their classification into main groups regarding technical and economic aspects. The lecture is completed with topics such as process chains in manufacturing.
The following topics will be covered:

- Quality control
- Primary processing (casting, plastics engineering, sintering, additive manufacturing processes)
- Forming (sheet-metal forming, massive forming, plastics engineering)
- Cutting (machining with geometrically defined and geometrically undefined cutting edges, separating, abrading)
- Joining
- Coating
- Heat treatment and surface treatment
- Process chains in manufacturing

This lucture provides an excursion to an industry company.

Workload
regular attendance: 63 hours
self-study: 177 hours

Literature
Lecture Notes

T Course: Markov Decision Models I [T-WIWI-102710]

Responsibility: Karl-Heinz Waldmann
Contained in: [M-WIWI-101414] Methodical Foundations of OR
[M-WIWI-101400] Stochastic Methods and Simulation

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550679	Markov Decision Models I	Vorlesung (V)	2	Ellen Platt, Karl-Heinz Waldmann, André Lust
WS 16/17	2550681	Rechnerübungen zu Stochastische Entscheidungsmodelle I	Übung (Ü)	2	Ellen Platt, Karl-Heinz Waldmann, André Lust
WS 16/17	2550680	Übungen zu Stochastische Entscheidungsmodelle I	Übung (Ü)	2	Ellen Platt, Karl-Heinz Waldmann, André Lust

Learning Control / Examinations
The assessment consists of an 1h written exam following Section 4(2), 1 of the examination regulations. Credit from the voluntary computer lab is accounted for in the overall grade raising the exam grade by a 2/3 step of a full grade (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Markov Decision Models I (WS 16/17):

The participants will be enabled to model and analyze stochastic systems with modern techniques. The discussion of practice-oriented case studies pursues two goals. On the one hand, typical problem settings are illustrated and on the other hand, criteria for the evaluation of the performance of stochastic systems are motivated. Properties and characteristics for the evaluation of the performance of Markov Chains, Poisson Processes and queuing systems are developed.

Content
Markov Chains, Poisson Processes, Markov Chains in Continuous Time, Queuing Systems

Workload
The total workload for this course is approximately 150 hours. For further information see German version.

Literature

- Waldmann, K.H., Stocker, U.M. (2012): Stochastische Modelle - eine anwendungsorientierte Einführung, Springer, 2. Auflage
- Elective literature:
  - Norris, J.R. (1997): Markov Chains; Cambridge University Press
  - Bremaud, P. (1999): Markov Chains, Gibbs Fields, Monte Carlo Simulation and Queues, Springer

T Course: Markov Decision Models II [T-WIWI-102711]

Responsibility: Karl-Heinz Waldmann
Contained in: [M-WIWI-101400] Stochastic Methods and Simulation
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2550682	Markov Decision Models II	Vorlesung (V)	2	Ellen Platt, Karl-Heinz Waldmann, André Lust
SS 2016	2550684	Rechnerübungen zu Stochastische Entscheidungsmodelle II	Übung (Ü)	2	Karl-Heinz Waldmann
SS 2016	2550683	Übungen zu Stochastische Entscheidungsmodelle II	Übung (Ü)	1	Karl-Heinz Waldmann

Learning Control / Examinations
The assessment consists of an 1h written exam following Section 4(2), 1 of the examination regulations. Credit from the voluntary computer lab is accounted for in the overall grade raising the exam grade by a 2/3 step of a full grade (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

Conditions
None

Recommendations
Foundations in the field of the Markov Decision Models I [2550679] are desired.

Remarks
The lecture is offered irregularly. The curriculum of the next two years is available online.

Die folgenden Informationen stammen aus der Veranstaltung Markov Decision Models II (SS 2016):

The participants will be enabled to utilize Markov Decision Processes as a method for analyzing, controlling and optimizing dynamic stochastic systems. The discussion of practice-oriented case studies in the area of the management of energy systems, revenue management and logistics illustrates the application fields of Markov Decision Processes. Necessary mathematical concepts like theoretical foundations, optimality criteria and the solution of the optimality equation are presented.
Particularly the development of simple structured decision rules, that are desired by practitioners on the one hand, and that permit the efficient solutions of the optimality equation on the other hand, are discussed. The facultative computer exercise course using the programming language Java comprises a practice-oriented case study that illustrates the opportunities of the optimization of stochastic systems.

Content
Queuing Systems, Stochastic Decision Processes

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

Literature

- Waldmann, K.H., Stocker, U.M. (2012): Stochastische Modelle - eine anwendungsorientierte Einführung, Springer, 2. Auflage
- Elective literature: Puterman, M.L. (1994): Markov Decision Processes: Discrete Stochastic Dynamic Programming; John Wiley

T Course: Material Flow in Logistic Systems [T-MACH-102151]

Responsibility: Kai Furmans
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
6	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117051	Material flow in logistic systems	Vorlesung (V)	3	Kai Furmans

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Material flow in logistic systems (WS 16/17):

Students are able to:

- describe material flow processes qualitativ and quantitativ,
- assign possibibilities of technical solutions to a open operational task,
- plan material flow systems, illustrate them in simple models and analyse them regarding their performance,
- use methods to determine performance indicators like throughput, utilization, etc., and
- evaluate material flow systems regarding performance and availability.

Content

- elements of material flow systems (conveyor elements, fork, join elements)
- models of material flow networks using graph theory and matrices
- queueing theory, calculation of waiting time, utilization
- warehouseing and order-picking
- shuttle systems
- sorting systems
- simulation
- calculation of availability and reliability
- value stream analysis

Workload
regular attendance: 42 hours
self-study: 138 hours

Literature
Arnold, Dieter; Furmans, Kai : Materialfluss in Logistiksystemen; Springer-Verlag Berlin Heidelberg, 2009

T Course: Materials and Processes for Body Leightweight Construction in the Automotive Industry [T-MACH-105166]

Responsibility: Stefan Kienzle, Dieter Steegmüller
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149669	Materials and Processes for Body Lightweight Construction in the Automotive Industry	Vorlesung (V)	2	Stefan Kienzle, Dieter Steegmüller

Die folgenden Informationen stammen aus der Veranstaltung Materials and Processes for Body Lightweight Construction in the Automotive Industry (WS 16/17):

The students ...

- are able to name the various lightweight approaches and identify possible areas of application.
- are able to identify the different production processes for manufacturing lightweight structures and explain their functions.
- are able to perform a process selection based on the methods and their characteristics.
- are able to evaluate the different methods against lightweight applications on the basis of technical and economic aspects.

Content
The objective of the lecture is to build up an overview of the relevant materials and processes for the production of a lightweight body. This includes both the actual production and the joining for the body. The lecture covers the different lightweight approaches and possible fields of application in the automotive industry. The methods are discussed with practical examples from the automotive industry.
The following topics will be covered:

- lightweight designs
- aluminum and steel for lightweight construction
- fibre-reinforced plastics by the RTM and SMC process
- joining of steel and aluminum (clinching, riveting, welding)
- bonding
- coating
- finishing
- quality assurance
- virtual factory

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Lecture Notes

T Course: Mathematics I - Final Exam [T-MATH-102261]

Responsibility: Günter Last, Steffen Winter, Martin Folkers, Daniel Hug
Contained in: [M-MATH-101676] Mathematics 1

ECTS	Version
3,5	1

T Course: Mathematics I - Midterm Exam [T-MATH-102260]

Responsibility: Günter Last, Steffen Winter, Martin Folkers, Daniel Hug
Contained in: [M-MATH-101676] Mathematics 1

ECTS	Version
3,5	1

T Course: Mathematics II - Final Exam [T-MATH-102263]

Responsibility: Günter Last, Steffen Winter, Martin Folkers, Daniel Hug
Contained in: [M-MATH-101677] Mathematics 2

ECTS	Version
3,5	1

T Course: Mathematics II - Midterm Exam [T-MATH-102262]

Responsibility: Günter Last, Steffen Winter, Martin Folkers, Daniel Hug
Contained in: [M-MATH-101677] Mathematics 2

ECTS	Version
3,5	1

T Course: Mathematics III - Final Exam [T-MATH-102264]

Responsibility: Günter Last, Steffen Winter, Martin Folkers, Daniel Hug
Contained in: [M-MATH-101679] Mathematics 3

ECTS	Version
7	1

T Course: Metal Forming [T-MACH-105177]

Responsibility: Florian Herlan
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2150681	Metal Forming	Vorlesung (V)	2	Florian Herlan

Die folgenden Informationen stammen aus der Veranstaltung Metal Forming (SS 2016):

The students

- are able to reflect the basics, forming processes, tools, Machines and equipment of metal forming in an integrated and systematic way.
- are capable to illustrate the differences between the forming processes, tools, machines and equipment with concrete examples and are qualified to analyze and assess them in terms of their suitability for the particular application.
- are also able to transfer and apply the acquired knowledge to other metal forming problems.

Content
At the beginning of the lecture the basics of metal forming are briefly introduced. The focus of the lecture is on massive forming (forging, extrusion, rolling) and sheet forming (car body forming, deep drawing, stretch drawing). This includes the systematic treatment of the appropriate metal forming Machines and the corresponding tool technology.
Aspects of tribology, as well as basics in material science and aspects of production planning are also discussed briefly. The plastic theory is presented to the extent necessary in order to present the numerical simulation method and the FEM computation of forming processes or tool design. The lecture will be completed by product samples from the forming technology.
The topics are as follows:

- Introduction and basics
- Hot forming
- Metal forming machines
- Tools
- Metallographic fundamentals
- Plastic theory
- Tribology
- Sheet forming
- Extrusion
- Numerical simulation

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Lecture Notes

T Course: Meteorological Hazards [T-PHYS-101557]

Responsibility: Michael Kunz
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
	1

Conditions
none

T Course: Microactuators [T-MACH-101910]

Responsibility: Manfred Kohl
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2142881	Microactuators	Vorlesung (V)	2	Manfred Kohl

Die folgenden Informationen stammen aus der Veranstaltung Microactuators (SS 2016):

- Knowledge of the actuation principles including pros and cons
- Knowledge of important fabrication technologies
- Explanation of layout and function of the microactuators
- Calculation of important properties (time constants, forces, displacements, etc.)
- Development of a layout based on specifications

Content
- Basic knowledge in the material science of the actuation principles
- Layout and design optimization
- Fabrication technologies
- Selected developments
- Applications

The lecture includes amongst others the following topics:

- Microelectromechnical systems: linear actuators, microrelais, micromotors
- Medical technology and life sciences: Microvalves, micropumps, microfluidic systems
- Microrobotics: Microgrippers, polymer actuators (smart muscle)
- Information technology: Optical switches, mirror systems, read/write heads

Workload
lecture time 1.5 h/week
self preparation: 8.5 h/week

Literature
- Lecture notes
- D. Jendritza, Technischer Einsatz Neuer Aktoren: Grundlagen, Werkstoffe, Designregeln und Anwendungsbeispiele, Expert-Verlag, 3. Auflage, 2008
- M. Kohl, Shape Memory Microactuators, M. Kohl, Springer-Verlag Berlin, 2004
- N.TR. Nguyen, S.T. Wereley, Fundamentals and applications of Microfluidics, Artech House, Inc. 2002
- H. Zappe, Fundamentals of Micro-Optics, Cambride University Press 2010

T Course: Mobility and Infrastructure [T-BGU-101791]

Responsibility: Ralf Roos
Contained in: [M-BGU-101067] Mobility and Infrastructure

ECTS	Version
9	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	6200406	Übungen zu Verkehrswesen (bauiBFP5-MOBIN)	Übung (Ü)		KIT Mitarbeiter, Peter Vortisch
SS 2016	6200416	Übungen zu Raumplanung und Planungsrecht (bauiBFP5-MOBIN)	Übung (Ü)	1	KIT Mitarbeiter, Sebastian Wilske
SS 2016	6200407	Bemessungsgrundlagen im Straßenwesen (bauiBFP5-MOBIN)	Vorlesung (V)	2	Ralf Roos, Matthias Zimmermann
SS 2016	6200404	Raumplanung und Planungsrecht (bauiBFP5-MOBIN)	Vorlesung (V)	2	Sebastian Wilske
SS 2016	6200408	Übungen zu Bemessungsgrundlagen im Straßenwesen (bauiBFP5-MOBIN)	Übung (Ü)		Plamena Plachkova-Dzhurova, Matthias Zimmermann
SS 2016	6200405	Verkehrswesen (bauiBFP5-MOBIN)	Vorlesung (V)	2	Peter Vortisch

Conditions
none

T Course: Model Based Application Methods [T-MACH-102199]

Responsibility: Frank Kirschbaum
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Version
4	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2134139	Model based Application Methods	Vorlesung (V)	2	Frank Kirschbaum

Die folgenden Informationen stammen aus der Veranstaltung Model based Application Methods (SS 2016):

The student can name the most important methods for model-based calibration of powertrain ECUs. Particulary he can choose and apply the correct approach for empirical modeling for a given powertrain calibration task (fuel consumption, emissions, air path, driveability, etc.) and type of plant (linear-nonlinear, static-dynamic, etc.). He is capable to solve typical Problems of a calibration engineer of automotive OEMs or suppliers.

Content
The efforts for the calibration of automotive powertrain ECUs are increasing due to new engine or powertrain technologies and tightening emission laws. From a present view only model based calibration methods are capable to handle this situation. The lecture presents a selection of practice-proofed model-based calibration methods.

Workload
regular attendance:
Lectures 2 SWS: approx. 22 h
Computer exercises 1 SWS: approx. 11 h
self study: approx. 87 h

T Course: Monetary and Financial Policy [T-WIWI-102836]

Responsibility: Joachim Nagel, Berthold Wigger
Contained in: [M-WIWI-101403] Public Finance

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2560122	Monetary and Financial Policy	Vorlesung (V)	3	Joachim Nagel

Learning Control / Examinations
The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Conditions
None

Recommendations
See german version

Die folgenden Informationen stammen aus der Veranstaltung Monetary and Financial Policy (WS 16/17):

Successful completion of the course will enable students to ...
- ... understand the monetary and financial policy before the financial crisis.
- ... explain the cause of the financial crisis.
- ... describe and evaluate the monetary policy in crisis mode.
- ... critically discuss the boundaries of monetary and financial policy.
- ... discuss the challenges for monetary policy using the example of the European Monetary Union.
- ... critically evaluate and discuss the topic "financial stability vs. monetary mandate - a contradiction?".

Content
The current financial crisis changed the operationel implementation of financial policy within the big currency areas. Especially financial policy within the european union faces great challenges because of the dept problems of some union members. Limitations seem to disappears.
The lecture covers this range of topics and explores the question whether the financial crisis changes/will change monetary policy.

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

T Course: Monetary and Financial Policy [T-WIWI-102877]

Responsibility: Berthold Wigger
Contained in: [M-WIWI-101403] Public Finance

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2560131	Introduction to Public Finance	Vorlesung (V)	3	Berthold Wigger

Learning Control / Examinations
See module description.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Introduction to Public Finance (WS 16/17):

Students are able to:

- critically assess the economic role of the state in a market economy
- explain and discuss key concepts in public finance, including: public goods; economic externalities; and market failure
- explain and critically discuss competing theoretical approaches to public finance, including welfare economics and public choice theory
- explain the theory of bureaucracy according to Weber and critically assess its strengths and weaknesses
- evaluate the incentives inherent in the bureaucratic model, as well as the more recent introduction of market-oriented incentives associated with public-sector reform
- analyze the strategic implications of public decision making

Content
The course *Introduction to Public Finance* provides an overview of the fundamental issues in public economics. The first part of the course deals with normative theories about the economic role of the state in a market economy. Welfare economics theory is offered as a base model, with which alternative normative theories are compared and contrasted. Within this theoretical framework, arguments concerning efficiency and equity are developed as justification for varying degrees of economic intervention by the state. The second part of the course deals with the positivist theory of public economics. Processes of public decision making are examined and the conditions that lead to market failures resulting from collective action problems are discussed. The third part of the course examines a variety of public spending programs, including social security systems, the public education system, and programs aimed at reducing poverty. The fifth part of the course addresses the key theoretical and political issues associated with fiscal federalism.

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

Literature
Wigger, B. U. 2006. ***Grundzüge der Finanzwissenschaft.*** Springer: Berlin.

T Course: Nanotechnology with Clusterbeams [T-MACH-102080]

Responsibility: Jürgen Gspann
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2143876	Nanotechnology with Clusterbeams	Vorlesung (V)	2	Jürgen Gspann

Die folgenden Informationen stammen aus der Veranstaltung Nanotechnology with Clusterbeams (WS 16/17):

Nanotechnology is presented on the basis of a technology for nano- and microstructuring by accelerated nanoparticles (clusters), mainly in view of nanomechanics.

Content
Nanotechnology in biology
Nanosystemstechnology
Cluster beam generation, ionisation and acceleration; cluster properties
Structure generation using accelerated metal clusters
Structuring via gas cluster impact; reactive accelerated cluster erosion (RACE)
Atomic force microscopy of impact structures; nanotribology
Comparison with femtosecond laser machining (Winter term only)
Simulations; Fullerene synthesis, impact structures, visionary nanomachinery

Literature
Foil copies with short commentaries are distributed during the lectures.

T Course: Nature-Inspired Optimisation Methods [T-WIWI-102679]

Responsibility: Pradyumn Kumar Shukla
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511106	Nature-Inspired Optimization Methods	Vorlesung (V)	2	Pradyumn Kumar Shukla

Learning Control / Examinations
The examination will be offered latest until winter term 2017/2018 (repeaters only).
The assessment consists of a written exam (60 min) (according to Section 4(2), 1 of the examination regulation) and an additional written examination called "bonus exam", 60 min (according Section 4(2), 3 of the examination regulation) or a selection of exersices . The bonus exam may be split into several shorter written tests.
The grade of this course is the achieved grade in the written examination. If this grade is at least 4.0 and at most 1.3, a passed bonus exam will improve it by one grade level (i.e. by 0.3 or 0.4).

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Nature-Inspired Optimization Methods (SS 2016):

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 Course: Nonlinear Optimization I [T-WIWI-102724]

Responsibility: Oliver Stein
Contained in: [M-WIWI-101414] Methodical Foundations of OR
[M-WIWI-101400] Stochastic Methods and Simulation
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Version
4,5	1

Learning Control / Examinations
The assessment consits of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.
The exam takes place in the semester of the lecture and in the following semester.
The examination can also be combined with the examination of*Nonlinear OptimizationII*[2550113]. In this case, the duration of the written examination takes 120 minutes.

Conditions
The successful completion of a compulsory prerequisite is mandatory for admission to the exam.

Modeled Conditions
The following conditions must be met:

1. Successful completion of course [T-WIWI-103062] *Prerequisite for Nonlinear Optimization I (Bachelor)* is required before taking this course.
2. Course [T-WIWI-103637] *Nonlinear Optimization I und II* and this course are mutually exclusive.

Remarks
Part I and II of the lecture are held consecutively in the *same*semester.

T Course: Nonlinear Optimization I und II [T-WIWI-103637]

Responsibility:
Contained in: [M-WIWI-101414] Methodical Foundations of OR

ECTS	Version
9	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550142	Rechnerübung zu Nichtlineare Optimierung I + II	Übung (Ü)		Oliver Stein, Robert Mohr
WS 16/17	2550112	Übungen zu Nichtlineare Optimierung I + II	Übung (Ü)		Oliver Stein, Robert Mohr

Learning Control / Examinations
The assessment consits of a written exam (120 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.
The exam takes place in the semester of the lecture and in the following semester.

Conditions
The successful completion of a compulsory prerequisite is mandatory for admission to the exam.

Modeled Conditions
The following conditions must be met:

1. Successful completion of course [T-WIWI-103060] *Prerequisite for Nonlinear Optimization II (Bachelor)* is required before taking this course.
2. Successful completion of course [T-WIWI-103062] *Prerequisite for Nonlinear Optimization I (Bachelor)* is required before taking this course.
3. Course [T-WIWI-102724] *Nonlinear Optimization I* and this course are mutually exclusive.
4. Course [T-WIWI-102725] *Nonlinear Optimization II* and this course are mutually exclusive.

Remarks
Part I and II of the lecture are held consecutively in the *same*semester.

T Course: Nonlinear Optimization II [T-WIWI-102725]

Responsibility: Oliver Stein
Contained in: [M-WIWI-101414] Methodical Foundations of OR

ECTS	Version
4,5	1

Learning Control / Examinations
The assessment consits of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.
The exam takes place in the semester of the lecture and in the following semester.
The exam can also be combined with the examination of*Nonlinear Optimization*I[2550111]. In this case, the duration of the written exam takes 120 minutes.

Conditions
The successful completion of a compulsory prerequisite is mandatory for admission to the exam.

Modeled Conditions
The following conditions must be met:

1. Successful completion of course [T-WIWI-103060] *Prerequisite for Nonlinear Optimization II (Bachelor)* is required before taking this course.
2. Course [T-WIWI-103637] *Nonlinear Optimization I und II* and this course are mutually exclusive.

Remarks
Part I and II of the lecture are held consecutively in the *same*semester.

T Course: Novel Actuators and Sensors [T-MACH-102152]

Responsibility: Manfred Kohl, Martin Sommer
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2141865	Novel actuators and sensors	Vorlesung (V)	2	Manfred Kohl, Martin Sommer

Die folgenden Informationen stammen aus der Veranstaltung Novel actuators and sensors (WS 16/17):

- Knowledge of the principles of actuation and sensing including pros and cons
- Explanation of layout and function of important actuators and sensors
- Calculation of important properties (time constants, forces, displacements, sensitivity, etc.)
- Development of a layout based on specifications

Content
Contents: - Basic knowledge in the material science of actuator and sensor principles
- Layout and design optimization
- Fabrication technologies
- Selected developments
- Applications
Index: The lecture includes amongst others the following topics:

- Piezo actuators
- Magnetostrictive actuators
- Shape memory actuators
- Electro-/magnetorheological actuators
- Sensors: Concepts, materials, fabrication
- Micromechanical sensors: Pressure, force, inertia sensors
- Temperature sensors
- Micro sensors for bio analytics
- Mechano-magnetic sensors

The lecture addresses students in the fields of mechanical engineering, mechatronics and information technology, materials science and engineering, electrical engineering and economic sciences. A comprehensive introduction is given in the basics and current developments on the macroscopic length scale.
The lecture is core subject of the major course "Actuators and Sensors" of the specialization "Mechatronics and Microsystems Technology" in Mechanical Engineering.

Workload
Work Lecture:
time of attendance: 1.5 hours/week
Self-study: 7 hours/week
Work Tutorial:
time of attendance: 1.5 hours/week
Self-study: 3.5 hours/week

Literature
- Lecture notes
- Donald J. Leo, Engineering Analysis of Smart Material Systems, John Wiley & Sons, Inc., 2007
- "Sensors Update", Edited by H.Baltes, W. Göpel, J. Hesse, VCH, 1996, ISBN: 3-527-29432-5
- "Multivariate Datenanalyse – Methodik und Anwendungen in der Chemie", R. Henrion, G. Henrion, Springer 1994, ISBN 3-540-58188-X

T Course: Operative CRM [T-WIWI-102597]

Responsibility: Andreas Geyer-Schulz
Contained in: [M-WIWI-101460] CRM and Service Management
[M-WIWI-101422] Specialization in Customer Relationship Management

ECTS	Version
4,5	1

Learning Control / Examinations
Assessment consists of a written exam of 1 hour length (§4 (2), 1 of the examination regulations) and by submitting written papers as part of the exercise (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).
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.

Conditions
None

Recommendations
The attendance of courses *Customer Relationship Management* [2540508] and *Analyitical CRM* [2540522] is advised.

T Course: Optoelectronic Components [T-ETIT-101907]

Responsibility: Wolfgang Freude
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Version
4	1

Conditions
none

T Course: Organic Computing [T-WIWI-102659]

Responsibility: Hartmut Schmeck
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511104	Organic Computing	Vorlesung (V)	2	Hartmut Schmeck
SS 2016	2511105	Übungen zu Organic Computing	Übung (Ü)	1	Micaela Wünsche, Hartmut Schmeck, Friederike Pfeiffer-Bohnen, Lukas König

Learning Control / Examinations
The examination will be offered latest until winter term 2016/2017 (repeaters only).
The assessment of this course consists of a written examination (60 min) (following §4(2), 1 SPOs) and of submitting written exercises that recapitulate the content of the course. The exercises include theoretical questions as well as practical programming. For providing a successful solution to all exercises, a bonus will be granted, improving the grade of a passed exam by one grade-step (0.3 or 0.4,) (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015). The course will be offered every second semester (summer term) and exams may be repeated at every ordinary exam date.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Organic Computing (SS 2016):

The student acquires the ability to master methods and concepts of Organic Computing and to demonstrate innovation skills regarding the used methods.
Therefore the course aims at the teaching of fundamentals and methods of Organic Computing within the context of its applicability in practice. On the basis of a fundamental understanding of the taught concepts and methods the students should be able to choose the adequate methods and concepts, if necessary further develop them according to the situation and use them properly when facing related problems in their later job. The students should be capable of finding arguments for the chosen solutions and express them to others.

Content
The mission of Organic Computing is to tame complexity in technical systems by providing appropriate degrees of freedom for self-organized behaviour adapting to changing requirements of the execution environment, in particular with respect to human needs. According to this vision an organic computer system should be aware of its own capabilities, the requirements of the environment, and it should be equipped with a number of "self-x" properties allowing for the anticipated adaptiveness and for a reduction in the complexity of system management. These self-x properties are self-organisation, self-configuration, self-optimization, self-healing, self-protection and self-explanation. In spite of these self-x properties, an organic system should be open to external control actions which might be necessary to prevent undesired behaviour.

Workload
The total workload for this course is approximately 150.0 hours. For further information see German version.

Literature

- Autonomic Computing: Concepts, Infrastructure and Applications. M. Parashar and S. Hariri (Ed.), CRC Press. December 2006.
- Self-Organization in Biological Systems. S. Camazine, J. Deneubourg, N. R. Franks, J. Sneyd, G. Theraulaz and E. Bonabeau. Princeton University Press, 2003.
- Complex Adaptive Systems: An Introduction. H. G. Schuster, Scator Verlag, 2001.
- Introduction to Evolutionary Computing. A. E. Eiben and J. E. Smith. Natural Computing Series, Springer Verlag, 2003. Swarm Intelligence: From Natural to Artificial Systems.Eric Bonabeau, Marco Dorigo and Guy Theraulaz. Oxford University Press, 1999.
- Control of Complex Systems. K. Astrom, P. Albertos, M. Blanke, A. Isidori and W. Schaufelberger. Springer Verlag, 2001.

Elective literature:

- **Adaptive and Self-organising Systems,** Christian Müller-Schloer, Moez Mnif, Emre Cakar, Hartmut Schmeck, Urban Richter, June 2007. Preprint.Submitted to ACM Transactions on Autonomous and Adaptive Systems (TAAS)
- **Organic Computing - Addressing Complexity by Controlled Self-organization,** Jürgen Branke, Moez Mnif, Christian Müller-Schloer, Holger Prothmann, Urban Richter, Fabian Rochner, Hartmut Schmeck, In Tiziana Margaria, Anna Philippou, and Bernhard Steffen, *Proceedings of ISoLA 2006*, pp. 200-206. Paphos, Cyprus, November 2006.
- Evolutionary Optimization in Dynamic Environments. J. Branke. Kluwer Academic Publishers, 2002.
- Self-star Properties in Complex Information Systems: Conceptual and Practical Foundations (Lecture Notes in Computer Science. O. Babaoglu, M. Jelasity, A. Montresor, C. Fetzer, S. Leonardi, A. van Moorsel and M. van Steen. Springer Verlag, 2005.
- Design and Control of Self-organizing Systems. C. Gershenson. PhD thesis, Vrije Universiteit Brussel, Brussels, Belgium, 2007.
- VDE / ITG / GI - Positionspapier: Organic Computing - Computer- und Systemarchitektur im Jahr 2010. Juli 2003. it - Information Technology, Themenheft Organic Computing, Oldenbourg Verlag. Volume: 47, Issue: 4/2005.

further references will be announced in class

T Course: Patent Law [T-INFO-101310]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101215] Intellectual Property Law

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24656	Patent Law	Vorlesung (V)	2	Peter Bittner

Die folgenden Informationen stammen aus der Veranstaltung Patent Law (SS 2016):

Ziel der Vorlesung ist es, den Studenten aufbauend auf der Überblicksvorlesung *Gewerblicher Rechtsschutz und Urheberrecht* vertiefte Kenntnisse auf dem Rechtsgebiet des Patentrechts und des Business mit technischem IP zu verschaffen. Die Studenten sollen die Zusammenhänge zwischen den wirtschaftlichen Hintergründen und den rechtspolitischen Anliegen, auf dem Gebiet des technischen IP, insbesondere auf dem Gebiet der Informations- und Kommunikationstechnik kennen lernen. Sie sollen die Regelungen des nationalen, europäischen und internationalen Patentrechts, des Know-How-Schutzes kennen lernen und auf praktische Sachverhalte anwenden, insbesondere für die Nutzung von technischem IP durch Verträge und Gerichtsverfahren. Der Konflikt zwischen dem MonopolPatent und der Politik der Europäischen Kartellrechtsverwaltung wird mit den Studenten erörtert.

Content
Die Vorlesung befasst sich mit dem Recht und den Gegenständen des technischen IP, insbesondere Erfindungen, Patente, Gebrauchsmuster, Geschmacksmuster, Know-How, den Rechten und Pflichten von Arbeitnehmererfindern als Schöpfern von technischem IP, der Lizenzierung, den Beschränkungen und Ausnahmen der Patentierbarkeit, der Schutzdauer, der Durchsetzung der Rechte und der Verteidigung gegen solche Rechte in Nichtigkeits- und Löschungsverfahren. Gegenstand der Vorlesung ist nicht allein das deutsche, sondern auch das amerikanische und das europäische und das internationale Patentrecht. Die Studenten sollen die Zusammenhänge zwischen den wirtschaftlichen Hintergründen, den rechtspolitischen Anliegen bei technischem IP, insbesondere bei der Informations- und Kommunikationstechnik, und dem rechtlichen Regelungsrahmen erkennen und auf praktische Sachverhalte anwenden, insbesondere für die Nutzung von technischem IP durch Verträge und Gerichtsverfahren. Der Konflikt zwischen dem MonopolPatent und der Politik der Europäischen Kartellrechtsverwaltung wird mit den Studenten erörtert.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt bei 3 Leistungspunkten 90 h, davon 22,5 Präsenz.

T Course: Personnel Policies and Labor Market Institutions [T-WIWI-102908]

Responsibility: Petra Nieken
Contained in: [M-WIWI-101513] Human Resources and Organizations

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2573002	Übungen zu Personalpolitik und Arbeitsmarktinstitutionen	Übung (Ü)	1	André Haas, Petra Nieken
SS 2016	2573001	Personnel Policies and Labor Market Institutions	Vorlesung (V)	2	Petra Nieken

Learning Control / Examinations
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Conditions
None

Recommendations
Completion of module Business Administration is recommended.
Basic knowledge of microeconomics, game theory, and statistics is recommended.

Die folgenden Informationen stammen aus der Veranstaltung Personnel Policies and Labor Market Institutions (SS 2016):

The student

- understands the process and role of agents in collective wage bargaining.
- analyzes strategic decisions in the context of corporate governance.
- understands the concept of co-determination in Germany.
- challenges statements that evaluate certain personnel politics.

Content
The students acquire knowledge about the process and the strategic aspects of collective bargaining about wages. They analyze selected aspects of corporate governance and co-determination in Germany. The lecture also addresses questions of personnel politics and issue of labor market discrimination. Microeconomic and behavioral approaches as well as empirical data is used and evaluated critically.

Workload
The total workload for this course is approximately 135 hours.
Lecture 32h
Preparation of lecture 52h
Exam preparation 51h

Literature
Arbeitsmarktökonomik, W. Franz, Springer, 2013

T Course: Photovoltaics [T-ETIT-100724]

Responsibility: N.N.
Contained in: [M-WIWI-101404] Extracurricular Module in Engineering

ECTS	SWS	Version
3	2	1

Conditions
none

T Course: Physics for Engineers [T-MACH-100530]

Responsibility: Alexander Nesterov-Müller, Peter Gumbsch
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
6	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2142890	Physics for Engineers	Vorlesung (V)	2	Tobias Christoph Förtsch, Daniel Weygand, Alexander Nesterov-Müller, Peter Gumbsch

Die folgenden Informationen stammen aus der Veranstaltung Physics for Engineers (SS 2016):

The student

- has the basic understanding of the physical foundations to explain the relationship between the quantum mechanical principles and the optical as well as electrical properties of materials
- can describe the fundamental experiments, which allow the illustration of these principles

Content
1) Foundations of solid state physics

- Wave particle dualism
- Tunnelling
- Schrödinger equation
- H-atom

2) Electrical conductivity of solids

- solid state: periodic potentials
- Pauli Principle
- band structure
- metals, semiconductors and isolators
- p-n junction / diode

3) Optics

- quantum mechanical principles of the laser
- linear optics
- non-linear optics

Workload
regular attendance: 22,5 hours (lecture) and 22,5 hours (excerises 2142891)
self-study: 97,5 hours and 49 hours (excerises 2142891)

Literature

- Tipler und Mosca: Physik für Wissenschaftler und Ingenieure, Elsevier, 2004
- Haken und Wolf: Atom- und Quantenphysik. Einführung in die experimentellen und theoretischen Grundlagen, 7. Aufl., Springer, 2000

T Course: PLM for Product Development in Mechatronics [T-MACH-102181]

Responsibility: Martin Eigner
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2122376	PLM for product development in mechatronics	Vorlesung (V)		Martin Eigner

Die folgenden Informationen stammen aus der Veranstaltung PLM for product development in mechatronics (SS 2016):

Students have a basic overview about product data management and product lifecycle management.
Students know components and core functions of PLM solutions
Students can describe trends in research and practice in the environment of PLM

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

T Course: PLM-CAD Workshop [T-MACH-102153]

Responsibility: Jivka Ovtcharova
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2121357	PLM-CAD Workshop	Praktikum (P)	4	Jivka Ovtcharova, Mitarbeiter
WS 16/17	2121357	PLM-CAD Workshop	Praktikum (P)	4	Jivka Ovtcharova, Mitarbeiter

Die folgenden Informationen stammen aus der Veranstaltung PLM-CAD Workshop (WS 16/17):

Ziel des Workshops ist es, den Nutzen der kollaborativen Produktentwicklung mit PLM aufzuzeigen und deren Mehrwert gegenüber einer klassischen CAD- Entwicklung hervorzuheben. Den Studierenden wird im Einzelnen vermittelt, wie durch PLM produktbeschreibende Daten, wie z. B. Stücklisten und Zeichnungen, ganzheitlich und transparent verwaltet werden, sowie Abläufe in der Produktentwicklung automatisiert gesteuert werden können.

Content
Im Rahmen des Workshops wird eine Produktentwicklung als Projektauftrag innerhalb des Produktlebenszyklus durch den Einsatz moderner PLM/PDM- und CAD- Systeme abgewickelt.

T Course: Power Generation [T-ETIT-101924]

Responsibility: Bernd Hoferer
Contained in: [M-ETIT-101165] Energy Generation and Network Components
[M-WIWI-101404] Extracurricular Module in Engineering

ECTS	SWS	Version
3	2	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	23356	Erzeugung elektrischer Energie	Vorlesung (V)	2	Bernd Hoferer

Conditions
none

T Course: Power Network [T-ETIT-100830]

Responsibility: Thomas Leibfried
Contained in: [M-ETIT-102379] Power Network

ECTS	SWS	Version
6	4	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	23373	Übungen zu 23371 Elektrische Energienetze	Übung (Ü)	2	Yannick Rink
WS 16/17	23371	Elektrische Energienetze	Vorlesung (V)	2	Thomas Leibfried

T Course: Practical Seminar Digital Services [T-WIWI-105711]

Responsibility: Christof Weinhardt, Rudi Studer, Stefan Nickel, Wolf Fichtner, Alexander Mädche, York Sure-Vetter, Gerhard Satzger

Contained in: [M-WIWI-102752] Fundamentals of Digital Service Systems

ECTS	Version
4,5	1

Learning Control / Examinations
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).

Conditions
None

Recommendations
None

Remarks
The current range of seminar topics is announced on the KSRI website www.ksri.kit.edu.

T Course: Practical Training in Basics of Microsystem Technology [T-MACH-102164]

Responsibility: Arndt Last
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2143875	Introduction to Microsystem Technology - Practical Course	Praktikum (P)	2	Arndt Last
WS 16/17	2143875	Introduction to Microsystem Technology - Practical Course	Praktikum (P)	2	Arndt Last

Die folgenden Informationen stammen aus der Veranstaltung Introduction to Microsystem Technology - Practical Course (WS 16/17):

- Deepening of the contents of the lecture MST I resp. II
- Understanding the technological processes in the micro system technology
- Experience in lab-work at real workplaces where normally research is carried out

Content
In the practical training includes nine experiments:
1. Hot embossing of plastics micro structures
2. Micro electroforming
3. Mikro optics: "LIGA-micro spectrometer"
4. UV-lithography
5. Optical waveguides
6. Capillary electrophoresis on a chip
7. SAW gas sensor
8. Metrology
9. Atomic force microscopy

Each student takes part in only five experiments.
The experiments are carried out at real workstations at the IMT and coached by IMT-staff.

Workload
Time of attendance: 21 h + 2 h exam
Privat studies: 5 h preparing experiments + 10 h preparing the exam

Literature
Menz, W., Mohr, J.: Mikrosystemtechnik für Ingenieure, VCH-Verlag, Weinheim, 1997
Unterlagen zum Praktikum zur Vorlesung ' Grundlagen der Mikrosystemtechnik'

T Course: Prerequisite for Facility Location and Strategic Supply Chain Management [T-WIWI-103061]

Responsibility: Stefan Nickel
Contained in: [M-WIWI-101421] Supply Chain Management
[M-WIWI-101413] Applications of Operations Research
[M-WIWI-101414] Methodical Foundations of OR

ECTS	Version
	1

Learning Control / Examinations
Proof of successful participation in the practical lessons.

Conditions
None

T Course: Prerequisite for Nonlinear Optimization I (Bachelor) [T-WIWI-103062]

Responsibility:
Contained in: [M-WIWI-101414] Methodical Foundations of OR
[M-WIWI-101400] Stochastic Methods and Simulation
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Version
	1

Learning Control / Examinations
See German version

Conditions
None

T Course: Prerequisite for Nonlinear Optimization II (Bachelor) [T-WIWI-103060]

Responsibility: Oliver Stein
Contained in: [M-WIWI-101414] Methodical Foundations of OR

ECTS	Version
	1

Learning Control / Examinations
see german version

Conditions
None

T Course: Prerequisite for Tactical and Operational Supply Chain Management [T-WIWI-105940]

Responsibility: Stefan Nickel
Contained in: [M-WIWI-101421] Supply Chain Management
[M-WIWI-101413] Applications of Operations Research
[M-WIWI-101400] Stochastic Methods and Simulation
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Version
	1

Learning Control / Examinations
Proof of successful participation in the practical lessons.

Conditions
None

T Course: Principles of Insurance Management [T-WIWI-102603]

Responsibility: Ute Werner
Contained in: [M-WIWI-101436] Risk and Insurance Management

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2530055	Principles of Insurance Management	Vorlesung (V)	3	Ute Werner

Learning Control / Examinations
The assessment consists of oral presentations (incl. papers) within the lecture (according to Section 4 (2), 3 of the examination regulation) and a final oral exam (according to Section 4 (2), 2 of the examination regulation).
The overall grade consists of the assessment of the oral presentations incl. papers (50 percent) and the assessment of the oral exam (50 percent).

Conditions
None

Recommendations
None

Die folgenden Informationen stammen aus der Veranstaltung Principles of Insurance Management (SS 2016):

See German version.

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

Literature

- D. Farny. *Versicherungsbetriebslehre.* Karlsruhe 2011.
- P. Koch. *Versicherungswirtschaft - ein einführender Überblick.* 2005.
- M. Rosenbaum, F. Wagner. Versicherungsbetriebslehre. Grundlegende Qualifikationen. Karlsruhe 2002.
- U. Werner. Einführung in die Versicherungsbetriebslehre. Skript zur Vorlesung.

Elective literature:
Will be announced during the lecture.

T Course: Probabilistic Machine Learning for Finance and Data Science [T-WIWI-105712]

Responsibility: Maxim Ulrich
Contained in: [M-WIWI-102753] Machine Learning for Finance and Data Science

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	792500169	Probabilistic Machine Learning for Finance and Data Science	Vorlesung (V)	4	
SS 2016	2530360	Probabilistic Machine Learning for Finance and Data Science	Vorlesung (V)	4	Maxim Ulrich

Learning Control / Examinations
See description of the respective module

Conditions
See description of the respective module

Remarks
New course starting summer term 2016 and will is taught in English.

T Course: Problem Solving, Communication and Leadership [T-WIWI-102871]

Responsibility: Hagen Lindstädt
Contained in: [M-WIWI-101513] Human Resources and Organizations
[M-WIWI-101425] Strategy and Organization

ECTS	Language	Version
2	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2577910	Problem solving, communication and leadership	Vorlesung (V)	1	Kerstin Fehre, Hagen Lindstädt

Learning Control / Examinations
The assessment consists of a written exam (30 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Problem solving, communication and leadership (SS 2016):

After passing this course students are able to

- structure problem solving processes.
- apply the principles of focused communication based on charts and presentations.
- understand leadership in the context of situation and personality.

Content
The course deals with various aspects of problem solving and communication processes and is divided into two parts. The first part of the course addresses the fundamental steps in the problem-solving process; namely, problem identification, problem structuring, problem analysis and communication of solution. Ideas for structuring problem solving processes will be discussed and the perquisites for and principles of structured communication based on charts and presentations will be explained. The second part of the course addresses important concepts in leadership, including the context-specificity of influence, the choice of leader and the characteristics of employees. The course content reflects current issues in management and communication practice and is oriented toward the practical application of theoretical insights to these issues. In this respect, the course aims to develop interdisciplinary skills.

Workload
The total workload for this course is approximately 60 hours. For further information see German version.

Literature
The relevant excerpts and additional sources are made known during the course.

T Course: Procedures of Remote Sensing [T-BGU-103542]

Responsibility: Uwe Weidner
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
3	1

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-BGU-101638] *Procedures of Remote Sensing, Prerequisite* is required before taking this course.

T Course: Procedures of Remote Sensing, Prerequisite [T-BGU-101638]

Responsibility: Uwe Weidner
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
1	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	6020266	Übungen zu Fernerkundungsverfahren	Übung (Ü)	1	Uwe Weidner

T Course: Product Lifecycle Management [T-MACH-105147]

Responsibility: Jivka Ovtcharova
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Language	Version
6	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2121350	Product Lifecycle Management	Vorlesung (V)	3	Jivka Ovtcharova

Die folgenden Informationen stammen aus der Veranstaltung Product Lifecycle Management (WS 16/17):

The students can:

- clarify the management concept of PLM, its objectives and highlight the economic benefits of the PLM concept.
- illustrate the need for an integrated and cross-departmental business process - from planning, portfolio construction and return of customer information, from the use phase to maintenance and recycling of products.
- reason the processes and functions needed to support the entire product life cycle and discuss the main operating software systems (PDM, ERP, SCM, CRM) and their functions for supporting PLM.
- argue a method to successfully introduce the concept of Management PLM in companys.

Content
Product Lifecycle Management (PLM) is an approach to the holistic and cross-company management and control of all product-related processes and data throughout the life cycle along the extended supply chain - from design and production to sales, to the dismantling and recycling.
Product Lifecycle Management is a comprehensive approach for effective and efficient design of the product life cycle. Based on all product information, which comes up across the entire value chain and across multiple partners, processes, methods and tools are made available to provide the right information at the right time, quality and the right place.
The course covers:

- A consistent description of all business processes that occur during the product life cycle (development, production, sales, dismantling, . . .)
- the presentation of methods for the performance of the PLM business processes,
- explaining the most important corporate information systems to support the life cycle (PDM, ERP, SCM, CRM systems) to sample the software manufacturer SAP

Workload
regular attendance: 42 hours
self-study: 128 hours

Literature
Lecture slides.

V. Arnold et al: Product Lifecycle Management beherrschen, Springer-Verlag, Heidelberg, 2005.

J. Stark: Product Lifecycle Management, 21st Century Paradigm for Product Realisation, Springer-Verlag, London, 2006.

A. W. Scheer et al: Prozessorientiertes Product Lifecycle Management, Springer-Verlag, Berlin, 2006.

J. Schöttner: Produktdatenmanagement in der Fertigungsindustrie, Hanser-Verlag, München, 1999.

M.Eigner, R. Stelzer: Produktdaten Management-Systeme, Springer-Verlag, Berlin, 2001.

G. Hartmann: Product Lifecycle Management with SAP, Galileo press, 2007.

K. Obermann: CAD/CAM/PLM-Handbuch, 2004.

T Course: Production and Logistics Controlling [T-WIWI-103091]

Responsibility: Helmut Wlcek
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Version
3	1

Learning Control / Examinations
The assessment consists of a written exam (following §4(2), 1 of the examination regulation).
The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

T Course: Production Economics and Sustainability [T-WIWI-102820]

Responsibility: Magnus Fröhling
Contained in: [M-WIWI-101437] Industrial Production I

ECTS	Language	Version
3,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2581960	Production Economics and Sustainability	Vorlesung (V)	2	Jérémy Rimbon

Learning Control / Examinations
The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Production Economics and Sustainability (WS 16/17):

Students shall be aware of issues concerning industrial production and sustainability and shall apply strategies to resolve these issues.

Content
The analysis and management of material flows on the company level and above will be the focus of this lecture. Herein, the discussion will be about cost-effective and environmentally acceptable steps to avoid, abate and recycle emissions and waste as well as ways of efficient resources handling. As methods material flow analysis (MFA), life cycle assessment (LCA) and OR methods, e.g. for decision support, are introduced.
Topics:
- regulations related to materials and substances
- raw materials, reserves and their availabilities/lifetimes
- material and substance flow analysis (MFA/SFA)
- material related ecoprofiles, e.g. Carbon Footprint
- LCA
- resource efficiency
- emission abatement
- waste management and closed-loop recycling
- raw material oriented production systems
- environmental management (EMAS, ISO 14001, Ecoprofit), eco-controlling

Workload
Total effort required will account for approximately 105h (3.5 credits).

Literature
will be announced in the course

T Course: Production Technology and Management in Automotive Industry [T-MACH-102189]

Responsibility: Volker Michael Stauch
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149001	Production Technology and Management in Automotive	Vorlesung / Übung (VÜ)	2	Volker Michael Stauch

Die folgenden Informationen stammen aus der Veranstaltung Production Technology and Management in Automotive (WS 16/17):

The students ...

- are capable to specify the current challenges in automotive industry and to explain approaches to solve them.
- are able to classify the main parts of an automotive plant and its key elements (production facilities).
- are qualified to identify interlinkages between development processes and production systems (such as lean production).
- have the ability to classify modern concepts of logistics and tasks in management and design of value added networks.
- are enabled to explain the importance of an integrated quality management in product development and production as well as related methods.
- are able to characterize methodical approaches of analytical assessment and optimization of production planning tasks.

Content
The lecture deals with the technical and organizational aspects of automotive production. The course starts with an introduction to the automotive industry, current trends in vehicle technology and integrated product development. A selection of manufacturing processes are subjects of the second lecture block. Experiences of the applications of the Mercedes Production System in production, logistics and maintenance are the subject of the third event. During the last block approaches to quality management, global networks and current analytical planning methods in research are discussed. The course is strongly oriented towards the practice and is provided with many current examples. Mr. Stauch was Head of Powertrain Production Mercedes Benz Cars and plant manager Untertürkheim until 2010.
The following topics will be covered:

- Introduction to Automotive Industry and Technology
- Basics of Product Development
- Selected Automotive Manufacturing Technologies
- Automotive Production Systems
- Logistics
- Quality Assurance
- Global Networks
- Analytical Approaches of Production Planning

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Lecture Slides

T Course: Project in Applied Remote Sensing [T-BGU-101814]

Responsibility: Stefan Hinz
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
1	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	6020267	Projektübung angewandte Fernerkundung	Übung (Ü)	2	Assistenten, Stefan Hinz

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-BGU-101638] *Procedures of Remote Sensing, Prerequisite* is required before taking this course.

T Course: Project Management [T-BGU-101675]

Responsibility: Shervin Haghsheno
Contained in: [M-BGU-101004] Fundamentals of construction

ECTS	Version
3	1

Conditions
none

T Course: Projectseminar [T-GEISTSOZ-101958]

Responsibility: Gerd Nollmann
Contained in: [M-GEISTSOZ-101167] Sociology/Empirical Social Research

ECTS	Version
4	1

Conditions
None.

T Course: Public Law I - Basic Principles [T-INFO-101963]

Responsibility: Matthias Bäcker
Contained in: [M-INFO-101192] Constitutional and Administrative Law

ECTS	SWS	Version
3	4	1

T Course: Public Law II [T-INFO-102042]

Responsibility: Matthias Bäcker
Contained in: [M-INFO-101192] Constitutional and Administrative Law

ECTS	Version
3	1

T Course: Public Media Law [T-INFO-101311]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101217] Public Business Law

ECTS	Version
3	1

T Course: Public Revenues [T-WIWI-102739]

Responsibility: Berthold Wigger
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101668] Economic Policy I
[M-WIWI-101403] Public Finance

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2560120	Public Revenues	Vorlesung (V)	2	Berthold Wigger

Learning Control / Examinations
The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Conditions
None

Recommendations
Basic knowledge of Public Finance is required.

Die folgenden Informationen stammen aus der Veranstaltung Public Revenues (SS 2016):

See German version.

Content
The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

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

Literature
Elective literature:

- Homburg, S.(2000): *Allgemeine Steuerlehre,* Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4th ed., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I* and *Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2nd ed., Springer

T Course: Quality Management [T-MACH-102107]

Responsibility: Gisela Lanza
Contained in: [M-WIWI-101404] Extracurricular Module in Engineering
[M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149667	Quality Management	Vorlesung (V)	2	Gisela Lanza

Die folgenden Informationen stammen aus der Veranstaltung Quality Management (WS 16/17):

The students ...

- are capable to comment on the content covered by the lecture.
- are capable of substantially quality philosophies.
- are able to apply the QM tools and methods they have learned about in the lecture to new problems from the context of the lecture.
- are able to analyze and evaluate the suitability of the methods, procedures and techniques they have learned about in the lecture for a specic problem.

Content
Based on the quality philosophies Total Quality Management (TQM) and Six Sigma, the lecture deals with the requirements of modern quality management. Within this context, the process concept of a modern enterprise and the process-specic elds of application of quality assurance methods are presented. The lecture covers the current state of the art in preventive and non-preventive quality management methods in addition to manufacturing metrology, statistical methods and service-related quality management. The content is completed with the presentation of certication possibilities and legal quality aspects.
Main topics of the lecture:

- The term "quality"
- Total Quality Management (TQM) and Six Sigma
- Universal methods and tools
- QM during early product stages – product denition
- QM during product development and in procurement
- QM in production – manufacturing metrology
- QM in production – statistical methods
- QM in service
- Quality management systems
- Legal aspects of QM

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Lecture Notes

T Course: Real Estate Management I [T-WIWI-102744]

Responsibility: Thomas Lützkendorf
Contained in: [M-WIWI-101466] Real Estate Management

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2586401	Übungen zu Real Estate Management I	Übung (Ü)	2	Peter Michl
WS 16/17	2586400	Real Estate Management I	Vorlesung (V)	2	Peter Michl, Thomas Lützkendorf

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Conditions
None

Remarks
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

Die folgenden Informationen stammen aus der Veranstaltung Real Estate Management I (WS 16/17):

The student

- has a basic understanding of the specific characteristics of real estate and real estate markets
- is able to transfer and apply in-depth knowledge in the field of business administration to construction and real estate
- is able to analyze, evaluate or to meet decisions in the life cycle of real estate

Content
The course Real Estate Management I deals with questions concerning the economy of a single building througout its lifecycle. Among other topics this includes project development, location and market studies, german federal building codes as well as finance and assessment of economic efficiency.
The tutorial recesses the contents of the course by means of practical examples and, in addition to that, goes into the possible use of software tools.

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

Literature
Elective literature:

- Gondring (Hrsg.): "Immobilienwirtschaft: Handbuch für Studium und Praxis". ISBN 3-8006-2989-5. Vahlen 2004
- Kühne-Büning (Hrsg.): "Grundlagen der Wohnungs- und Immobilienwirtschaft". ISBN 3-8314-0706-1. Knapp & Hammonia-Verlag 2005
- Schulte (Hrsg.): "Immobilienökonomie Bd. I". ISBN 3-486-25430-8. Oldenbourg 2000

T Course: Real Estate Management II [T-WIWI-102745]

Responsibility: Thomas Lützkendorf
Contained in: [M-WIWI-101466] Real Estate Management

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2585400	Real Estate Management II	Vorlesung (V)	2	Peter Michl, Thomas Lützkendorf
SS 2016	2585401	Übung zu Real Estate Management II	Übung (Ü)	2	Peter Michl

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Reexaminations are offered at every ordinary examination date.

Conditions
None

Recommendations
A combination with the module *Design Construction and Assessment of Green Buildings I* is recommended.
Furthermore it is recommeded to choose courses of the following fields

- Finance and Banking
- Insurance
- Civil Engineering and Architecture (building physics, structural design, facility management)

Remarks
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

Die folgenden Informationen stammen aus der Veranstaltung Real Estate Management II (SS 2016):

The student

- has an in-depth knowledge on the economic classification and significance of the real estate industry
- has a critical understanding of essential theories, methods and instruments of the real estate industry
- is able to analyze and evaluate activity areas and functions in real estate companies as well as to prepare or to take decisions

Content
The course Real Estate Management II gives special attention to topics in connection to the management of large real estate portfolios. This especially includes property valuation, market and object rating, maintenance and modernization, as well as real estate portfolio and risk management. The tutorial provides examples in order to practice the application of theoretical knowledge to practical problems.

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

Literature
Elective literature:
See german version.

T Course: Remote Sensing, exam [T-BGU-101636]

Responsibility: Stefan Hinz
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
4	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	6020241	Fernerkundungssysteme	Vorlesung (V)	1	Stefan Hinz
SS 2016	6020265	Fernerkundungsverfahren	Vorlesung (V)	2	Uwe Weidner
SS 2016	6020242	Übungen zu Fernerkundungssysteme	Übung (Ü)	1	Uwe Weidner
SS 2016	6020266	Übungen zu Fernerkundungsverfahren	Übung (Ü)	1	Uwe Weidner

Modeled Conditions
The following conditions must be met:

1. Successful completion of course [T-BGU-101637] *Systems of Remote Sensing, Prerequisite* is required before taking this course.
2. Successful completion of course [T-BGU-101638] *Procedures of Remote Sensing, Prerequisite* is required before taking this course.

Recommendations
None

T Course: Renewable Energy-Resources, Technologies and Economics [T-WIWI-100806]

Responsibility: Russell McKenna
Contained in: [M-WIWI-101464] Energy Economics

ECTS	Language	Version
3,5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2581012	Renewable Energy – Resources, Technologies and Economics	Vorlesung (V)	2	Russell McKenna

Learning Control / Examinations
The assessment consists of a written exam according to Section 4(2), 1 of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Renewable Energy – Resources, Technologies and Economics (WS 16/17):

The student:

- understands the motivation and the global context of renewable energy resources.
- gains detailed knowledge about the different renewable resources and technologies as well as their potentials.
- understands the systemic context and interactions resulting from the increased share of renewable power generation.
- understands the important economic aspects of renewable energies, including electricity generation costs, political promotion and marketing of renewable electricity.
- is able to characterize and where required calculate these technologies.

Content
1. General introduction: Motivation, Global situation
2. Basics of renewable energies: Energy balance of the earth, potential definition
3. Hydro
4. Wind
5. Solar
6. Biomass
7. Geothermal
8. Other renewable energies
9. Promotion of renewable energies
10. Interactions in systemic context
11. Excursion to the "Energieberg" in Mühlburg

Workload
The total workload for this course is approximately 105.0 hours. For further information see German version.

Literature
Elective literature:

- Kaltschmitt, M., 2006, Erneuerbare Energien : Systemtechnik, Wirtschaftlichkeit, Umweltaspekte, aktualisierte, korrigierte und ergänzte Auflage Berlin, Heidelberg : Springer-Verlag Berlin Heidelberg.
- Kaltschmitt, M., Streicher, W., Wiese, A. (eds.), 2007, Renewable Energy: Technology, Economics and Environment, Springer, Heidelberg.
- Quaschning, V., 2010, Erneuerbare Energien und Klimaschutz : Hintergründe - Techniken - Anlagenplanung – Wirtschaftlichkeit München : Hanser, III.2., aktualis. Aufl.
- Harvey, D., 2010, Energy and the New Reality 2: Carbon-Free Energy Supply, Eathscan, London/Washington.
- Boyle, G. (ed.), 2004, Renewable Energy: Power for a Sustainable Future, 2nd Edition, Open University Press, Oxford.

T Course: Requirements Analysis and Requirements Management [T-WIWI-102759]

Responsibility: Ralf Kneuper
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511218	Requirements Analysis and Requirements Management	Vorlesung (V)	2	Ralf Kneuper

Learning Control / Examinations
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Requirements Analysis and Requirements Management (WS 16/17):

The students have a full understanding of the foundations of the analysis and management of requirements as part of the development process of software and systems. They know the main terminology and approaches of this topic, and are able to express requirements themselves using different description methods.

Content
The analysis and management of requirements is a central task in the development of software and systems, addressing the border between the application discipline and computer science. The adequate performance of this task has a decisive influence on the whether or not a development project will be successful. The lecture provides an introduction to this topic, using the syllabus for the "Certified Professional for Requirements Engineering" (CPRE) as a guideline.
Lecture structure:
1. Introduction and overview, motivation
2. Identifying requirements
3. Documenting requirements (in natural language or using a modelling language such as UML)
4. Verification and validation of requirements
5. Management of requirements
6. Tool support

Workload
Workload: 120h overall,
Lecture 30h
Review and preparation of lectures 60h
Exam preparation 29h
Exam 1h

Literature
Literature will be given in the lecture.

T Course: Selected Applications of Technical Logistics [T-MACH-102160]

Responsibility: Vladimir Madzharov, Martin Mittwollen
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2118087	Selected Applications of Technical Logistics	Vorlesung (V)	3	Martin Mittwollen

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Selected Applications of Technical Logistics (SS 2016):

Students are able to:

- Model the dynamic behaviour of material handling systems and based on this calculate the dynamical behaviour and
- Transfer this approach autonomous to further, different material handling installations and
- Discuss the knowledge with subject related persons.

Content
design and dimension of machines from intralogistics // static and dynamic behaviour // operation properties and specifics // visit of real intralogistic system
Inside practical lectures: sample applications and calculations in addition to the lectures

Workload
presence: 31,5h
rework: 148,5h

Literature
Recommendations during lessons

T Course: Selected Applications of Technical Logistics and Project [T-MACH-102161]

Responsibility: Vladimir Madzharov, Martin Mittwollen
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
6	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2118088	Selected Applications of Technical Logistics and Project	Seminar (S)	4	Martin Mittwollen

Die folgenden Informationen stammen aus der Veranstaltung Selected Applications of Technical Logistics and Project (SS 2016):

Students are able to:

- Model the dynamic behaviour of material handling systems and based on this calculate the dynamical behaviour and
- Transfer this approach autonomous to further, different material handling installations,
- Discuss the knowledge with subject related persons and
- Judge about systems in place and justify it in front of subject related persons.

Content
design and dimension of machines from intralogistics // static and dynamic behaviour // operation properties and specifics // visit of real intralogistic system // self manufactured project report
Inside practical lectures: sample applications and calculations in addition to the lectures
Self manufacturing of a project report to recesses the topic.

Workload
presence: 42h
rework: 198h

Literature
Recommendations during lessons

T Course: Selected Topics on Optics and Microoptics for Mechanical Engineers [T-MACH-102165]

Responsibility: Timo Mappes
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2143892	Selected Topics on Optics and Microoptics for Mechanical Engineers	Block-Vorlesung (BV)	2	Timo Mappes

Die folgenden Informationen stammen aus der Veranstaltung Selected Topics on Optics and Microoptics for Mechanical Engineers (SS 2016):

Die Vorlesung "Ausgewählte Kapitel der Optik und Mikrooptik für Maschinenbauer" verfolgt folgende Lernziele:
(a) Die Studierenden können den Aufbau eines optischen Instruments beschreiben und erklären.
(b) Die Studierenden können Fertigungsverfahren (mikro)optischer Bauteile gegeneinander abwägen und bewerten sowie Ansätze zu neuen Fertigungsprozessen entwickeln.
(c) Die Studierenden können die Ursachen von Aberrationen beschreiben und unterschiedliche optische Effekte in die technische Nutzung übertragen.
(d) Die Studierenden können Kontrastverfahren zur optimalen Sichtbarmachung mikroskopischer Strukturen im Auf- und Durchlicht problemorientiert auswählen.
(e) Die Studierenden wenden das Wissen um den Aufbau und die Fertigungsverfahren eines optischen Instruments im Design eines Instruments mit ungewöhnlichen Anforderungen konkret an und skizzieren die Vor- und Nachteile der entwickelten Konstruktionsansätze.
(f) Die Studierenden können die erlernten Techniken (Auslegung eines optischen Strahlengangs, Funktionsweisen einfacher mikroskopischer Kontrastverfahren und zudem des Projektmanagements) in einem der Aufgabe entsprechenden Format präsentieren.

Content
In dieser Veranstaltung wird in die Grundlagen der Optik eingeführt. Vor dem Hintergrund der technischen Nutzung optischer Effekte und Messverfahren werden an ausgewählten Beispielen Bauelemente der Optik diskutiert. Dazu wird die Anwendung optischer Zusammenhänge und Effekte in optischen Instrumenten und Apparaten erörtert. Die Fertigungsverfahren für makroskopische und mikroskopische Optiken werden mit den technischen Randbedingungen erläutert. Die Studierenden erhalten die Möglichkeit in einer die Vorlesung begleitenden Gruppenarbeit ein optisches Instrument als Konzept zu entwerfen und können damit das Erlernte vertiefen sowie die Ergebnisse gemeinsam diskutieren.

Workload
Präsenzzeit: 26 Stunden
Selbststudium: 94 Stunden

Literature
(a) Hecht Eugene: Optik; 5., überarb. Aufl.; Oldenbourg Verlag, München und Wien, 2009
(b) Folien der Vorlesung als *.pdf

T Course: Semantic Web Technologies [T-WIWI-102874]

Responsibility: Rudi Studer, Andreas Harth
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511311	Exercises to Semantic Web Technologies	Übung (Ü)	1	Rudi Studer, Maribel Acosta Deibe, Andreas Harth, York Sure-Vetter
SS 2016	2511310	Semantic Web Technologies	Vorlesung (V)	2	Rudi Studer, Andreas Harth, York Sure-Vetter

Learning Control / Examinations
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.

Conditions
None

Recommendations
Lectures on Informatics of the Bachelor on Information Management (Semester 1-4) or equivalent are required.

Die folgenden Informationen stammen aus der Veranstaltung Semantic Web Technologies (SS 2016):

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

Content
The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

Additional Literature

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. http://www.w3.org/TR/webarch/
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

T Course: Seminar in Business Administration (Bachelor) [T-WIWI-103486]

Responsibility: Martin Klarmann, Marliese Uhrig-Homburg, Christof Weinhardt, Andreas Geyer-Schulz, Ju-Young Kim, Hagen Lindstädt, Thomas Lützkendorf, Stefan Nickel, Marcus Wouters, Petra Nieken, Wolf Fichtner, Hansjörg Fromm, Ute Werner, David Lorenz, Gerhard Satzger, Frank Schultmann, Bruno Neibecker, Orestis Terzidis, Marion Weissenberger-Eibl, Martin Ruckes

Contained in: [M-WIWI-101816] Seminar Module

ECTS	Language	Version
3	englisch/deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2579904	Seminar Management Accounting	Seminar (S)	2	Frank Stadtherr, Michael Pelz
SS 2016	2571180	Seminar in Marketing und Vertrieb (Bachelor)	Seminar (S)	2	Martin Klarmann
SS 2016	2579905	Special Topics in Management Accounting	Seminar (S)	2	Ana Mickovic
WS 16/17	2572197	Seminar in strategic and behavioral marketing	Seminar (S)		Bruno Neibecker
SS 2016	2540524	Bachelor Seminar aus CRM (nur Bachelor)	Seminar (S)	2	Victoria-Anne Schweigert, Andreas Geyer-Schulz, Fabian Ball, Andreas Sonnenbichler

Learning Control / Examinations
The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Conditions
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Remarks
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.

Die folgenden Informationen stammen aus der Veranstaltung Seminar Management Accounting (SS 2016):

Students
- are largely independently able to identify a distinct topic in Management Accounting,
- are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Content
The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. You are to a large extent free to select your own topic. The seminar course is concentrated in four meetings that are spread throughout the semester.
Meeting 1: Introductory lecture. You need to conduct a first literature search and at the end of the first week you should identify (provisionally) the topic for your paper.
Meeting 2 and 3: The purpose of the second week is to define the topics and research questions in much more detail. Different types of papers may be selected: literature review, research paper, descriptive case study, or teaching case. Students will present

their ideas and all participants should ask questions, help each other focus, offer ideas, etc.
Meeting 4: In the third week we are going to present and discuss the final papers.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Will be announced in the course.

Die folgenden Informationen stammen aus der Veranstaltung Special Topics in Management Accounting (SS 2016):

Students
- are largely independently able to identify a distinct topic in Management Accounting,
- are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources.

Content
The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscibed. The seminar course is concentrated in four meetings that are spread throughout the semester.
Meeting 1: Introductory lecture. You need to conduct a first literature search and at the end of the first week you should identify (provisionally) the topic for your paper.
Meeting 2 and 3: The purpose of the second week is to define the topics and research questions in much more detail. Different types of papers may be selected: literature review, research paper, descriptive case study, or teaching case. Students will present their ideas and all participants should ask questions, help each other focus, offer ideas, etc.
Meeting 4: In the third week we are going to present and discuss the final papers.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Will be announced in the course.

Die folgenden Informationen stammen aus der Veranstaltung Seminar in strategic and behavioral marketing (WS 16/17):

Students

- do literature search based on a given topic, identify relevant literature and evaluate this literature,
- give presentations in a scientific context in front of an auditorium to present the results oft he research,
- present results of the research in a seminar thesis as a scientific publication using format requirements such as those recommended by well-known publishers.

Content
In the seminar the student should learn to apply the research methods to a predefined topic area. The topics are based on research questions in marketing. This problem analysis requires a interdisciplinary examination. As a special option, the implementation of methodological solutions for market research can be accomplished and discussed with respect to its application.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Will be allocated according the individual topics.

T Course: Seminar in Economics (Bachelor) [T-WIWI-103487]

Responsibility: Kay Mitusch, Ingrid Ott, Jan Kowalski, Marten Hillebrand, Clemens Puppe, Johannes Philipp Reiß, Berthold Wigger
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Version
3	1

Learning Control / Examinations
The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Conditions
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Remarks
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.

T Course: Seminar in Engineering Science (Bachelor) [T-WIWI-102755]

Responsibility: Fachvertreter ingenieurwissenschaftlicher Fakultäten
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Version
3	1

Learning Control / Examinations
See German version.

Conditions
See module description.

Recommendations
None

T Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis, York Sure-Vetter, Johann Marius Zöllner
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Language	Version
3	deutsch/englisch/deutsch/englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2513306	Event Processing: Processing of Real-Time Data and their Business Potential	Seminar / Praktikum (S/P)	2	Ljiljana Stojanovic, Rudi Studer, Suad Sejdovic, Dominik Riemer, York Sure-Vetter
WS 16/17	2513305	Developing IT-based Business Models	Seminar (S)	2	Rudi Studer, Maria Maleshkova, York Sure-Vetter, Felix Leif Keppmann
SS 2016	2595470	Seminar Service Science, Management & Engineering	Seminar (S)	2	Christof Weinhardt, Rudi Studer, Stefan Nickel, Wolf Fichtner, York Sure-Vetter, Gerhard Satzger
SS 2016	2512300	Knowledge Discovery and Data Mining	Seminar / Praktikum (S/P)	3	Aditya Mogadala, Achim Rettinger, Rudi Studer, York Sure-Vetter, Andreas Thalhammer
SS 2016	2513208	Seminar Betriebliche Informationssysteme: Mobile Hacking (Bachelor)	Seminar (S)	2	Stefan Hellfeld, Sascha Alpers, Andreas Oberweis
WS 16/17	2512307	Applications of Semantic MediaWiki	Seminar / Praktikum (S/P)	3	Tobias Weller, Matthias Frank, Achim Rettinger, Rudi Studer, Maria Maleshkova, York Sure-Vetter
SS 2016	2513103	Energieinformatiksysteme weltweit	Seminar (S)	2	Hartmut Schmeck, Marlon Braun, Fabian Rigoll
WS 16/17	2513200	Seminar Betriebliche Informationssysteme: Programmieren 3 (Bachelor)	Seminar (S)	2	Jonas Lehner, Andreas Oberweis, Timm Caporale
WS 16/17	2513104	Multiagentensysteme: Theorie und Anwendung	Seminar (S)	2	Hartmut Schmeck, Christian Hirsch, Marlon Braun, Fabian Rigoll
WS 16/17	2595470	Seminar Service Science, Management & Engineering	Seminar (S)	2	Christof Weinhardt, Rudi Studer, Stefan Nickel, Wolf Fichtner, Hansjörg Fromm
SS 2016	2513300	Technology-enhanced Learning	Seminar (S)	2	Daniel Szentes, Martin Mandausch, Matthias Frank, Wolfgang Roller, Rudi Studer, Jürgen Beyerer, Klemens Böhm, Carmen Wolf, Gerd Gidion, York Sure-Vetter, Alexander Streicher

SS 2016	2513307	Cognitive Computing in the Medical Domain	Seminar (S)	2	Patrick Philipp, Steffen Thoma, Rudi Studer, York Sure-Vetter
WS 16/17	2512301	Linked Open Data basierte Web 3.0 Anwendungen und Services	Seminar / Praktikum (S/P)	3	Tobias Christof Käfer, Rudi Studer, Maribel Acosta Deibe, Andreas Harth, York Sure-Vetter

Learning Control / Examinations
The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Conditions
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Remarks
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.

Die folgenden Informationen stammen aus der Veranstaltung Event Processing: Processing of Real-Time Data and their Business Potential (SS 2016):

Content
Topics of interest include, but are not limited to:

- Prediction of lucrative areas / routes
- Real-time visualization of event streams
- Fraud Detection
- Sales forecast

Gladly, data with other data (e.g.weather or event data for NYC) can be linked.

Die folgenden Informationen stammen aus der Veranstaltung Developing IT-based Business Models (WS 16/17):

Content
Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

Die folgenden Informationen stammen aus der Veranstaltung Seminar Service Science, Management & Engineering (WS 16/17):

The student

- illustrates and evaluates classic and current research questions in service science, management and engineering,
- applies models and techniques in service science, also with regard to their applicability in practical cases,
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Content
Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.
See the KSRI website for more information about this seminar: www.ksri.kit.edu

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

Literature
The student will receive the necessary literature for his research topic.

Die folgenden Informationen stammen aus der Veranstaltung Knowledge Discovery and Data Mining (SS 2016):

Content
Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

Literature
Detailed references are indicated together with the respective subjects. For general background information look up the following textbooks:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

Die folgenden Informationen stammen aus der Veranstaltung Applications of Semantic MediaWiki (WS 16/17):

Content
Topics of interest include, but are not limited to:

- Analysis of Medical Processes
- Correlation analysis of medical data
- Visualization of data in SMW
- Sentiment analysis of Twitter data
- Upload Interface for SMW
- Process Matching of process data

Die folgenden Informationen stammen aus der Veranstaltung Cognitive Computing in the Medical Domain (SS 2016):

The purpose of this seminar is to collect and analyses popular medical datasets, to compare an contrast existing medical systems, to explore approaches for supporting patient diagnosis and to determine the potential of adopting already exciting solutions and algorithms to the medical domain.

Content
Topics of interest include, but are not limited to:

- Decision Support Systems
- Clinical Pathway Analysis
- AI Systems in the Medical Domain
- Ontology Analysis

Literature
Relevant Literatur will be announced during the Seminar.

Die folgenden Informationen stammen aus der Veranstaltung Linked Open Data basierte Web 3.0 Anwendungen und Services (WS 16/17):

Workload
Topicsof interest include, but are not limited to:

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

T Course: Seminar in Mathematics (Bachelor) [T-MATH-102265]

Responsibility: Günter Last, Martin Folkers
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Version
3	1

T Course: Seminar in Operations Research (Bachelor) [T-WIWI-103488]

Responsibility: Oliver Stein, Karl-Heinz Waldmann, Stefan Nickel
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Version
3	1

Learning Control / Examinations
The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Conditions
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Remarks
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.

T Course: Seminar in Statistics (Bachelor) [T-WIWI-103489]

Responsibility: Wolf-Dieter Heller, Melanie Schienle, Oliver Grothe
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Version
3	1

Learning Control / Examinations
The non exam assessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

Conditions
None.

Recommendations
See seminar description in the course catalogue of the KIT (https://campus.kit.edu/)

Remarks
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.

T Course: Seminar: Legal Studies I [T-INFO-101997]

Responsibility: Thomas Dreier
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2400054	Datenschutz durch Technik	Seminar (S)		Oliver Raabe
SS 2016	2400079	Seminar Digitale Transformation des Bürgerlichen Gesetzbuchs	Seminar (S)	2	Benjamin Raue, Michael Bartsch
SS 2016	2400041	Governance, Risk & Compliance	Seminar (S)	2	Hans-Rudolf Röhm
SS 2016	24820	Current Issues in Patent Law	Seminar (S)	2	Klaus-Jürgen Melullis
SS 2016	2400087	Aktuelle Probleme des Geistigen Eigentums und des Internetrechts	Seminar (S)	2	Benjamin Raue
SS 2016	2400088	Seminar "Sicherer Datenaustausch in Drittstaaten nach dem Schrems-Urteil - Rolle der Datenschutzbehörden und zukünftige Regelung des Datenaustausches"	Seminar (S)	2	Franziska Boehm

Die folgenden Informationen stammen aus der Veranstaltung Governance, Risk & Compliance (SS 2016):

Der/die Studierende hat vertiefte Kenntnisse hinsichtlich der Thematik "Governance, Risk & Compliance"sowohl auf regulatorischer Ebene als auch auf betriebswirtschaftlicher Ebene. Er/sie ist in der Lage, eine konkrete Fragestellung schriftlich in Form einer Seminararbeit auszuarbeiten sowie anschließend im mündlichen Vortrag zu präsentieren.

Content
Das Seminar beinhaltet neben der Einordnung der Thematik in den rechtlichen wie betriebswirtschaftlichen Kontext die Begrifflichkeiten, gesetzlichen Grundlagen und Haftungsaspekte. Darüber hinaus werden sowohl das Risikomanagementsystem als auch das Compliance-Management-System näher erläutert sowie die Relevanz dieser Systeme für das Unternehmen dargestellt. Den Abschluss bildet ein Blick in die Praxis hinsichtlich der Aufdeckung und dem adäquaten Umgang mit Verstößen. Die Themen werden zudem durch die Ausarbeitung einer konkreten Fragestellung in Form von Seminararbeiten sowie der anschließenden Präsentation abgerundet.

Workload
21 h Präsenzzeit, 60 h schriftliche Ausarbeitung, 9h Vortrag vorbereiten.

Die folgenden Informationen stammen aus der Veranstaltung Current Issues in Patent Law (SS 2016):

Ziel der Veranstaltung ist es, Studenten aller Fachrichtungen an das Patentrecht heranzuführen, und ihnen vertiefte Kenntnisse des Patentrechts zu vermitteln. Sie sollen die rechtspolitischen Anliegen und die wirtschaftlichen Hintergründe dieses Rechts anhand der Interessenlage typischer Fallgestaltungen erarbeiten und über einen Vergleich mit den gesetzlichen Regelungen Einblick in die gesetzlichen Regelungen gewinnen, die ihnen in ihrer späteren beruflichen Tätigkeit als Naturwissenschaftler oder Techniker ebenso wie als juristischer Berater umfangreich begegnen können. Dabei sollen sie an die Regelungen des nationalen, europäischen und internationalen Patentrechts, wie auch des Know-How-Schutzes herangeführt werden. Auch der Konflikt zwischen Patent als einem Monopolrecht und den Anforderungen einer freien Marktwirtschaft sowie deren Schutz durch das Kartellrecht wird mit den Studenten erörtert werden.

Workload
Der gesamte Arbeitsaufwand beträgt ca. 75-100 h, davon sind 22,5 h Präsenzzeit.

T Course: Service Oriented Computing [T-WIWI-105801]

Responsibility: Barry Norton, Sudhir Agarwal, Rudi Studer
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch/englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511308	Service Oriented Computing	Vorlesung (V)	2	Rudi Studer, Maria Maleshkova
SS 2016	2511309	Exercises to Service Oriented Computing	Übung (Ü)	1	Rudi Studer, Maria Maleshkova, Felix Leif Keppmann

Learning Control / Examinations
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.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Service Oriented Computing (SS 2016):

Students will extend their knowledge and proficiency in the area of modern service-oriented technologies. Thereby, they acquire the capability to understand, apply and assess concepts and methods that are of innovative and scientific nature.

Content
Building upon basic Web service technologies the lecture introduces selected topics fromadvanced service computing and service engineering. In particular, focus will be placed on new Web-based architectures and applications leveraging Web 2.0, Cloud Computing, Semantic Web and other emerging technologies.

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature
Literature will be announced in the lecture.

T Course: Services Marketing and B2B Marketing [T-WIWI-102806]

Responsibility: Martin Klarmann, Ju-Young Kim
Contained in: [M-WIWI-101424] Foundations of Marketing

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2572158	Services Marketing and B2B Marketing	Vorlesung (V)	2	Martin Klarmann, Ju-Young Kim

Learning Control / Examinations
The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Conditions
None

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

Die folgenden Informationen stammen aus der Veranstaltung Services Marketing and B2B Marketing (WS 16/17):

See German version.

Content
The aim of this course is to prepare students for two certain marketing perspectives. The service marketing is concentrated on the particularities coming up when a company sells services instead of products. Subjects in this section are for example:

- Measuring service quality
- Pricing services
- Management of service staff

The second part of the course contains a business-to-business marketing perspective. Topics are below others:

- Management of buying centers
- Competitive Bidding
- B2B-Branding

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Homburg, Christian (2012), Marketingmanagement, 4. Aufl., Wiesbaden.

T Course: Simulation I [T-WIWI-102627]

Responsibility: Karl-Heinz Waldmann
Contained in: [M-WIWI-101413] Applications of Operations Research
[M-WIWI-101400] Stochastic Methods and Simulation
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2550663	Übung zu Simulation I	Übung (Ü)		Karl-Heinz Waldmann
SS 2016	2550662	Simulation I	Vorlesung (V)		Ellen Platt, Karl-Heinz Waldmann, André Lust
SS 2016	2550664	Rechnerübung zu Simulation I	Übung (Ü)		Karl-Heinz Waldmann

Learning Control / Examinations
The assessment consists of an 1h written exam following Section 4(2), 1 of the examination regulations. Credit from the voluntary computer lab is accounted for in the overall grade raising the exam grade by a 2/3 step of a full grade (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

Conditions
None

Recommendations
None

Remarks
The course will be offered in the summer term 2015 and the summer term 2016.

Die folgenden Informationen stammen aus der Veranstaltung Simulation I (SS 2016):

The participants will be enabled to model discrete event systems that underlie stochastic influences and to analyze them using simulation. The discussion of practice-oriented case studies pursues two goals. On the one hand, the participants will be sensitized for different criteria to evaluate the performance of a stochastic discrete-event system. On the other hand, an overview of application areas of stochastic simulation is provided. In the context of the course, the basic elements of discrete-event simulation are introduced and a procedure model for the execution of simulation studies is developed. Properties of existing mathematical methods for the generation of random variables are discussed and are assigned to concrete application cases. Statistical methods for the description of simulation input data and for the interpretation of simulation results will be exemplified. The facultative computer exercise course using a simulation software comprises a practice-oriented case study that illustrates the opportunities and limitations of stochastic simulation.

Content
Generation of random numbers, Monte Carlo Integration, discrete event simulation, discrete random variables, continuous random variables, statistical analysis of simulated data.

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

Literature

- Lecture Notes
- K.-H. Waldmann/U. M. Stocker: Stochastische Modelle - Eine anwendungsorientierte Einführung, Springer (2012), 2. Auflage
- Elective literature: A. M. Law/W.D. Kelton: Simulation Modeling and Analysis (3rd ed), McGraw Hill (2000)

T Course: Simulation II [T-WIWI-102703]

Responsibility: Karl-Heinz Waldmann
Contained in: [M-WIWI-101400] Stochastic Methods and Simulation
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550665	Simulation II	Vorlesung (V)	2	Karl-Heinz Waldmann
WS 16/17	2550666	Übungen zu Simulation II	Übung (Ü)		Karl-Heinz Waldmann
WS 16/17	2550667	Rechnerübungen zu Simulation II	Übung (Ü)		Karl-Heinz Waldmann

Learning Control / Examinations
The assessment consists of an 1h written exam following Section 4(2), 1 of the examination regulations. Credit from the voluntary computer lab is accounted for in the overall grade raising the exam grade by a 2/3 step of a full grade (§4 (2), 3 SPO 2007 respectively §4 (3) SPO 2015).

Conditions
None

Recommendations
Foundations in the field of *Simulation I* [2550662] are desired.

Remarks
The course will be offered in the winter term 2015/2016.

T Course: Smart Energy Distribution [T-WIWI-102845]

Responsibility: Hartmut Schmeck
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
4	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511108	Smart Energy Distribution	Vorlesung (V)	2	Hartmut Schmeck

Learning Control / Examinations
The examination will be offered latest until winter term 2016/2017 (repeaters only).
written exam, unless the number of registered students is too small

Conditions
None

Recommendations
The students should have an understanding of informatics, they would benefit from some previous knowledge of self-organisation and methods for optimisation, but this is not mandatory

Remarks
This course is offered to students of the (KIC) MSc program EnTech but may also be taken by students of the Master programs Industrial Engineering, Economics Engineering, Information Engineering and Management, and Mathematics in Economics.

Die folgenden Informationen stammen aus der Veranstaltung Smart Energy Distribution (SS 2016):

The students will develop an understanding of the basic problems that arise from decentralisation and an increased share of renewables in the power mix and they will know how to deal with these problems by using concepts like virtualisation and self-organisation. They will know how to design and apply adequate methods for smart energy distribution in various related problem settings and they will be capable to explain the appropriate use of these methods. The students will get to know the scope of topics in energy informatics.

Content
The course addresses the role of information and communication technologies for the distribution of energy. The increasing share of power generation from renewable sources and the decentralisation of power generation lead to an increasing need for local balancing of power supply and demand. While traditional power management was based on the assumption that power consumption is not controllable and that electric power cannot be stored effectively, future power management will depend significantly on much more flexibility in demand and in innovative ways of storing energy.
The course will present concepts for smart energy management that have been developed in projects on "e-energy" and electric mobility, like virtual power plants, local agent-based power management, concepts of load shifting, autonomic and organic approaches to power management in smart homes, utilization of mobile and stationary batteries for stabilization of the power grid.
The concepts presented in this course are essential for the new disciplin of energy informatics.

Workload
The workload is about 120 hours (4 LP)

T Course: Social Structures of Modern Societies [T-GEISTSOZ-101959]

Responsibility: Gerd Nollmann
Contained in: [M-GEISTSOZ-101167] Sociology/Empirical Social Research

ECTS	Version
4	1

T Course: Software Engineering [T-WIWI-100809]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511206	Software Engineering	Vorlesung (V)	2	Andreas Oberweis

Learning Control / Examinations
The assessment consists of an 1h written exam in the first week after lecture period.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Software Engineering (SS 2016):

Students

- are familiar with the concepts and principles of software engineering and can discuss it,
- know common software development process models and their strengths and weaknesses and can discuss it,
- know methods for requirements analysis and can use it and can model and evaluate use case models,
- know models for systems structuring and controling as well as architecture principles of software systems and can discuss it.
- can model and evaluate component diagrams
- are familiar with basic concepts of software quality management and are able to apply software test and evaluation methods in concrete situations.

Content
The course deals with fundamental aspects of the systematically development of huge software systems. The course covers topics such as:

- software developing process models
- methods and tools for the development phases: requirements analysis, system specification, system design, programming and testing.

Workload
Lecture 30h
Exercise 15h

Review und Preparation of lectures 30h
Review and Preparation of exercises 15h
Exam preparation 29h
Exam 1h

Total: 120h

Literature

- H. Balzert. Lehrbuch der Software-Technik. Spektrum Verlag 2008.
- I. Sommerville. Software Engineering. Pearson Studium 2012.

Further literature is given in the course.

T Course: Software Laboratory: OR Models I [T-WIWI-102717]

Responsibility: Stefan Nickel
Contained in: [M-WIWI-101413] Applications of Operations Research

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550490	Modellieren und OR-Software: Einführung	Praktikum (P)	3	Tanya Gonser, Melanie Reuter-Oppermann, Stefan Nickel

Learning Control / Examinations
The assessment is a 120 minutes examination, including a written and a practical part (according to §4(2), 1 of the examination regulation).
The examination is held in the term of the software laboratory and the following term.

Conditions
None

Recommendations
Firm knowledge of the contents from the lecture *Introduction to Operations Research I* [2550040] of the module *Operations Research* [WW1OR].

Remarks
Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.
The lecture is offered in every winter term. The planned lectures and courses for the next three years are announced online.

Die folgenden Informationen stammen aus der Veranstaltung Modellieren und OR-Software: Einführung (WS 16/17):

The student

- evaluates the possibilities of computer usage in practical applications of Operations Research,
- is capable of classifying and utilizing the general possibilities and fields of usage of modeling and implementation software for solving OR models in practice,
- models and solves problems arising in industry applications with the aid of computer-supported optimization methods.

Content
After an introduction to general concepts of modelling tools (implementation, data handling, result interpretation, . . .), the software IBM ILOG CPLEX Optimization Studio and the corresponding modeling language OPL will be discussed which can be used to solve OR problems on a computer-aided basis.
Subsequently, a broad range of exercises will be discussed. The main goals of the exercises from literature and practical applications are to learn the process of modeling optimization problems as linear or mixed-integer programs, to efficiently utilize the presented tools for solving these optimization problems and to implement heuristic solution procedures for mixed-integer programs.

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

T Course: Software Quality Management [T-WIWI-102895]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511209	Übungen zu Software-Qualitätsmanagement	Übung (Ü)	1	Meike Ullrich, Andreas Oberweis, Timm Caporale
SS 2016	2511208	Software Quality Management	Vorlesung (V)	2	Andreas Oberweis

Learning Control / Examinations
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.

Conditions
None

Remarks
This course was formely named "Software Technology: Quality Management".

Die folgenden Informationen stammen aus der Veranstaltung Software Quality Management (SS 2016):

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.

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.

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam 1h

Total: 150h

Literature

- Helmut Balzert: Lehrbuch der Software-Technik. Spektrum-Verlag 2008
- Peter Liggesmeyer: Software-Qualität, Testen, Analysieren und Verifizieren von Software. Spektrum Akademischer Verlag 2002
- Mauro Pezzè, Michal Young: Software testen und analysieren. Oldenbourg Verlag 2009

Further literature is given in lectures.

T Course: Solving Finance Problems using Machine Learning [T-WIWI-105714]

Responsibility: Maxim Ulrich
Contained in: [M-WIWI-102753] Machine Learning for Finance and Data Science

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	792500170	Solving Finance Problems using Machine Learning	Vorlesung (V)	2	
SS 2016	2530362	Solving Finance Problems using Machine Learning	Vorlesung (V)	2	Maxim Ulrich
SS 2016	2530363	Übung zu Solving Finance Problems using Machine Learning	Übung (Ü)		Elmar Jakobs, Stephan Florig, Maxim Ulrich

Learning Control / Examinations
See description of respective module.

Conditions
See description of respective module.

Recommendations
It is recommended that students share an interest for programming.

Remarks
New course starting summer term 2016.

T Course: Special Sociology [T-GEISTSOZ-101957]

Responsibility: Gerd Nollmann
Contained in: [M-GEISTSOZ-101167] Sociology/Empirical Social Research

ECTS	Version
4	1

Conditions
None.

T Course: Special Topics in Information Engineering & Management [T-WIWI-102706]

Responsibility: Christof Weinhardt
Contained in: [M-WIWI-101434] eBusiness and Service Management

ECTS	Version
4,5	1

Learning Control / Examinations
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).

Conditions
None

Recommendations
None

Remarks
All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Engineering & Management course. The current topics of the practical seminars are available at the following homepage: www.iism.kit.edu/im/lehre
The Special Topics Information Engineering and Management is equivalent to the practical seminar, as it was only offered for the major in "Information Management and Engineering" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.
The Special Topics Information Engineering and Managementcan 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 Course: Special Topics of Applied Informatics [T-WIWI-102910]

Responsibility: Rudi Studer, Hartmut Schmeck, Andreas Oberweis
Contained in: [M-WIWI-101426] Electives in Informatic
[M-WIWI-101399] Emphasis Informatics

ECTS	Version
5	1

Learning Control / Examinations
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Conditions
None

Remarks
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 Course: Special Topics of Efficient Algorithms [T-WIWI-102657]

Responsibility: Hartmut Schmeck
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Version
5	1

Learning Control / Examinations
The assessment consists of assignments or of a bonus exam (wrt §4 (2), 3 SPO), and a written exam (60 min.) in the week after the end of the lecturing periodwrt (§4 (2), 1 SPO). The exam will be offered in every semester and can be repeated on regular examination dates.
If the mark obtained in the written exam is in between 1.3 and 4.0, a successful completion of the assignments or the bonus exam will improve the mark by one level (i.e. by 0.3 or 0.4).

Conditions
None

Remarks
This course can be particularly used for recognising the external courses with the topics in the area of algorithms, data-structures and computer infrastructures but are not associated in other courses in this subject area.

T Course: Special Topics of Enterprise Information Systems [T-WIWI-102676]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Version
5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511224	Spezialvorlesung Betriebliche Informationssysteme: Informationssicherheitsmanagement	Vorlesung (V)	2	Stefanie Betz

Learning Control / Examinations
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Conditions
None

T Course: Special Topics of Knowledge Management [T-WIWI-102671]

Responsibility: Rudi Studer
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Version
5	1

Learning Control / Examinations
Assesment is provided by a written exam of 60 minutes or an oral exam during the first few weeks after the lecturing period (acc. to §4(2), 1 or 2 SPO). The exam is offered each semester and may be repeated at the regular examination day.

Conditions
None

Remarks
see german version

T Course: Special Topics of Software- and Systemsengineering [T-WIWI-102678]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Version
5	1

Learning Control / Examinations
The assessment consists of an 1h written exam in the first week after lecture period.

Conditions
None

Remarks
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 Course: Specific Aspects in Taxation [T-WIWI-102790]

Responsibility: Armin Bader, Berthold Wigger
Contained in: [M-WIWI-101465] Topics in Finance I
[M-WIWI-101423] Topics in Finance II
[M-WIWI-101403] Public Finance

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2560129	Specific Aspects in Taxation	Vorlesung / Übung (VÜ)	3	Armin Bader, Berthold Wigger

Learning Control / Examinations
The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Conditions
None

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

Die folgenden Informationen stammen aus der Veranstaltung Specific Aspects in Taxation (WS 16/17):

See German version.

Content
The lecture "Special Aspects of Taxation" focuses on the effects of different taxes. The main emphasis is on German tax legislation. In addition to that, international aspects of taxation, in particular with respect to the European integration, will be discussed.
The lecture consists of four parts: First specific tax problems of corporate, income and consumption taxes are treated. Part two introduces the advantages and disadvantages of each of these taxes, in particular their incidence ("Who actually carries the tax burden?") and their effects within the value chain. The third part then deals with the question how the different taxes contribute to public revenues. Finally, the last part compares tax systems within and outside Europe.
As a special feature, guest lecturers will provide insight into practical aspects of taxation.

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

Literature
Elective literature:

- Andel, N. (1998): *Finanzwissenschaft*, 4th ed., Mohr Siebeck.
- Betsch, O., Groh, A.P. und Schmidt, K. (2000): *Gründungs- und Wachstumsfinanzierung innovativer Unternehmen*, Oldenbourg.
- Cloer, A. und Lavrelashvili, N. (2008): *Einführung in das Europäische Steuerrecht*, Schmidt Erich.
- Homburg, S.(2007) : *Allgemeine Steuerlehre*, 5th ed.,Vahlen.
- Kravitz, N. (Ed.) (2010) : *Internationale Aspekte der Unternehmensbesteuerung,* Journal of Business Economics, Special Issue 2/2010
- Scheffler, W. (2009) : *Besteuerung von Unternehmen I – Ertrags- Substanz- und Verkehrssteuern*, 11th ed., Müller Jur..
- Scheffler, W. (2009): *Besteuerung von Unternehmen II – Steuerbilanz*, 11th ed., Müller Jur..
- Wigger, B.U. (2006): *Grundzüge der Finanzwissenschaft*; 2nd ed., Springer.

T Course: Statistical Modeling of generalized regression models [T-WIWI-103065]

Responsibility: Wolf-Dieter Heller
Contained in: [M-WIWI-101420] Econometrics and Economics
[M-WIWI-101608] Statistics and Econometrics
[M-WIWI-101599] Statistics and Econometrics

ECTS	Version
4,5	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2521350	Statistische Modellierung von Allgemeinen Regressionsmodellen	Vorlesung (V)	2	Wolf-Dieter Heller

Learning Control / Examinations
The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Conditions
None

Recommendations
Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

T Course: Statistics I [T-WIWI-102737]

Responsibility: Melanie Schienle
Contained in: [M-WIWI-101726] Preliminary Exam
[M-WIWI-101432] Introduction to Statistics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2600013	Tutorien zu Statistik I	Übung (Ü)	2	Carlo Siebenschuh, Oliver Grothe
SS 2016	2600008	Statistics I	Vorlesung (V)	4	Oliver Grothe

Learning Control / Examinations
The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.
The exam takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Statistics I (SS 2016):

The Student understands and applies

- the basic concepts of statistical data exploration,
- the basic definitions and theorems of probability theory.

Content
A. Descriptive Statistics: univariate und bivariate analysis
B. Probability Theory: probability space, conditional and product probabilities

Workload
150 hours (5.0 Credits).

Literature
Skriptum: Kurzfassung Statistik I
Elective literature:
Bamberg, G., Baur, F. und Krapp, M.: Statistik, 15. überarb. Auflage. Oldenbourg, München 2009, ISBN 978-3486590883.
Bol, G.: Deskriptive Statistik, 6. überarb. Auflage, Oldenbourg, München 2004, ISBN 978-3486576122.
Bol, G.: Wahrscheinlichkeitstheorie, 6. überarb. Auflage, Oldenbourg, München 2007, ISBN 978-3486584356.
Mosler, K. und Schmid, F.: Beschreibende Statistik und Wirtschaftsstatistik, 4. akt. und verb. Auflage, Springer, Berlin 2009, ISBN 978-3642015564.
Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2010, ISBN 978-3642150098.
Rinne, H.: Taschenbuch der Statistik, 4. überarb. u. erw. Auflage., Harri Deutsch, Frankfurt a. M. 2008, ISBN 978-3817118274.
Schwarze, J.: Grundlagen der Statistik, Beschreibende Verfahren, 11. vollst. überarbeitete Auflage, NWB, Herne 2009, ISBN 978-3482594816.
Schwarze, J.: Grundlagen der Statistik 2: Wahrscheinlichkeitsrechnung und induktive Statistik, 9. vollst. überarb. Aufl., NWB, Herne 2009, ISBN 978-3482568695.
Taleb: The Black Swan: The Impact of the Highly Improbable, Penguin 2008.

T Course: Statistics II [T-WIWI-102738]

Responsibility: Melanie Schienle
Contained in: [M-WIWI-101432] Introduction to Statistics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2610020	Statistics II	Vorlesung (V)	4	Oliver Grothe

Learning Control / Examinations
The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.
The exam takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

Conditions
None

Recommendations
It ist recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2610020].

Die folgenden Informationen stammen aus der Veranstaltung Statistics II (WS 16/17):

The student

- understands and applies the basic definitions and theorems of probability theory,
- transfers these theoretical foundations to problems in parametrical mathematical statistics.

Content
B. Probability Theory:

- transformation of probabilities,
- parameters of location and dispersion,
- most importand discrete and continuous distributions,
- covariance and correlation,
- convolution and limit distributions

C. Theory of estimation and testing:

- suffiency of statistics,
- point estimation (optimality, ML-method),
- internal estimations,
- theory of tests (optimality, most important examples of tests)

Workload
150 hours (5.0 Credits).

Literature
Script: Kurzfassung Statistik II
Elective literature:
Bamberg, G., Baur, F. und Krapp, M.: Statistik, 16. überarb. Auflage. Oldenbourg, München 2011, ISBN 978-3486702583.
Bol, G.: Induktive Statistik, 3. überarb. Auflage, Oldenbourg, München 2003, ISBN 978-3486-272765.
Bol, G.: Wahrscheinlichkeitstheorie, 6. überarb. Auflage, Oldenbourg, München 2007, ISBN 978-3486584356.
Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2010, ISBN 978-3642150098.
Rinne, H.: Taschenbuch der Statistik, 4. überarb. u. erw. Auflage, Harri Deutsch, Frankfurt a. M. 2008, ISBN 978-3817118274.
Schwarze, J.: Grundlagen der Statistik 2: Wahrscheinlichkeitsrechnung und induktive Statistik, 9. vollst. überarb. Aufl., NWB, Herne 2009, ISBN 978-3482568695.

T Course: Strategic Management of Information Technology [T-WIWI-102669]

Responsibility: Thomas Wolf
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511602	Strategic Management of Information Technology	Vorlesung (V)	2	Thomas Wolf
SS 2016	2511603	Übungen zu Strategisches Management der betrieblichen Informationsverarbeitung	Übung (Ü)	1	Thomas Wolf

Learning Control / Examinations
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Strategic Management of Information Technology (SS 2016):

Students know the outer frame of IT in an enterprise and know which functions IT has within an enterprise. They unterstand the organization and the content of these functions.

Content
The following topics will be covered: strategic planing of ICT, architecture of ICT, overall planning of ICT, outsourcing, operation and controlling of ICT.

Literature

- Nolan, R., Croson, D.: Creative Destruction: A Six-Stage Process for Transforming the Organization. Harvard Business School Press, Boston Mass. 1995
- Heinrich, L. J., Burgholzer, P.: Informationsmanagement, Planung, Überwachung, Steuerung d. Inform.-Infrastruktur. Oldenbourg, München 1990
- Nolan, R.: Managing the crises in data processing. Harvard Business Review, Vol. 57, Nr. 2 1979
- Österle, H. et al.: Unternehmensführung und Informationssystem. Teubner, Stuttgart 1992
- Thome, R.: Wirtschaftliche Informationsverarbeitung. Verlag Franz Vahlen, München 1990

T Course: Systems of Remote Sensing, Prerequisite [T-BGU-101637]

Responsibility: Stefan Hinz
Contained in: [M-WIWI-101646] Introduction to Natural Hazards and Risk Analysis 1
[M-WIWI-101648] Introduction to Natural Hazards and Risk Analysis 2

ECTS	Version
1	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	6020242	Übungen zu Fernerkundungssysteme	Übung (Ü)	1	Uwe Weidner

T Course: Tactical and Operational Supply Chain Management [T-WIWI-102714]

Responsibility: Stefan Nickel
Contained in: [M-WIWI-101421] Supply Chain Management
[M-WIWI-101413] Applications of Operations Research
[M-WIWI-101400] Stochastic Methods and Simulation
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Language	Version
4,5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2550486	Taktisches und operatives SCM	Vorlesung (V)	2	Stefan Nickel
SS 2016	2550487	Übungen zu Taktisches und operatives SCM	Übung (Ü)	1	Brita Rohrbeck, Stefan Nickel

Learning Control / Examinations
The assessment consists of a written exam (120 minutes) according to Section 4(2), 1 of the examination regulation.
The exam takes place in every the semester.
Prerequisite for admission to examination is the succesful completion of the online assessments.

Conditions
Prerequisite for admission to examination is the succesful completion of the online assessments.

Modeled Conditions
The following conditions must be met:

- Successful completion of course [T-WIWI-105940] *Prerequisite for Tactical and Operational Supply Chain Management* is required before taking this course.

Recommendations
None

Remarks
The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online.

Die folgenden Informationen stammen aus der Veranstaltung Taktisches und operatives SCM (SS 2016):

Content
The lecture covers basic quantitative methods in location planning in the context of strategic Supply Chain Planning. Besides the discussion of several criteria for the evaluation of the locations of facilities, the students are acquainted with classical location planning models (planar models, network models and discrete models) and advanced location planning models designed for Supply Chain Management (single-period and multi-period models).The exercisesaccompanying the lecture offer the possibility to apply the considered models to practical problems.

Literature
Elective Literature

- Daskin: Network and Discrete Location: Models, Algorithms, and Applications, Wiley, 1995
- Domschke, Drexl: Logistik: Standorte, 4. Auflage, Oldenbourg, 1996
- Francis, McGinnis, White: Facility Layout and Location: An Analytical Approach, 2nd Edition, Prentice Hall, 1992
- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
- Thonemann: Operations Management - Konzepte, Methoden und Anwendungen, Pearson Studium, 2005

T Course: Tax Law I [T-INFO-101315]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101216] Private Business Law

ECTS	Version
3	1

T Course: Tax Law II [T-INFO-101314]

Responsibility: Detlef Dietrich, Thomas Dreier
Contained in: [M-INFO-101216] Private Business Law

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24646	Tax Law II	Vorlesung (V)	2	Detlef Dietrich

Die folgenden Informationen stammen aus der Veranstaltung Tax Law II (SS 2016):

Ziel der Vorlesung ist es, auf den Gebieten der Wirtschafts- und Rechtswissenschaft, aufbauend auf der Überblicksvorlesung 'Einführung in das Unternehmenssteuerrecht' vertiefte Kenntnisse in der betriebswirtschaftlichen Steuerlehre zu verschaffen. Die Studenten erhalten die Grundlage für eine wissenschaftliche Auseinandersetzung mit den steuerlichen Vorschriften und können die Wirkung auf unternehmerische Entscheidungen einschätzen. Hervorgehoben werden solche Steuerrechtsregelungen, die dem Steuerpflichtigen Handlungs- und Entscheidungsmöglichkeiten eröffnen.

Content
Ziel der Vorlesung ist es, auf den Gebieten der Wirtschafts- und Rechtswissenschaft, aufbauend auf der Überblicksvorlesung 'Einführung in das Unternehmenssteuerrecht' vertiefte Kenntnisse in der betriebswirtschaftlichen Steuerlehre zu verschaffen. Die Studenten erhalten die Grundlage für eine wissenschaftliche Auseinandersetzung mit den steuerlichen Vorschriften und können die Wirkung auf unternehmerische Entscheidungen einschätzen. Hervorgehoben werden solche Steuerrechtsregelungen, die dem Steuerpflichtigen Handlungs- und Entscheidungsmöglichkeiten eröffnen.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt bei 3 Leistungspunkten 90 h, davon 22,5 Präsenz.

Literature

- Grashoff, Steuerrecht,Verlag C.H. Beck, in der neuesten Auflage.
- Spangemacher, Gewerbesteuer, Band 5, Grüne Reihe, Erich Fleischer Verlag
- Falterbaum/Bolk/Reiß/Eberhart, Buchführung und Bilanz, Band 10, Grüne Reihe, Erich Fleischer Verlag
- Tipke, K./Lang, J., Steuerrecht,Köln, in der neuesten Auflage.
- Jäger/Lang Körperschaftsteuer, Band 6, Grüne Reihe, Erich Fleischer Verlag
- Lippross Umsatzsteuer, Band 11, Grüne Reihe, Erich Fleischer Verlag
- Plückebaum/Wendt/ Niemeier/Schlierenkämper Einkommensteuer, Band 3, Grüne Reihe, Erich Fleischer Verlag

Weiterführende Literatur

T Course: Telecommunications Law [T-INFO-101309]

Responsibility: Matthias Bäcker
Contained in: [M-INFO-101217] Public Business Law

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	24632	Telekommunikationsrecht	Vorlesung (V)	2	Matthias Bäcker

Die folgenden Informationen stammen aus der Veranstaltung Telekommunikationsrecht (SS 2016):

Die Telekommunikation ist die technische Grundlage der Informationswirtschaft. In welcher Art und Weise beispielsweise UMTS reguliert wird, ist von maßgeblicher Bedeutung für die Bereitstellung von Diensten in der Welt der mobilen Inhaltsdienste. Die zentralen Vorgaben der Telekommunikationsregulierung finden sich im Telekommunikationsgesetz (TKG). Dieses ist infolge gemeinschaftsrechtlicher Vorgaben 2004 vollständig novelliert worden. Die Vorlesung vermittelt dem Studenten die für das Verstehen der Rahmenbedingungen der Informationsgesellschaft unablässigen telekommunikationsrechtlichen Kenntnisse.

Content
Die Vorlesung bietet einen Überblick über das neue TKG. Dabei wird die ganze Bandbreite der Regulierung behandelt: Von den materiellrechtlichen Instrumenten der wettbewerbsschaffenden ökonomischen Regulierung (Markt-, Zugangs-, Entgeltregulierung sowie besondere Missbrauchsaufsicht) und der nicht-ökonomischen Regulierung (Kundenschutz; Rundfunkübertragung; Vergabe von Frequenzen, Nummern und Wegerechten; Fernmeldegeheimnis; Datenschutz und öffentliche Sicherheit) bis hin zur institutionellen Ausgestaltung der Regulierung. Zum besseren Verständnis werden zu Beginn der Vorlesung die technischen und ökonomischen Grundlagen sowie die gemeinschafts- und verfassungsrechtlichen Vorgaben geklärt.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt bei 3 Leistungspunkten 90 h, davon 22,5 Präsenz.

Literature
Da der Rechtsstoff teilweise im Diskurs mit den Studierenden erarbeitet werden soll, ist eine aktuelle Version des TKG zu der Vorlesung mitzubringen.
Weitere Literatur wird in der Vorlesung angegeben.
Weiterführende Literatur
Erweiterte Literaturangaben werden in der Vorlesung bekannt gegeben.

T Course: Trademark and Unfair Competition Law [T-INFO-101313]

Responsibility: Yvonne Matz
Contained in: [M-INFO-101215] Intellectual Property Law

ECTS	Version
3	1

T Course: Warehousing and Distribution Systems [T-MACH-105174]

Responsibility: Melanie Schwab, Judith Weiblen
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Version
4	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2118097	Warehousing and distribution systems	Vorlesung (V)	2	Kai Furmans

Conditions
none

Die folgenden Informationen stammen aus der Veranstaltung Warehousing and distribution systems (SS 2016):

Students are able to:

- Describe the areas of typical warehouse and distribution systems with the respective processes and can illustrate it with sketches,
- Use and choose strategies of warehouse and distribution systems according to requirements,
- Classify typical systsems using criteria discussed in the lecture, and
- Reson about the choice of appropriate technical solutions.

Content

- Introduction
- Yard management
- Receiving
- Storage and picking
- Workshop on cycle times
- Consoldiation and packing
- Shipping
- Added Value
- Overhead
- Case Study: DCRM
- Planning of warehouses
- Case study: Planning of warehouses
- Distribution networks
- Lean Warehousing

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
ARNOLD, Dieter, FURMANS, Kai (2005)
Materialfluss in Logistiksystemen, 5. Auflage, Berlin: Springer-Verlag
ARNOLD, Dieter (Hrsg.) et al. (2008)
Handbuch Logistik, 3. Auflage, Berlin: Springer-Verlag
BARTHOLDI III, John J., HACKMAN, Steven T. (2008)
Warehouse Science
GUDEHUS, Timm (2005)
Logistik, 3. Auflage, Berlin: Springer-Verlag
FRAZELLE, Edward (2002)
World-class warehousing and material handling, McGraw-Hill
MARTIN, Heinrich (1999)
Praxiswissen Materialflußplanung: Transport, Hanshaben, Lagern, Kommissionieren, Braunschweig, Wiesbaden: Vieweg

WISSER, Jens (2009)
Der Prozess Lagern und Kommissionieren im Rahmen des Distribution Center Reference Model (DCRM); Karlsruhe : Universitätsverlag
A comprehensive overview of scientific papers can be found at:
ROODBERGEN, Kees Jan (2007)
Warehouse Literature

T Course: Web Science [T-WIWI-103112]

Responsibility: York Sure-Vetter
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	englisch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511312	Web Science	Vorlesung (V)	2	York Sure-Vetter

Learning Control / Examinations
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.

Conditions
None

Remarks
New course starting winter term 2015/2016.

Die folgenden Informationen stammen aus der Veranstaltung Web Science (WS 16/17):

The students

- look critically into current research topics in the field of Web Science and learns in particular about the topics small-world-problem, network theory, social network analysis, bibliometrics, as well as link analysis and search.
- apply interdisciplinary thinking.
- train the application of technological approaches to social science problems.

Content
This course aims to provide students with a basic knowledge and understanding about the structure and analysis of selected web phenomena and technologies. Topics include the small world problem, network theory, social network analysis, graph search and technologies/standards/architectures.

Workload

- The total workload for this course is approximately 150 hours
- Time of presentness: 45 hours
- Time of preperation and postprocessing: 67.5 hours
- Exam and exam preperation: 37.5 hours

Literature

- Networks, Crowds, and Markets: Reasoning About a Highly Connected World, by David Easley and Jon Kleinberg, 2010 (free online book: http://www.cs.cornell.edu/home/kleinber/networks-book/)
- Thelwall, M. (2009). Social network sites: Users and uses. In: M. Zelkowitz (Ed.), Advances in Computers 76. Amsterdam: Elsevier (pp. 19-73)

T Course: Welfare Economics [T-WIWI-102610]

Responsibility: Clemens Puppe
Contained in: [M-WIWI-101501] Economic Theory

ECTS	Version
4,5	1

Learning Control / Examinations
The assessment consists of a written exam at the end of the semester (according to Section 4 (2), 1 or 2 of the examination regulation).

Conditions
The courses *Economics I: Microeconomics* [2610012] and *Economics II: Macroeconomics* [2600014] have to be completed beforehand.

Modeled Conditions
The following conditions must be met:

1. Successful completion of course [T-WIWI-102708] *Economics I: Microeconomics* is required before taking this course.
2. Successful completion of course [T-WIWI-102709] *Economics II: Macroeconomics* is required before taking this course.

Recommendations
None

T Course: Wildcard Additional Examinations 1 [T-WIWI-104391]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 10 [T-WIWI-104401]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
	1

T Course: Wildcard Additional Examinations 11 [T-WIWI-104402]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 12 [T-WIWI-104403]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 13 [T-WIWI-104404]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 14 [T-WIWI-104405]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 15 [T-WIWI-104406]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

Conditions
None

T Course: Wildcard Additional Examinations 16 [T-WIWI-104407]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 17 [T-WIWI-104408]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 18 [T-WIWI-104409]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 19 [T-WIWI-104410]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 2 [T-WIWI-104392]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 20 [T-WIWI-104411]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 21 [T-WIWI-104412]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
5	1

T Course: Wildcard Additional Examinations 22 [T-WIWI-104413]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
5	1

T Course: Wildcard Additional Examinations 23 [T-WIWI-104414]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
3	1

T Course: Wildcard Additional Examinations 24 [T-WIWI-104415]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
3	1

Conditions
None

T Course: Wildcard Additional Examinations 25 [T-WIWI-104416]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
3	1

T Course: Wildcard Additional Examinations 26 [T-WIWI-104417]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
3	1

T Course: Wildcard Additional Examinations 27 [T-WIWI-104418]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
3	1

T Course: Wildcard Additional Examinations 28 [T-WIWI-104419]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
3	1

T Course: Wildcard Additional Examinations 29 [T-WIWI-106008]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
4	1

T Course: Wildcard Additional Examinations 3 [T-WIWI-104394]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 30 [T-WIWI-106009]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
4	1

T Course: Wildcard Additional Examinations 4 [T-WIWI-104395]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 5 [T-WIWI-104396]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
2	1

T Course: Wildcard Additional Examinations 6 [T-WIWI-104397]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
	1

T Course: Wildcard Additional Examinations 7 [T-WIWI-104398]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
	1

T Course: Wildcard Additional Examinations 8 [T-WIWI-104399]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
	1

T Course: Wildcard Additional Examinations 9 [T-WIWI-104400]

Responsibility:
Contained in: [M-WIWI-101982] Additional Examinations

ECTS	Version
	1

T Course: Windpower [T-MACH-105234]

Responsibility: Norbert Lewald
Contained in: [M-WIWI-101404] Extracurricular Module in Engineering

ECTS	Version
4	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2157381	Windpower	Veranstaltung (Ver-anst.)	2	Norbert Lewald

T Course: Workflow-Management [T-WIWI-102662]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Version
5	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2016	2511204	Workflow-Management	Vorlesung (V)	2	Andreas Oberweis
SS 2016	2511205	Übungen zu Workflow-Management	Übung (Ü)	1	Andreas Drescher, Andreas Oberweis

Learning Control / Examinations
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.

Conditions
None

Die folgenden Informationen stammen aus der Veranstaltung Workflow-Management (SS 2016):

Students

- explain the concepts and principles of workflow management concepts and systems and their applications,
- create and evaluatel business process models,
- analyze static and dynamic properties of workflows.

Content
A workflow is that part of a business process which is automatically executed by a computerized system. Workflow management includes the design, modelling, analysis, execution and management of workflows. Workflow management systems are standard software systems for the efficient control of processes in enterprises and organizations. Knowledge in the field of workflow management systems is especially important during the design of systems for process support.
The course covers the most important concepts of workflow management. Modelling and design techniques are presented and an overview about current workflow management systems is given. Standards, which have been proposed by the workflow management coalition (WfMC), are discussed. Petri nets are proposed as a formal modelling and analysis tool for business processes. Architecture and functionality of workflow management systems are discussed. The course is a combination of theoretical foundations of workflow management concepts and of practical application knowledge.

Workload
Lecture 30h
Exercise 15h

Preparation of lecture 30h
Preparation of exercises 30h
Exam preparation 44h
Exam 1h

Total: 150h

Literature

- W. van der Aalst, H. van Kees: Workflow Management: Models, Methods and Systems, Cambridge 2002: The MIT Press.
- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer 2012.
- A. Oberweis: Modellierung und Ausführung von Workflows mit Petri-Netzen. Teubner-Reihe Wirtschaftsinformatik, B.G. Teubner Verlag, 1996.

- F. Schönthaler, G.Vossen, A. Oberweis, T. Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.

  Further literature is given in the lecture.

Part IX
Appendix: Qualification objectives of the Bachelor's degree in Economics Engineering

Graduates of the Bachelor's degree in Economics Engineering are equipped with strategically oriented knowledge in economics, science, law, mathematics and information technology acquired during the three-semester core program.

The economics section includes economic-related topics from microeconomics, macroeconomics and econometrics as well as finance, business management, information industry, production management, marketing and accounting.

The math section is divided into mathematics, statistics and operations research. It includes analysis and linear algebra, descriptive and inductive statistics, elementary probability theory and optimization methods.

In the engineering field, the focus is either on the physical or chemical field.

Under law, the topics of private law and public law are covered.

The technological area is covered by the Applied and Theoretical Informatics.

Through the comprehensive methodological basis, the graduates are in a position to acknowledge and apply specialized basic concepts, methods, models and approaches. They are also able to analyze and review economic, legal and technological structures as well as situations and processes.

They can apply the relevant mathematical and scientific concepts and methods as well as legal knowledge to solve concrete tasks.

The graduates have deeper knowledge in economics, business administration and selectively in statistics, informatics, operations research, law, sociology and engineering.

They are able to react based on this knowledge from the different subjects and disciplines. They thereby largely operate independently and can review, analyze, interpret and evaluate economic, legal, scientific and technical topics systematically. They can model and classify specialized problems and then come up with appropriate methods and procedures for solving the given tasks and derive improvement potentials.

The know how to validate, illustrate and interpret the obtained results.

This practical use of their know-how also takes into account the social, scientific and ethical aspects.

Graduates of the Bachelor's degree in Economics Engineering can assume responsibility in interdisciplinary teams, technically argue and defend their position before both expert representatives and laypersons.

They have the ability to apply the acquired information to career-related activities in the industry, service sector or in the public management as well as take up a Master's degree program in Economics Engineering or any other related course.

Universität des Landes Baden-Württemberg und
nationales Forschungszentrum in der Helmholtz-Gemeinschaft

Amtliche Bekanntmachung

2015 **Ausgegeben Karlsruhe, den 29. September 2015** **Nr. 93**

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Studien- und Prüfungsordnung des Karlsruher Instituts für Technologie (KIT) für den Bachelorstudiengang Technische Volkswirtschaftslehre

vom 24. September 2015

Aufgrund von § 10 Absatz 2 Ziff. 5 und § 20 des Gesetzes über das Karlsruher Institut für Technologie (KIT-Gesetz - KITG) in der Fassung vom 14. Juli 2009 (GBl. S. 317 f), zuletzt geändert durch Artikel 5 des Dritten Gesetzes zur Änderung hochschulrechtlicher Vorschriften (3. Hochschulrechtsänderungsgesetz – 3. HRÄG) vom 01. April 2014 (GBl. S. 99, 167) und § 8 Absatz 5 des Gesetzes über die Hochschulen in Baden-Württemberg (Landeshochschulgesetz - LHG) in der Fassung vom 1. Januar 2005 (GBl. S. 1 f), zuletzt geändert durch Artikel 1 des 3. HRÄG vom 01. April 2014 (GBl. S. 99 ff.), hat der Senat des KIT am 21. September 2015 die folgende Studien- und Prüfungsordnung für den Bachelorstudiengang Technische Volkswirtschaftslehre beschlossen.

Der Präsident hat seine Zustimmung gemäß § 20 Absatz 2 KITG iVm. § 32 Absatz 3 Satz 1 LHG am 24. September 2015 erteilt.

Inhaltsverzeichnis

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Präambel

Das KIT hat sich im Rahmen der Umsetzung des Bolognaprozesses zum Aufbau eines europäischen Hochschulraumes zum Ziel gesetzt, dass am Abschluss des Studiums am KIT der Mastergrad stehen soll. Das KIT sieht daher die am KIT angebotenen konsekutiven Bachelor- und Masterstudiengänge als Gesamtkonzept mit konsekutivem Curriculum.

I. Allgemeine Bestimmungen

§ 1 Geltungsbereich

Diese Bachelorprüfungsordnung regelt Studienablauf, Prüfungen und den Abschluss des Studiums im Bachelorstudiengang Technische Volkswirtschaftslehre am KIT.

§ 2 Ziel des Studiums, akademischer Grad

(1) Im Bachelorstudium sollen die wissenschaftlichen Grundlagen und die Methodenkompetenz der Fachwissenschaften vermittelt werden. Ziel des Studiums ist die Fähigkeit, einen konsekutiven Masterstudiengang erfolgreich absolvieren zu können sowie das erworbene Wissen berufsfeldbezogen anwenden zu können.

(2) Aufgrund der bestandenen Bachelorprüfung wird der akademische Grad „Bachelor of Science (B.Sc.)“ für den Bachelorstudiengang Technische Volkswirtschaftslehre verliehen.

§ 3 Regelstudienzeit, Studienaufbau, Leistungspunkte

(1) Die Regelstudienzeit beträgt sechs Semester.

Der Studiengang nimmt teil am Programm „Studienmodelle individueller Geschwindigkeit“. Die Studierenden haben im Rahmen der dortigen Kapazitäten und Regelungen bis einschließlich drittem Fachsemester Zugang zu den Veranstaltungen des MINT-Kollegs Baden-Württemberg (im folgenden MINT-Kolleg).

(2) Bei einer qualifizierten Teilnahme am MINT-Kolleg bleiben bei der Anrechnung auf die Regelstudienzeit bis zu zwei Semester unberücksichtigt. Die konkrete Anzahl der Semester richtet sich nach § 8 Absatz 1 Satz 5 bis 7.

Eine qualifizierte Teilnahme liegt vor, wenn die Studierende Veranstaltungen des MINT- Kollegs für die Dauer von mindestens einem Semester im Umfang von mindestens zwei Fachkursen (Gesamtworkload 10 Semesterwochenstunden) belegt hat. Das MINT-Kolleg stellt hierüber eine Bescheinigung aus.

(3) Das Lehrangebot des Studiengangs ist in Fächer, die Fächer sind in Module, die jeweiligen Module in Lehrveranstaltungen gegliedert. Die Fächer und ihr Umfang werden in § 20 festgelegt. Näheres beschreibt das Modulhandbuch.

(4) Der für das Absolvieren von Lehrveranstaltungen und Modulen vorgesehene Arbeitsaufwand wird in Leistungspunkten (LP) ausgewiesen. Die Maßstäbe für die Zuordnung von Leistungspunkten entsprechen dem European Credit Transfer System (ECTS). Ein Leistungspunkt entspricht einem Arbeitsaufwand von etwa 30 Zeitstunden. Die Verteilung der Leistungspunkte auf die Semester hat in der Regel gleichmäßig zu erfolgen.

(5) Der Umfang der für den erfolgreichen Abschluss des Studiums erforderlichen Studien- und Prüfungsleistungen wird in Leistungspunkten gemessen und beträgt insgesamt 180 Leistungspunkte.

(6) Lehrveranstaltungen können nach vorheriger Ankündigung auch in englischer Sprache angeboten werden, sofern es deutschsprachige Wahlmöglichkeiten gibt.

§ 4 Modulprüfungen, Studien- und Prüfungsleistungen

(1) Die Bachelorprüfung besteht aus Modulprüfungen. Modulprüfungen bestehen aus einer oder mehreren Erfolgskontrollen.

Erfolgskontrollen gliedern sich in Studien- oder Prüfungsleistungen.

(2) Prüfungsleistungen sind:

1. schriftliche Prüfungen,
2. mündliche Prüfungen oder
3. Prüfungsleistungen anderer Art.

(3) Studienleistungen sind schriftliche, mündliche oder praktische Leistungen, die von den Studierenden in der Regel lehrveranstaltungsbegleitend erbracht werden. Die Bachelorprüfung darf nicht mit einer Studienleistung abgeschlossen werden.

(4) Von den Modulprüfungen sollen mindestens 70 % benotet sein.

(5) Bei sich ergänzenden Inhalten können die Modulprüfungen mehrerer Module durch eine auch modulübergreifende Prüfungsleistung (Absatz 2 Nr.1 bis 3) ersetzt werden.

§ 5 Anmeldung und Zulassung zu den Modulprüfungen und Lehrveranstaltungen

(1) Um an den Modulprüfungen teilnehmen zu können, müssen sich die Studierenden online im Studierendenportal zu den jeweiligen Erfolgskontrollen anmelden. In Ausnahmefällen kann eine Anmeldung schriftlich im Studierendenservice oder in einer anderen, vom Studierendenservice autorisierten Einrichtung erfolgen. Für die Erfolgskontrollen können durch die Prüfenden Anmeldefristen festgelegt werden. Die Anmeldung der Bachelorarbeit ist im Modulhandbuch geregelt.

(2) Sofern Wahlmöglichkeiten bestehen, müssen Studierende, um zu einer Prüfung in einem bestimmten Modul zugelassen zu werden, vor der ersten Prüfung in diesem Modul mit der Anmeldung zu der Prüfung eine bindende Erklärung über die Wahl des betreffenden Moduls und dessen Zuordnung zu einem Fach abgeben. Auf Antrag des/der Studierenden kann die Wahl oder die Zuordnung nachträglich geändert werden. Sofern bereits ein Prüfungsverfahren in einem Modul begonnen wurde, ist die Änderung der Wahl oder der Zuordnung erst nach Beendigung des Prüfungsverfahrens zulässig.

(3) Zu einer Erfolgskontrolle ist zuzulassen, wer

1. in den Bachelorstudiengang Technische Volkswirtschaftslehre am KIT eingeschrieben ist; die Zulassung beurlaubter Studierender ist auf Prüfungsleistungen beschränkt; und

2. nachweist, dass er die im Modulhandbuch für die Zulassung zu einer Erfolgskontrolle festgelegten Voraussetzungen erfüllt und

3. nachweist, dass er in dem Bachelorstudiengang Technische Volkswirtschaftslehre den Prüfungsanspruch nicht verloren hat und

4. die in § 20 a genannte Voraussetzung erfüllt.

(4) Nach Maßgabe von § 30 Abs. 5 LHG kann die Zulassung zu einzelnen Pflichtveranstaltungen beschränkt werden. Der/die Prüfende entscheidet über die Auswahl unter den Studierenden, die sich rechtzeitig bis zu dem von dem/der Prüfenden festgesetzten Termin angemeldet haben unter Berücksichtigung des Studienfortschritts dieser Studierenden und unter Beachtung von § 13 Abs. 1 Satz 1 und 2, sofern ein Abbau des Überhangs durch andere oder zusätzliche Veranstal-

tungen nicht möglich ist. Für den Fall gleichen Studienfortschritts sind durch die KIT-Fakultäten weitere Kriterien festzulegen. Das Ergebnis wird den Studierenden rechtzeitig bekannt gegeben.

(5) Die Zulassung ist abzulehnen, wenn die in Absatz 3 und 4 genannten Voraussetzungen nicht erfüllt sind.

§ 6 Durchführung von Erfolgskontrollen

(1) Erfolgskontrollen werden studienbegleitend, in der Regel im Verlauf der Vermittlung der Lehrinhalte der einzelnen Module oder zeitnah danach, durchgeführt.

(2) Die Art der Erfolgskontrolle (§ 4 Abs. 2 Nr. 1 bis 3, Abs. 3) wird von der/dem Prüfenden der betreffenden Lehrveranstaltung in Bezug auf die Lerninhalte der Lehrveranstaltung und die Lernziele des Moduls festgelegt. Die Art der Erfolgskontrolle, ihre Häufigkeit, Reihenfolge und Gewichtung sowie gegebenenfalls die Bildung der Modulnote müssen mindestens sechs Wochen vor Vorlesungsbeginn im Modulhandbuch bekannt gemacht werden. Im Einvernehmen von Prüfendem und Studierender bzw. Studierendem können die Art der Prüfungsleistung sowie die Prüfungssprache auch nachträglich geändert werden; im ersten Fall ist jedoch § 4 Abs. 5 zu berücksichtigen. Bei der Prüfungsorganisation sind die Belange Studierender mit Behinderung oder chronischer Erkrankung gemäß § 13 Abs. 1 zu berücksichtigen. § 13 Abs. 1 Satz 3 und 4 gelten entsprechend.

(3) Bei unvertretbar hohem Prüfungsaufwand kann eine schriftlich durchzuführende Prüfungsleistung auch mündlich, oder eine mündlich durchzuführende Prüfungsleistung auch schriftlich abgenommen werden. Diese Änderung muss mindestens sechs Wochen vor der Prüfungsleistung bekannt gegeben werden.

(4) Bei Lehrveranstaltungen in englischer Sprache (§ 3 Abs. 6) können die entsprechenden Erfolgskontrollen in dieser Sprache abgenommen werden. § 6 Abs. 2 gilt entsprechend.

(5) *Schriftliche Prüfungen* (§ 4 Abs. 2 Nr. 1) sind in der Regel von einer/einem Prüfenden nach § 18 Abs. 2 oder 3 zu bewerten. Sofern eine Bewertung durch mehrere Prüfende erfolgt, ergibt sich die Note aus dem arithmetischen Mittel der Einzelbewertungen. Entspricht das arithmetische Mittel keiner der in § 7 Abs. 2 Satz 2 definierten Notenstufen, so ist auf die nächstliegende Notenstufe auf- oder abzurunden. Bei gleichem Abstand ist auf die nächstbessere Notenstufe zu runden. Das Bewertungsverfahren soll sechs Wochen nicht überschreiten. Schriftliche Prüfungen dauern mindestens 60 und höchstens 300 Minuten.

(6) *Mündliche Prüfungen* (§ 4 Abs. 2 Nr. 2) sind von mehreren Prüfenden (Kollegialprüfung) oder von einer/einem Prüfenden in Gegenwart einer oder eines Beisitzenden als Gruppen- oder Einzelprüfungen abzunehmen und zu bewerten. Vor der Festsetzung der Note hört die/der Prüfende die anderen an der Kollegialprüfung mitwirkenden Prüfenden an. Mündliche Prüfungen dauern in der Regel mindestens 15 Minuten und maximal 60 Minuten pro Studierenden.

Die wesentlichen Gegenstände und Ergebnisse der *mündlichen Prüfung* sind in einem Protokoll festzuhalten. Das Ergebnis der Prüfung ist den Studierenden im Anschluss an die mündliche Prüfung bekannt zu geben.

Studierende, die sich in einem späteren Semester der gleichen Prüfung unterziehen wollen, werden entsprechend den räumlichen Verhältnissen und nach Zustimmung des Prüflings als Zuhörerinnen und Zuhörer bei mündlichen Prüfungen zugelassen. Die Zulassung erstreckt sich nicht auf die Beratung und Bekanntgabe der Prüfungsergebnisse.

(7) Für *Prüfungsleistungen anderer Art* (§ 4 Abs. 2 Nr. 3) sind angemessene Bearbeitungsfristen einzuräumen und Abgabetermine festzulegen. Dabei ist durch die Art der Aufgabenstellung und durch entsprechende Dokumentation sicherzustellen, dass die erbrachte Prüfungsleistung dem/der Studierenden zurechenbar ist. Die wesentlichen Gegenstände und Ergebnisse einer solchen Erfolgskontrolle sind in einem Protokoll festzuhalten.

Bei *mündlich* durchgeführten *Prüfungsleistungen anderer Art* muss neben der/dem Prüfenden ein/e Beisitzende/r anwesend sein, die/der zusätzlich zum/zur Prüfenden das Protokoll zeichnet.

Schriftliche Arbeiten im Rahmen einer *Prüfungsleistung anderer Art* haben dabei die folgende Erklärung zu tragen: „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.“ Trägt die Arbeit diese Erklärung nicht, wird sie nicht angenommen. Die wesentlichen Gegenstände und Ergebnisse einer solchen Erfolgskontrolle sind in einem Protokoll festzuhalten.

§ 6 a Erfolgskontrollen im Antwort-Wahl-Verfahren

Das Modulhandbuch regelt, ob und in welchem Umfang Erfolgskontrollen im Wege des *Antwort-Wahl-Verfahrens* abgelegt werden können

§ 6 b Computergestützte Erfolgskontrollen

(1) Erfolgskontrollen können computergestützt durchgeführt werden. Dabei wird die Antwort bzw. Lösung der/des Studierenden elektronisch übermittelt und, sofern möglich, automatisiert ausgewertet. Die Prüfungsinhalte sind von einer/einem Prüfenden zu erstellen.

(2) Vor der computergestützten Erfolgskontrolle hat die/der Prüfende sicherzustellen, dass die elektronischen Daten eindeutig identifiziert und unverwechselbar und dauerhaft den Studierenden zugeordnet werden können. Der störungsfreie Verlauf einer computergestützten Erfolgskontrolle ist durch entsprechende technische und fachliche Betreuung zu gewährleisten. Alle Prüfungsaufgaben müssen während der gesamten Bearbeitungszeit zur Bearbeitung zur Verfügung stehen.

(3) Im Übrigen gelten für die Durchführung von computergestützten Erfolgskontrollen die §§ 6 bzw. 6 a.

§ 7 Bewertung von Studien- und Prüfungsleistungen

(1) Das Ergebnis einer Prüfungsleistung wird von den jeweiligen Prüfenden in Form einer Note festgesetzt.

(2) Folgende Noten sollen verwendet werden:

sehr gut (very good)	:	hervorragende Leistung,
gut (good)	:	eine Leistung, die erheblich über den durchschnittlichen Anforderungen liegt,
befriedigend (satisfactory)	:	eine Leistung, die durchschnittlichen Anforderungen entspricht,
ausreichend (sufficient)	:	eine Leistung, die trotz ihrer Mängel noch den Anforderungen genügt,
nicht ausreichend (failed)	:	eine Leistung, die wegen erheblicher Mängel nicht den Anforderungen genügt.

Zur differenzierten Bewertung einzelner Prüfungsleistungen sind nur folgende Noten zugelassen:

1,0; 1,3	:	sehr gut
1,7; 2,0; 2,3	:	gut
2,7; 3,0; 3.3	:	befriedigend
3,7; 4,0	:	ausreichend
5,0	:	nicht ausreichend

Diese Noten müssen in den Protokollen, im Zeugnis, im Transcript of Records sowie im Diploma Supplement verwendet werden.

(3) Studienleistungen werden mit „bestanden“ oder mit „nicht bestanden“ gewertet.

(4) Bei der Bildung der gewichteten Durchschnitte der Modulnoten, der Fachnoten und der Gesamtnote wird nur die erste Dezimalstelle hinter dem Komma berücksichtigt; alle weiteren Stellen werden ohne Rundung gestrichen.

(5) Jedes Modul und jede Erfolgskontrolle darf in demselben Studiengang nur einmal gewertet werden.

(6) Eine Prüfungsleistung ist bestanden, wenn die Note mindestens „ausreichend“ (4,0) ist.

(7) Die Modulprüfung ist bestanden, wenn alle erforderlichen Erfolgskontrollen bestanden sind. Die Modulprüfung und die Bildung der Modulnote sollen im Modulhandbuch geregelt werden. Sofern das Modulhandbuch keine Regelung über die Bildung der Modulnote enthält, errechnet sich die Modulnote aus einem nach den Leistungspunkten der einzelnen Teilmodule gewichteter Notendurchschnitt. Die differenzierten Noten (Absatz 2) sind bei der Berechnung der Modulnoten als Ausgangsdaten zu verwenden.

(8) Die Ergebnisse der Erfolgskontrollen sowie die erworbenen Leistungspunkte werden durch den Studierendenservice des KIT verwaltet.

(9) Die Noten der Module eines Faches gehen in die Fachnote mit einem Gewicht proportional zu den ausgewiesenen Leistungspunkten der Module ein. Dabei werden die Noten der Module, die nicht zum Grundlagenstudium gemäß dem Studienplan für den Bachelorstudiengang Wirtschaftsingenieurwesen zählen, mit dem doppelten Gewicht der ausgewiesenen Leistungspunkte der Module berücksichtigt.

(10) Die Gesamtnote der Bachelorprüfung, die Fachnoten und die Modulnoten lauten:

		bis	1,5	=	sehr gut
von	1,6	bis	2,5	=	gut
von	2,6	bis	3,5	=	befriedigend
von	3,6	bis	4,0	=	ausreichend

§ 8 Orientierungsprüfungen, Verlust des Prüfungsanspruchs

(1) Die Modulprüfung Mikroökonomie (VWL I) im Modul „Einführung in die Volkswirtschaftslehre“ und die Modulprüfung Statistik I im Modul „Einführung in die Statistik“ sind bis zum Ende des Prüfungszeitraums des zweiten Fachsemesters abzulegen (Orientierungsprüfungen).

(2) Wer die Orientierungsprüfungen einschließlich etwaiger Wiederholungen bis zum Ende des Prüfungszeitraums des dritten Fachsemesters nicht erfolgreich abgelegt hat, verliert den Prüfungsanspruch im Studiengang, es sei denn, dass die Fristüberschreitung nicht selbst zu vertreten ist; hierüber entscheidet der Prüfungsausschuss auf Antrag der oder des Studierenden. Eine zweite Wiederholung der Orientierungsprüfungen ist ausgeschlossen.

Die Fristüberschreitung hat die/der Studierende insbesondere dann nicht zu vertreten, wenn eine qualifizierte Teilnahme am MINT-Kolleg im Sinne von § 3 Abs. 2 vorliegt. Ohne ausdrückliche Genehmigung des Vorsitzenden des Prüfungsausschusses gilt eine Fristüberschreitung von

1. einem Semester als genehmigt, wenn die/der Studierende eine qualifizierte Teilnahme am MINT-Kolleg gemäß § 3 Abs. 2 im Umfang von einem Semester nachweist oder
2. zwei Semestern als genehmigt, wenn die/der Studierende eine qualifizierte Teilnahme am MINT-Kolleg gemäß § 3 Abs. 2 im Umfang von zwei Semestern nachweist.

Als Nachweis gilt die vom MINT-Kolleg gemäß § 3 Abs. 2 auszustellende Bescheinigung, die beim Studierendenservice des KIT einzureichen ist. Im Falle von Nr. 1 kann der Vorsitzende des

Prüfungsausschusses auf Antrag der Studierenden die Frist um ein weiteres Semester verlängern, wenn dies aus studienorganisatorischen Gründen für das fristgerechte Ablegen der Orientierungsprüfung erforderlich ist, insbesondere weil die Module, die Bestandteil der Orientierungsprüfung sind, nur einmal jährlich angeboten werden.

(3) Ist die Bachelorprüfung bis zum Ende des Prüfungszeitraums des neunten Fachsemesters einschließlich etwaiger Wiederholungen nicht vollständig abgelegt, so erlischt der Prüfungsanspruch im Studiengang, es sei denn, dass die Fristüberschreitung nicht selbst zu vertreten ist. Die Entscheidung über eine Fristverlängerung und über Ausnahmen von der Fristregelung trifft der Prüfungsausschuss unter Beachtung der in § 32 Abs. 6 LHG genannten Tätigkeiten auf Antrag des/der Studierenden. Der Antrag ist schriftlich in der Regel bis sechs Wochen vor Ablauf der in Satz 1 genannten Studienhöchstdauer zu stellen.

(4) Der Prüfungsanspruch geht auch verloren, wenn eine nach dieser Studien- und Prüfungsordnung erforderliche Studien- oder Prüfungsleistung endgültig nicht bestanden ist.

§ 9 Wiederholung von Erfolgskontrollen, endgültiges Nichtbestehen

(1) Studierende können eine nicht bestandene schriftliche Prüfung (§ 4 Absatz 2 Nr. 1) einmal wiederholen. Wird eine schriftliche Wiederholungsprüfung mit „nicht ausreichend“ (5,0) bewertet, so findet eine mündliche Nachprüfung im zeitlichen Zusammenhang mit dem Termin der nicht bestandenen Prüfung statt. In diesem Falle kann die Note dieser Prüfung nicht besser als „ausreichend“ (4,0) sein.

(2) Studierende können eine nicht bestandene mündliche Prüfung (§ 4 Absatz 2 Nr. 2) einmal wiederholen.

(3) Wiederholungsprüfungen nach Absatz 1 und 2 müssen in Inhalt, Umfang und Form (mündlich oder schriftlich) der ersten entsprechen. Ausnahmen kann der zuständige Prüfungsausschuss auf Antrag zulassen.

(4) Prüfungsleistungen anderer Art (§ 4 Absatz 2 Nr. 3) können einmal wiederholt werden.

(5) Studienleistungen können mehrfach wiederholt werden.

(6) Die Prüfungsleistung ist endgültig nicht bestanden, wenn die mündliche Nachprüfung im Sinne des Absatzes 1 mit „nicht ausreichend“ (5,0) bewertet wurde. Die Prüfungsleistung ist ferner endgültig nicht bestanden, wenn die mündliche Prüfung im Sinne des Absatzes 2 oder die Prüfungsleistung anderer Art gemäß Absatz 4 mit „nicht bestanden“ bewertet wurde.

(7) Das Modul ist endgültig nicht bestanden, wenn eine für sein Bestehen erforderliche Prüfungsleistung endgültig nicht bestanden ist.

(8) Eine zweite Wiederholung derselben Prüfungsleistung gemäß § 4 Abs. 2 ist nur in Ausnahmefällen auf Antrag des/der Studierenden zulässig („Antrag auf Zweitwiederholung“). Der Antrag ist schriftlich beim Prüfungsausschuss in der Regel bis zwei Monate nach Bekanntgabe der Note zu stellen.

Über den ersten Antrag eines/einer Studierenden auf Zweitwiederholung entscheidet der Prüfungsausschuss, wenn er den Antrag genehmigt. Wenn der Prüfungsausschuss diesen Antrag ablehnt, entscheidet ein Mitglied des Präsidiums. Über weitere Anträge auf Zweitwiederholung entscheidet nach Stellungnahme des Prüfungsausschusses ein Mitglied des Präsidiums. Wird der Antrag genehmigt, hat die Zweitwiederholung spätestens zum übernächsten Prüfungstermin zu erfolgen. Absatz 1 Satz 2 und 3 gelten entsprechend.

(9) Die Wiederholung einer bestandenen Prüfungsleistung ist nicht zulässig.

(10) Die Bachelorarbeit kann bei einer Bewertung mit „nicht ausreichend“ (5,0) einmal wiederholt werden. Eine zweite Wiederholung der Bachelorarbeit ist ausgeschlossen.

§ 10 Abmeldung; Versäumnis, Rücktritt

(1) Studierende können ihre Anmeldung zu *schriftlichen Prüfungen* ohne Angabe von Gründen bis zur Ausgabe der Prüfungsaufgaben widerrufen (Abmeldung). Eine Abmeldung kann online im Studierendenportal bis 24 Uhr des Vortages der Prüfung oder in begründeten Ausnahmefällen beim Studierendenservice innerhalb der Geschäftszeiten erfolgen. Erfolgt die Anmeldung gegenüber dem/der Prüfenden hat diese/r Sorge zu tragen, dass die Abmeldung im Campus Management System verbucht wird.

(2) Bei *mündlichen Prüfungen* muss die Abmeldung spätestens drei Werktage vor dem betreffenden Prüfungstermin gegenüber dem/der Prüfenden erklärt werden. Der Rücktritt von einer mündlichen Prüfung weniger als drei Werktage vor dem betreffenden Prüfungstermin ist nur unter den Voraussetzungen des Absatzes 5 möglich. Der Rücktritt von mündlichen Nachprüfungen im Sinne von § 9 Abs. 1 ist grundsätzlich nur unter den Voraussetzungen von Absatz 5 möglich.

(3) Die Abmeldung von *Prüfungsleistungen anderer Art* sowie von *Studienleistungen* ist im Modulhandbuch geregelt.

(4) Eine Erfolgskontrolle gilt als mit „nicht ausreichend“ (5,0) bewertet, wenn die Studierenden einen Prüfungstermin ohne triftigen Grund versäumen oder wenn sie nach Beginn der Erfolgskontrolle ohne triftigen Grund von dieser zurücktreten. Dasselbe gilt, wenn die Bachelorarbeit nicht innerhalb der vorgesehenen Bearbeitungszeit erbracht wird, es sei denn, der/die Studierende hat die Fristüberschreitung nicht zu vertreten.

(5) Der für den Rücktritt nach Beginn der Erfolgskontrolle oder das Versäumnis geltend gemachte Grund muss dem Prüfungsausschuss unverzüglich schriftlich angezeigt und glaubhaft gemacht werden. Bei Krankheit des/der Studierenden oder eines allein zu versorgenden Kindes oder pflegebedürftigen Angehörigen kann die Vorlage eines ärztlichen Attestes verlangt werden.

§ 11 Täuschung, Ordnungsverstoß

(1) Versuchen Studierende das Ergebnis ihrer Erfolgskontrolle durch Täuschung oder Benutzung nicht zugelassener Hilfsmittel zu beeinflussen, gilt die betreffende Erfolgskontrolle als mit „nicht ausreichend“ (5,0) bewertet.

(2) Studierende, die den ordnungsgemäßen Ablauf einer Erfolgskontrolle stören, können von der/dem Prüfenden oder der Aufsicht führenden Person von der Fortsetzung der Erfolgskontrolle ausgeschlossen werden. In diesem Fall gilt die betreffende Erfolgskontrolle als mit „nicht ausreichend“ (5,0) bewertet. In schwerwiegenden Fällen kann der Prüfungsausschuss diese Studierenden von der Erbringung weiterer Erfolgskontrollen ausschließen.

(3) Studierende können innerhalb einer Frist von einem Monat verlangen, dass Entscheidungen gemäß Absatz 1 und 2 vom Prüfungsausschuss überprüft werden.

(4) Näheres regelt die Allgemeine Satzung des KIT zur Redlichkeit bei Prüfungen und Praktika in der jeweils gültigen Fassung.

§ 12 Mutterschutz, Elternzeit, Wahrnehmung von Familienpflichten

(1) Auf Antrag sind die Mutterschutzfristen, wie sie im jeweils gültigen Gesetz zum Schutz der erwerbstätigen Mutter (Mutterschutzgesetz - MuSchG) festgelegt sind, entsprechend zu berücksichtigen. Dem Antrag sind die erforderlichen Nachweise beizufügen. Die Mutterschutzfristen unterbrechen jede Frist nach dieser Prüfungsordnung. Die Dauer des Mutterschutzes wird nicht in die Frist eingerechnet.

(2) Gleichfalls sind die Fristen der Elternzeit nach Maßgabe des jeweils gültigen Gesetzes (Bundeselterngeld- und Elternzeitgesetz - BEEG) auf Antrag zu berücksichtigen. Der/die Studierende muss bis spätestens vier Wochen vor dem Zeitpunkt, von dem an die Elternzeit angetreten werden soll, dem Prüfungsausschuss unter Beifügung der erforderlichen Nachweise schriftlich mitteilen, in welchem Zeitraum die Elternzeit in Anspruch genommen werden soll. Der Prüfungsausschuss hat zu prüfen, ob die gesetzlichen Voraussetzungen vorliegen, die bei einer Arbeit-

nehmerin bzw. einem Arbeitnehmer den Anspruch auf Elternzeit auslösen würden, und teilt dem/der Studierenden das Ergebnis sowie die neu festgesetzten Prüfungszeiten unverzüglich mit. Die Bearbeitungszeit der Bachelorarbeit kann nicht durch Elternzeit unterbrochen werden. Die gestellte Arbeit gilt als nicht vergeben. Nach Ablauf der Elternzeit erhält der/die Studierende ein neues Thema, das innerhalb der in § 14 festgelegten Bearbeitungszeit zu bearbeiten ist.

(3) Der Prüfungsausschuss entscheidet auf Antrag über die flexible Handhabung von Prüfungsfristen entsprechend den Bestimmungen des Landeshochschulgesetzes, wenn Studierende Familienpflichten wahrzunehmen haben. Absatz 2 Satz 4 bis 6 gelten entsprechend.

§ 13 Studierende mit Behinderung oder chronischer Erkrankung

(1) Bei der Gestaltung und Organisation des Studiums sowie der Prüfungen sind die Belange Studierender mit Behinderung oder chronischer Erkrankung zu berücksichtigen. Insbesondere ist Studierenden mit Behinderung oder chronischer Erkrankung bevorzugter Zugang zu teilnahmebegrenzten Lehrveranstaltungen zu gewähren und die Reihenfolge für das Absolvieren bestimmter Lehrveranstaltungen entsprechend ihrer Bedürfnisse anzupassen. Studierende sind gemäß Bundesgleichstellungsgesetz (BGG) und Sozialgesetzbuch Neuntes Buch (SGB IX) behindert, wenn ihre körperliche Funktion, geistige Fähigkeit oder seelische Gesundheit mit hoher Wahrscheinlichkeit länger als sechs Monate von dem für das Lebensalter typischen Zustand abweichen und daher ihre Teilhabe am Leben in der Gesellschaft beeinträchtigt ist. Der Prüfungsausschuss entscheidet auf Antrag der/des Studierenden über das Vorliegen der Voraussetzungen nach Satz 2 und 3. Die/der Studierende hat die entsprechenden Nachweise vorzulegen.

(2) Weisen Studierende eine Behinderung oder chronische Erkrankung nach und folgt daraus, dass sie nicht in der Lage sind, Erfolgskontrollen ganz oder teilweise in der vorgeschriebenen Zeit oder Form abzulegen, kann der Prüfungsausschuss gestatten, die Erfolgskontrollen in einem anderen Zeitraum oder einer anderen Form zu erbringen. Insbesondere ist behinderten Studierenden zu gestatten, notwendige Hilfsmittel zu benutzen.

(3) Weisen Studierende eine Behinderung oder chronische Erkrankung nach und folgt daraus, dass sie nicht in der Lage sind, die Lehrveranstaltungen regelmäßig zu besuchen oder die gemäß § 20 erforderlichen Studien- und Prüfungsleistungen zu erbringen, kann der Prüfungsausschuss auf Antrag gestatten, dass einzelne Studien- und Prüfungsleistungen nach Ablauf der in dieser Studien- und Prüfungsordnung vorgesehenen Fristen absolviert werden können.

§ 14 Modul Bachelorarbeit

(1) Voraussetzung für die Zulassung zum Modul Bachelorarbeit ist, dass die/der Studierende

1. Modulprüfungsleistungen im Umfang von mindestens 120 LP erfolgreich abgelegt und
2. alle Modulprüfungen des Grundlagenprogramms abgeschlossen hat,

Über Ausnahmen entscheidet der Prüfungsausschuss auf Antrag der/des Studierenden.

(2) Die Bachelorarbeit kann von Hochschullehrer/innen und leitenden Wissenschaftler/innen gemäß § 14 Abs. 3 Ziff. 1 KITG vergeben werden. Darüber hinaus kann der Prüfungsausschuss weitere Prüfende gemäß § 18 Abs. 2 und 3 zur Vergabe des Themas berechtigen. Den Studierenden ist Gelegenheit zu geben, für das Thema Vorschläge zu machen. Soll die Bachelorarbeit außerhalb der KIT-Fakultät für Wirtschaftswissenschaften angefertigt werden, so bedarf dies der Genehmigung durch den Prüfungsausschuss. Die Bachelorarbeit kann auch in Form einer Gruppenarbeit zugelassen werden, wenn der als Prüfungsleistung zu bewertende Beitrag der einzelnen Studierenden aufgrund objektiver Kriterien, die eine eindeutige Abgrenzung ermöglichen, deutlich unterscheidbar ist und die Anforderung nach Absatz 4 erfüllt. In Ausnahmefällen sorgt die/der Vorsitzende des Prüfungsausschusses auf Antrag der oder des Studierenden dafür, dass die/der Studierende innerhalb von vier Wochen ein Thema für die Bachelorarbeit erhält. Die Ausgabe des Themas erfolgt in diesem Fall über die/den Vorsitzende/n des Prüfungsausschusses.

(3) Thema, Aufgabenstellung und Umfang der Bachelorarbeit sind von dem Betreuer bzw. der Betreuerin so zu begrenzen, dass sie mit dem in Absatz 4 festgelegten Arbeitsaufwand bearbeitet werden kann.

(4) Die Bachelorarbeit soll zeigen, dass die Studierenden in der Lage sind, ein Problem aus ihrem Studienfach selbstständig und in begrenzter Zeit nach wissenschaftlichen Methoden zu bearbeiten. Der Umfang der Bachelorarbeit entspricht 12 Leistungspunkten. Die maximale Bearbeitungsdauer beträgt sechs Monate. Thema und Aufgabenstellung sind an den vorgesehenen Umfang anzupassen. Der Prüfungsausschuss legt fest, in welchen Sprachen die Bachelorarbeit geschrieben werden kann. Auf Antrag des Studierenden kann der/die Prüfende genehmigen, dass die Bachelorarbeit in einer anderen Sprache als Deutsch geschrieben wird.

(5) Bei der Abgabe der Bachelorarbeit haben die Studierenden schriftlich zu versichern, dass sie die Arbeit selbstständig verfasst und keine anderen als die angegebenen Quellen und Hilfsmittel benutzt haben, die wörtlich oder inhaltlich übernommenen Stellen als solche kenntlich gemacht und die Satzung des KIT zur Sicherung guter wissenschaftlicher Praxis in der jeweils gültigen Fassung beachtet haben. Wenn diese Erklärung nicht enthalten ist, wird die Arbeit nicht angenommen. Die Erklärung kann wie folgt lauten: „Ich versichere wahrheitsgemäß, die Arbeit selbstständig verfasst, alle benutzten Hilfsmittel vollständig und genau angegeben und alles kenntlich gemacht zu haben, was aus Arbeiten anderer unverändert oder mit Abänderungen entnommen wurde sowie die Satzung des KIT zur Sicherung guter wissenschaftlicher Praxis in der jeweils gültigen Fassung beachtet zu haben.“ Bei Abgabe einer unwahren Versicherung wird die Bachelorarbeit mit „nicht ausreichend“ (5,0) bewertet.

(6) Der Zeitpunkt der Ausgabe des Themas der Bachelorarbeit ist durch die Betreuerin/ den Betreuer und die/den Studierenden festzuhalten und dies beim Prüfungsausschuss aktenkundig zu machen. Der Zeitpunkt der Abgabe der Bachelorarbeit ist durch den/die Prüfende/n beim Prüfungsausschuss aktenkundig zu machen. Das Thema kann nur einmal und nur innerhalb des ersten Monats der Bearbeitungszeit zurückgegeben werden. Macht der oder die Studierende einen triftigen Grund geltend, kann der Prüfungsausschuss die in Absatz 3 festgelegte Bearbeitungszeit auf Antrag der oder des Studierenden um höchstens einen Monat verlängern. Wird die Bachelorarbeit nicht fristgerecht abgeliefert, gilt sie als mit „nicht ausreichend“ (5,0) bewertet, es sei denn, dass die Studierenden dieses Versäumnis nicht zu vertreten haben.

(7) Die Bachelorarbeit wird von mindestens einem/einer Hochschullehrer/in oder einem/einer leitenden Wissenschaftler/in gemäß § 14 abs. 3 Ziff. 1 KITG und einem/einer weiteren Prüfenden bewertet. In der Regel ist eine/r der Prüfenden die Person, die die Arbeit gemäß Absatz 2 vergeben hat. Bei nicht übereinstimmender Beurteilung dieser beiden Personen setzt der Prüfungsausschuss im Rahmen der Bewertung dieser beiden Personen die Note der Bachelorarbeit fest; er kann auch einen weiteren Gutachter bestellen. Die Bewertung hat innerhalb von sechs Wochen nach Abgabe der Bachelorarbeit zu erfolgen.

§ 14 a Berufspraktikum

(1) Während des Bachelorstudiums ist ein Berufspraktikum abzuleisten, welches geeignet ist, den Studierenden eine Anschauung von berufspraktischer Tätigkeit in Technischer Volkswirtschaftslehre zu vermitteln. Dem Berufspraktikum sind zehn Leistungspunkte zugeordnet.

(2) Die Studierenden setzen sich in eigener Verantwortung mit geeigneten privaten oder öffentlichen Einrichtungen in Verbindung, an denen das Praktikum abgeleistet werden kann. Das Nähere regelt das Modulhandbuch.

§ 15 Zusatzleistungen

(1) Es können auch weitere Leistungspunkte (Zusatzleistungen) im Umfang von höchstens 30 LP aus dem Gesamtangebot des KIT erworben werden. § 3 und § 4 der Prüfungsordnung bleiben davon unberührt. Diese Zusatzleistungen gehen nicht in die Festsetzung der Gesamt- und Modulnoten ein. Die bei der Festlegung der Modulnote nicht berücksichtigten LP werden als Zu-

satzleistungen im Transcript of Records aufgeführt und als Zusatzleistungen gekennzeichnet. Auf Antrag der/des Studierenden werden die Zusatzleistungen n das Bachelorzeugnis aufgenommen und als Zusatzleistungen gekennzeichnet. Zusatzleistungen werden mit den nach § 7 vorgesehenen Noten gelistet.

(2) Die Studierenden haben bereits bei der Anmeldung zu einer Prüfung in einem Modul diese als Zusatzleistung zu deklarieren. Auf Antrag der Studierenden kann die Zuordnung des Moduls später geändert werden.

§ 15 a Mastervorzug

Studierende, die im Bachelorstudium bereits mindestens 120 LP erworben haben, können zusätzlich zu den in § 15 Abs. 1 genannten Zusatzleistungen Leistungspunkte aus einem konsekutiven Masterstudiengang am KIT im Umfang von höchstens 30 LP erwerben (Mastervorzugsleistungen). § 3 und § 4 der Prüfungsordnung bleiben davon unberührt. Die Mastervorzugsleistungen gehen nicht in die Festsetzung der Gesamt-, Fach- und Modulnoten ein. Sie werden im Transcript of Records aufgeführt und als solche gekennzeichnet sowie mit den nach § 7 vorgesehenen Noten gelistet. § 15 Absatz 2 gilt entsprechend. Über die Genehmigung von Mastervorzugsleistungen entscheidet der Prüfungsausschuss auf Antrag der/des Studierenden.

§ 16 Überfachliche Qualifikationen

Neben der Vermittlung von fachlichen Qualifikationen ist der Auf- und Ausbau überfachlicher Qualifikationen im Umfang von mindestens 6 LP Bestandteil eines Bachelorstudiums. Überfachliche Qualifikationen können additiv oder integrativ vermittelt werden.

§ 17 Prüfungsausschuss

(1) Für den Bachelorstudiengang Technische Volkswirtschaftslehre wird ein Prüfungsausschuss gebildet. Er besteht aus fünf stimmberechtigten Mitgliedern: vier Hochschullehrer/innen / leitenden Wissenschaftler/innen gemäß § 14 Abs. 3 Ziff. 1 KITG / Privatdozentinnen bzw. -dozenten, einer /einem akademischen Mitarbeiter/in nach § 52 LHG / wissenschaftlichen Mitarbeiter/in gemäß § 14 Abs. 3 Ziff. 2 KITG und einer bzw. einem Studierenden mit beratender Stimme. Im Falle der Einrichtung eines gemeinsamen Prüfungsausschusses für den Bachelor- und den Masterstudiengang Technische Volkswirtschaftslehre erhöht sich die Anzahl der Studierenden auf zwei Mitglieder mit beratender Stimme, wobei je eine bzw. einer dieser Beiden aus dem Bachelor- und aus dem Masterstudiengang stammt. Die Amtszeit der nichtstudentischen Mitglieder beträgt zwei Jahre, die des studentischen Mitglieds ein Jahr.

(2) Die/der Vorsitzende, ihre/sein Stellvertreter/in, die weiteren Mitglieder des Prüfungsausschusses sowie deren Stellvertreter/innen werden von dem KIT-Fakultätsrat bestellt, die akademischen Mitarbeiter/innen nach § 52 LHG, die wissenschaftlichen Mitarbeiter gemäß § 14 Abs. 3 Ziff. 2 KITG und die Studierenden auf Vorschlag der Mitglieder der jeweiligen Gruppe; Wiederbestellung ist möglich. Die/der Vorsitzende und deren/dessen Stellvertreter/in müssen Hochschullehrer/innen oder leitende Wissenschaftler/innen § 14 Abs. 3 Ziff. 1 KITG sein. Die/der Vorsitzende des Prüfungsausschusses nimmt die laufenden Geschäfte wahr und wird durch das jeweilige Prüfungssekretariat unterstützt.

(3) Der Prüfungsausschuss achtet auf die Einhaltung der Bestimmungen dieser Studien- und Prüfungsordnung und fällt die Entscheidungen in Prüfungsangelegenheiten. Er entscheidet über die Anerkennung von Studienzeiten sowie Studien- und Prüfungsleistungen und trifft die Feststellung gemäß § 19 Absatz 1 Satz 1. Er berichtet der KIT-Fakultät regelmäßig über die Entwicklung der Prüfungs- und Studienzeiten, einschließlich der Bearbeitungszeiten für die Bachelorarbeiten und die Verteilung der Modul- und Gesamtnoten. Er ist zuständig für Anregungen zur Reform der Studien- und Prüfungsordnung und zu Modulbeschreibungen. Der Prüfungsausschuss entscheidet mit der Mehrheit seiner Stimmen. Bei Stimmengleichheit entscheidet der Vorsitzende des Prüfungsausschusses.

(4) Der Prüfungsausschuss kann die Erledigung seiner Aufgaben für alle Regelfälle auf die/den Vorsitzende/n des Prüfungsausschusses übertragen. In dringenden Angelegenheiten, deren Erledigung nicht bis zu der nächsten Sitzung des Prüfungsausschusses warten kann, entscheidet die/der Vorsitzende des Prüfungsausschusses.

(5) Die Mitglieder des Prüfungsausschusses haben das Recht, der Abnahme von Prüfungen beizuwohnen. Die Mitglieder des Prüfungsausschusses, die Prüfenden und die Beisitzenden unterliegen der Verschwiegenheit. Sofern sie nicht im öffentlichen Dienst stehen, sind sie durch die/den Vorsitzende/n zur Verschwiegenheit zu verpflichten.

(6) In Angelegenheiten des Prüfungsausschusses, die eine an einer anderen KIT-Fakultät zu absolvierende Prüfungsleistung betreffen, ist auf Antrag eines Mitgliedes des Prüfungsausschusses eine fachlich zuständige und von der betroffenen KIT-Fakultät zu nennende prüfungsberechtigte Person hinzuzuziehen.

(7) Belastende Entscheidungen des Prüfungsausschusses sind schriftlich mitzuteilen. Sie sind zu begründen und mit einer Rechtsbehelfsbelehrung zu versehen. Vor einer Entscheidung ist Gelegenheit zur Äußerung zu geben. Widersprüche gegen Entscheidungen des Prüfungsausschusses sind innerhalb eines Monats nach Zugang der Entscheidung schriftlich oder zur Niederschrift beim Präsidium des KIT einzulegen.

§ 18 Prüfende und Beisitzende

(1) Der Prüfungsausschuss bestellt die Prüfenden. Er kann die Bestellung der/dem Vorsitzenden übertragen.

(2) Prüfende sind Hochschullehr/innen sowie leitende Wissenschaftler/innen gemäß § 14 Abs. 3 Ziff. 1 KITG, habilitierte Mitglieder und akademische Mitarbeiter/innen gemäß § 52 LHG, welche einer KIT-Fakultät angehören und denen die Prüfungsbefugnis übertragen wurde; desgleichen kann wissenschaftlichen Mitarbeitern gemäß § 14 Abs. 3 Ziff. 2 KITG die Prüfungsbefugnis übertragen werden. Bestellt werden darf nur, wer mindestens die dem jeweiligen Prüfungsgegenstand entsprechende fachwissenschaftliche Qualifikation erworben hat.

(3) Soweit Lehrveranstaltungen von anderen als den unter Absatz 2 genannten Personen durchgeführt werden, sollen diese zu Prüfenden bestellt werden, sofern eine KIT-Fakultät eine Prüfungsbefugnis erteilt hat und sie die gemäß Absatz 2 Satz 2 vorausgesetzte Qualifikation nachweisen können.

(4) Die Beisitzenden werden durch die Prüfenden benannt. Zu Beisitzenden darf nur bestellt werden, wer einen akademischen Abschluss in einem Studiengang der Bereiche Wirtschafts- oder Ingenieurwissenschaften oder einen gleichwertigen akademischen Abschluss erworben hat.

§ 19 Anerkennung von Studien- und Prüfungsleistungen, Studienzeiten

(1) Studien- und Prüfungsleistungen sowie Studienzeiten, die in Studiengängen an staatlichen oder staatlich anerkannten Hochschulen und Berufsakademien der Bundesrepublik Deutschland oder an ausländischen staatlichen oder staatlich anerkannten Hochschulen erbracht wurden, werden auf Antrag der Studierenden anerkannt, sofern hinsichtlich der erworbenen Kompetenzen kein wesentlicher Unterschied zu den Leistungen oder Abschlüssen besteht, die ersetzt werden sollen. Dabei ist kein schematischer Vergleich, sondern eine Gesamtbetrachtung vorzunehmen. Bezüglich des Umfangs einer zur Anerkennung vorgelegten Studienleistung (Anrechnung) werden die Grundsätze des ECTS herangezogen.

(2) Die Studierenden haben die für die Anerkennung erforderlichen Unterlagen vorzulegen. Studierende, die neu in den Bachelorstudiengang Technische Volkswirtschaftslehre immatrikuliert wurden, haben den Antrag mit den für die Anerkennung erforderlichen Unterlagen innerhalb eines Semesters nach Immatrikulation zu stellen. Bei Unterlagen, die nicht in deutscher oder englischer Sprache vorliegen, kann eine amtlich beglaubigte Übersetzung verlangt werden. Die Be-

weislast dafür, dass der Antrag die Voraussetzungen für die Anerkennung nicht erfüllt, liegt beim Prüfungsausschuss.

(3) Werden Leistungen angerechnet, die nicht am KIT erbracht wurden, werden sie im Zeugnis als „anerkannt“ ausgewiesen.

Liegen Noten vor, werden die Noten, soweit die Notensysteme vergleichbar sind, übernommen und in die Berechnung der Modulnoten und der Gesamtnote einbezogen. Sind die Notensysteme nicht vergleichbar, können die Noten umgerechnet werden. Liegen keine Noten vor, wird der Vermerk „bestanden“ aufgenommen.

(4) Bei der Anerkennung von Studien- und Prüfungsleistungen, die außerhalb der Bundesrepublik Deutschland erbracht wurden, sind die von der Kultusministerkonferenz und der Hochschulrektorenkonferenz gebilligten Äquivalenzvereinbarungen sowie Absprachen im Rahmen der Hochschulpartnerschaften zu beachten.

(5) Außerhalb des Hochschulsystems erworbene Kenntnisse und Fähigkeiten werden angerechnet, wenn sie nach Inhalt und Niveau den Studien- und Prüfungsleistungen gleichwertig sind, die ersetzt werden sollen und die Institution, in der die Kenntnisse und Fähigkeiten erworben wurden, ein genormtes Qualitätssicherungssystem hat. Die Anrechnung kann in Teilen versagt werden, wenn mehr als 50 Prozent des Hochschulstudiums ersetzt werden soll.

(6) Zuständig für Anerkennung und Anrechnung ist der Prüfungsausschuss. Im Rahmen der Feststellung, ob ein wesentlicher Unterschied im Sinne des Absatz 1 vorliegt, sind die zuständigen Fachvertreter/innen zu hören. Der Prüfungsausschuss entscheidet in Abhängigkeit von Art und Umfang der anzurechnenden Studien- und Prüfungsleistungen über die Einstufung in ein höheres Fachsemester.

II. Bachelorprüfung

§ 20 Umfang und Art der Bachelorprüfung

(1) Die Bachelorprüfung besteht aus den Modulprüfungen ach Absatz 2 sowie dem Modul Bachelorarbeit (§ 14) und dem Berufspraktikum (§ 14 a).

(2) Es sind Modulprüfungen in folgenden Pflichtfächern abzulegen:

1. **Betriebswirtschaftslehre**:	Modul(e) im Umfang von 24 LP,
2. **Volkswirtschaftslehre**:	Modul(e) im Umfang von 33 LP,
3. **Informatik**:	Modul(e) im Umfang von15 LP,
4. **Operations Research:**	Modul(e) im Umfang von 9 LP,
5. **Recht:**	Modul(e) im Umfang von 11 LP,
6. **Physik** oder **Chemie:**	Modul(e) im Umfang von 14 LP,
7. **Statistik**:	Modul(e) im Umfang von 10 LP,
8. **Mathematik**:	Modul(e) im Umfang von 21 LP,
9. **Wahlpflichtbereich:**	Modul(e) im Umfang von 21 LP.

Die Festlegung der zur Auswahl stehenden Module und deren Fachzuordnung wird im Modulhandbuch getroffen.

Die Vermittlung überfachlicher Qualifikationen im Umfang von sechs LP findet im Rahmen der fachwissenschaftlichen Module und dem Berufspraktikum statt.

§ 20 a Leistungsnachweise für die Bachelorprüfung

Voraussetzung für die Anmeldung zur letzten Modulprüfung der Bachelorprüfung ist die Bescheinigung über das erfolgreich abgeleistete Berufspraktikum nach § 14 a. In Ausnahmefällen, die die Studierenden nicht zu vertreten haben, kann der Prüfungsausschuss die nachträgliche Vorlage dieses Leistungsnachweises genehmigen.

§ 21 Bestehen der Bachelorprüfung, Bildung der Gesamtnote

(1) Die Bachelorprüfung ist bestanden, wenn alle in § 20 genannten Modulprüfungen mindestens mit „ausreichend“ bewertet wurden.

(2) Die Gesamtnote der Bachelorprüfung errechnet sich als ein mit Leistungspunkten gewichteter Notendurchschnitt der Fachnoten sowie des Moduls Bachelorarbeit.

Dabei werden die Noten der Fächer gemäß § 20 Abs. 2 Ziffer 1 - 8 mit dem Gewicht der einzelnen Module berücksichtigt, das der jeweiligen Fachnotenberechnung gemäß § 7 Abs. 9 zugrunde liegt. Die Note des Profilfachs gemäß § 20 Abs. 2 Nr. 9 sowie die Note des Moduls Bachelorarbeit werden mit dem doppelten Gewicht ihrer Leistungspunkte berücksichtigt.

(3) Haben Studierende die Bachelorarbeit mit der Note 1,0 und die Bachelorprüfung mit einem Durchschnitt von 1,1 oder besser abgeschlossen, so wird das Prädikat „mit Auszeichnung“ (with distinction) verliehen.

§ 22 Bachelorzeugnis, Bachelorurkunde, Diploma Supplement und Transcript of Records

(1) Über die Bachelorprüfung werden nach Bewertung der letzten Prüfungsleistung eine Bachelorurkunde und ein Zeugnis erstellt. Die Ausfertigung von Bachelorurkunde und Zeugnis soll nicht später als drei Monate nach Ablegen der letzten Prüfungsleistung erfolgen. Bachelorurkunde und Bachelorzeugnis werden in deutscher und englischer Sprache ausgestellt. Bachelorurkunde und Zeugnis tragen das Datum der erfolgreichen Erbringung der letzten Prüfungsleistung. Diese Dokumente werden den Studierenden zusammen ausgehändigt. In der Bachelorurkunde wird die Verleihung des akademischen Bachelorgrades beurkundet. Die Bachelorurkunde wird von dem Präsidenten und der KIT-Dekanin/ dem KIT-Dekan der KIT-Fakultät unterzeichnet und mit dem Siegel des KIT versehen.

(2) Das Zeugnis enthält die Fach- und Modulnoten sowie die den Modulen und Fächern zugeordnete Leistungspunkte und die Gesamtnote. Sofern gemäß § 7 Abs. 2 Satz 2 eine differenzierte Bewertung einzelner Prüfungsleitungen vorgenommen wurde, wird auf dem Zeugnis auch die entsprechende Dezimalnote ausgewiesen; § 7 Abs. 4 bleibt unberührt. Das Zeugnis ist von der KIT-Dekanin/ dem KIT-Dekan der KIT-Fakultät und von der/dem Vorsitzenden des Prüfungsausschusses zu unterzeichnen.

(3) Mit dem Zeugnis erhalten die Studierenden ein Diploma Supplement in deutscher und englischer Sprache, das den Vorgaben des jeweils gültigen ECTS Users‘ Guide entspricht sowie ein Transcript of Records in deutscher und englischer Sprache.

(4) Das Transcript of Records enthält in strukturierter Form alle erbrachten Studien- und Prüfungsleistungen. Dies beinhaltet alle Fächer und Fachnoten samt den zugeordneten Leistungspunkten, die dem jeweiligen Fach zugeordneten Module mit den Modulnoten und zugeordneten Leistungspunkten sowie die den Modulen zugeordneten Erfolgskontrollen samt Noten und zugeordneten Leistungspunkten. Absatz 2 Satz 2 gilt entsprechend. Aus dem Transcript of Records soll die Zugehörigkeit von Lehrveranstaltungen zu den einzelnen Modulen deutlich erkennbar sein. Angerechnete Studien- und Prüfungsleistungen sind im Transcript of Records aufzunehmen. Alle Zusatzleistungen werden im Transcript of Records aufgeführt.

(5) Die Bachelorurkunde, das Bachelorzeugnis und das Diploma Supplement einschließlich des Transcript of Records werden vom Studierendenservice des KIT ausgestellt.

III. Schlussbestimmungen

§ 23 Bescheinigung von Prüfungsleistungen

Haben Studierende die Bachelorprüfung endgültig nicht bestanden, wird ihnen auf Antrag und gegen Vorlage der Exmatrikulationsbescheinigung eine schriftliche Bescheinigung ausgestellt,

die die erbrachten Studien- und Prüfungsleistungen und deren Noten sowie die zur Prüfung noch fehlenden Studien- und Prüfungsleistungen enthält und erkennen lässt, dass die Prüfung insgesamt nicht bestanden ist. Dasselbe gilt, wenn der Prüfungsanspruch erloschen ist.

§ 24 Aberkennung des Bachelorgrades

(1) Haben Studierende bei einer Prüfungsleistung getäuscht und wird diese Tatsache nach der Aushändigung des Zeugnisses bekannt, so können die Noten der Modulprüfungen, bei denen getäuscht wurde, berichtigt werden. Gegebenenfalls kann die Modulprüfung für „nicht ausreichend“ (5,0) und die Bachelorprüfung für „nicht bestanden“ erklärt werden.

(2) Waren die Voraussetzungen für die Zulassung zu einer Prüfung nicht erfüllt, ohne dass Studierende darüber täuschen wollte, und wird diese Tatsache erst nach Aushändigung des Zeugnisses bekannt, wird dieser Mangel durch das Bestehen der Prüfung geheilt. Hat die/der Studierende die Zulassung vorsätzlich zu Unrecht erwirkt, so kann die Modulprüfung für „nicht ausreichend“ (5,0) und die Bachelorprüfung für „nicht bestanden“ erklärt werden.

(3) Vor einer Entscheidung des Prüfungsausschusses ist Gelegenheit zur Äußerung zu geben.

(4) Das unrichtige Zeugnis ist zu entziehen und gegebenenfalls ein neues zu erteilen. Mit dem unrichtigen Zeugnis ist auch die Bachelorurkunde einzuziehen, wenn die Bachelorprüfung aufgrund einer Täuschung für „nicht bestanden“ erklärt wurde.

(5) Eine Entscheidung nach Absatz 1 und Absatz 2 Satz 2 ist nach einer Frist von fünf Jahren ab dem Datum des Zeugnisses ausgeschlossen.

(6) Die Aberkennung des akademischen Grades richtet sich nach § 35 Abs. 7 LHG.

§ 25 Einsicht in die Prüfungsakten

(1) Nach Abschluss der Bachelorprüfung wird den Studierenden auf Antrag innerhalb eines Jahres Einsicht in das Prüfungsexemplar ihrer Bachelorarbeit, die darauf bezogenen Gutachten und in die Prüfungsprotokolle gewährt.

(2) Für die Einsichtnahme in die schriftlichen Modulprüfungen, schriftlichen Modulteilprüfungen bzw. Prüfungsprotokolle gilt eine Frist von einem Monat nach Bekanntgabe des Prüfungsergebnisses.

(3) Der/die Prüfende bestimmt Ort und Zeit der Einsichtnahme.

(4) Prüfungsunterlagen sind mindestens fünf Jahre aufzubewahren.

§ 26 Inkrafttreten, Übergangsvorschriften

(1) Diese Studien- und Prüfungsordnung tritt am 01. Oktober 2015 in Kraft und gilt für

1. Studierende, die ihr Studium im Bachelorstudiengang Technische Volkswirtschaftslehre am KIT im ersten Fachsemester aufnehmen, sowie

2. für Studierende, die ihr Studium im Bachelorstudiengang Technische Volkswirtschaftslehre am KIT in einem höheren Fachsemester aufnehmen, sofern dieses Fachsemester nicht über dem Fachsemester liegt, das der erste Jahrgang nach Ziff. 1 erreicht.

(2) Die Studien- und Prüfungsordnung des KIT für den Bachelorstudiengang Technische Volkswirtschaftslehre vom 06. März 2007 (Amtliche Bekanntmachung des KIT Nr. 35 vom 11. Juni 2007), zuletzt geändert durch Satzung vom 27. März 2014 (Amtliche Bekanntmachung des KIT Nr. 19 vom 28. März 2014), behält Gültigkeit für

1. Studierende, die ihr Studium im Bachelorstudiengang Technische Volkswirtschaftslehre am KIT zuletzt im Sommersemester 2015 aufgenommen haben, sowie

2. für Studierende, die ihr Studium im Bachelorstudiengang Technische Volkswirtschaftslehre am KIT ab dem Wintersemester 2015/16 in einem höheren Fachsemester aufnehmen, sofern das Fachsemester über dem liegt, das der erste Jahrgang nach Absatz 1 Ziff. 1 erreicht hat. Im Übrigen tritt sie außer Kraft.

(3) Studierende, die auf Grundlage der Studien- und Prüfungsordnung für den Bachelorstudiengang Technische Volkswirtschaftslehre vom 06. März 2007 (Amtliche Bekanntmachung des KIT Nr. 35 vom 11. Juni 2007), zuletzt geändert durch Satzung vom 27. März 2014 (Amtliche Bekanntmachung des KIT Nr. 19 vom 28. März 2014), ihr Studium am KIT aufgenommen haben, können Prüfungen auf Grundlage dieser Studien- und Prüfungsordnung letztmalig bis zum Ende des Prüfungszeitraums des Sommersemesters 2020 ablegen.

Karlsruhe, den 24. September 2015

Professor Dr.-Ing. Holger Hanselka
(Präsident)

I. Allgemeine Bestimmungen

§ 1 Geltungsbereich, Ziele

(1) Diese Bachelorprüfungsordnung regelt Studienablauf, Prüfungen und den Abschluss des Studiums im Bachelorstudiengang Technische Volkswirtschaftslehre an der Universität Karlsruhe (TH).

(2) Im Bachelorstudium sollen die wissenschaftlichen Grundlagen und die Methodenkompetenz der Fachwissenschaften vermittelt werden. Ziel des Studiums ist die Fähigkeit, das erworbene Wissen berufsfeldbezogen anzuwenden sowie einen konsekutiven Masterstudiengang erfolgreich absolvieren zu können.

§ 2 Akademischer Grad

Aufgrund der bestandenen Bachelorprüfung wird der akademische Grad „Bachelor of Science" (abgekürzt: „B.Sc.") für den Bachelorstudiengang Technische Volkswirtschaftslehre verliehen.

§ 3 Regelstudienzeit, Studienaufbau, Leistungspunkte

(1) Die Regelstudienzeit beträgt sechs Semester. Sie umfasst ein Betriebspraktikum, Prüfungen und die Bachelorarbeit.

(2) Die im Studium zu absolvierenden Lehrinhalte sind auf Fächer verteilt. Die Fächer sind in Module gegliedert, die jeweils aus einer Lehrveranstaltung oder mehreren thematisch und zeitlich aufeinander bezogenen Lehrveranstaltungen bestehen. Studienplan oder Modulhandbuch beschreiben Art, Umfang und Zuordnung der Module zu einem Fach sowie die Möglichkeiten, Module untereinander zu kombinieren. Die Fächer und ihr Umfang werden in § 17 definiert.

(3) Der für das Absolvieren von Lehrveranstaltungen und Modulen vorgesehene Arbeitsaufwand wird in Leistungspunkten (Credits) ausgewiesen. Die Maßstäbe für die Zuordnung von Leistungspunkten entsprechen dem ECTS (European Credit Transfer System). Ein Leistungspunkt entspricht einem Arbeitsaufwand von etwa 30 Stunden.

(4) Der Umfang der für den erfolgreichen Abschluss des Studiums erforderlichen Studienleistungen wird in Leistungspunkten gemessen und beträgt insgesamt 180 Leistungspunkte.

(5) Die Leistungspunkte sind in der Regel gleichmäßig auf die Semester zu verteilen.

(6) Lehrveranstaltungen/Prüfungen können auch in englischer Sprache angeboten/abgenommen werden.

§ 4 Aufbau der Prüfungen

(1) Die Bachelorprüfung besteht aus einer Bachelorarbeit, Fachprüfungen und einem Seminarmodul. Jede der Fachprüfungen besteht aus einer oder mehreren Modulprüfungen. Eine Modulprüfung kann in mehrere Modulteilprüfungen untergliedert sein. Eine Modul(teil)prüfung besteht aus mindestens einer Erfolgskontrolle nach Absatz 2 Nr. 1 und 2. Ausgenommen hiervon sind Seminarmodule.

(2) Erfolgskontrollen sind:

1. schriftliche Prüfungen,
2. mündliche Prüfungen,
3. Erfolgskontrollen anderer Art.

Erfolgskontrollen anderer Art sind z. B. Vorträge, Marktstudien, Projekte, Fallstudien, Experimente, schriftliche Arbeiten, Berichte, Seminararbeiten und Klausuren, sofern sie nicht als schriftliche oder mündliche Prüfung in der Modul- oder Lehrveranstaltungsbeschreibung im Modulhandbuch ausgewiesen sind.

(3) In den Fachprüfungen (nach § 17 Absatz 2 und Absatz 3 Nr. 1 bis 7) sind mindestens 50 vom Hundert einer Modulprüfung in Form von schriftlichen oder mündlichen Prüfungen (Absatz 2 Nr. 1 und 2) abzulegen, die restliche Prüfung erfolgt durch Erfolgskontrollen anderer Art (Absatz 2 Nr. 3).

§ 5 Anmeldung und Zulassung zu den Prüfungen

(1) Die Zulassung zu den Prüfungen nach § 4 Absatz 2 Nr. 1 und 2 sowie zur Bachelorarbeit erfolgt im Studienbüro.

Um zu Prüfungen in einem Modul zugelassen zu werden, muss beim Studienbüro eine bindende Erklärung über die Wahl des betreffenden Moduls und dessen Zuordnung zu einem Fach, wenn diese Wahlmöglichkeit besteht, abgegeben werden.

(2) Die Zulassung darf nur abgelehnt werden, wenn

1. der Studierende in einem mit Technischer Volkswirtschaftslehre vergleichbaren oder einem verwandten Studiengang bereits eine Diplomvorprüfung, Diplomprüfung, Bachelor- oder Masterprüfung endgültig nicht bestanden hat, sich in einem Prüfungsverfahren befindet oder den Prüfungsanspruch in einem solchen Studiengang verloren hat oder
2. die in § 18 genannte Voraussetzung nicht erfüllt ist.

In Zweifelsfällen entscheidet der Prüfungsausschuss.

§ 6 Durchführung von Prüfungen und Erfolgskontrollen

(1) Erfolgskontrollen werden studienbegleitend, in der Regel im Verlauf der Vermittlung der Lehrinhalte der einzelnen Module oder zeitnah danach, durchgeführt.

(2) Die Art der Erfolgskontrollen (§ 4 Absatz 2 Nr. 1 bis 3) eines Moduls wird im Studienplan oder Modulhandbuch in Bezug auf die Lehrinhalte der betreffenden Lehrveranstaltungen und die Lehrziele des Moduls festgelegt. Die Art der Erfolgskontrollen, ihre Häufigkeit, Reihenfolge und Gewichtung, die Grundsätze zur Bildung der Modulteilprüfungsnoten und der Modulnote sowie Prüfer müssen mindestens sechs Wochen vor Semesterbeginn bekannt gegeben werden. Im Einvernehmen von Prüfer und Studierendem kann die Art der Erfolgskontrolle auch nachträglich geändert werden. Dabei ist jedoch § 4 Absatz 3 zu berücksichtigen.

(3) Bei unvertretbar hohem Prüfungsaufwand kann eine schriftlich durchzuführende Prüfung auch mündlich oder eine mündlich durchzuführende Prüfung auch schriftlich abgenommen werden. Diese Änderung muss mindestens sechs Wochen vor der Prüfung bekannt gegeben werden.

Bei Einvernehmen zwischen Prüfer und Kandidat kann der Prüfungsausschuss in begründeten Ausnahmefällen auch kurzfristig die Änderung der Prüfungsform genehmigen.

Wird die Wiederholungsprüfung einer schriftlichen Prüfung in mündlicher Form abgelegt, entfällt die mündliche Nachprüfung nach § 8 Absatz 2.

(4) Macht ein Studierender glaubhaft, dass er wegen länger andauernder oder ständiger körperlicher Behinderung nicht in der Lage ist, die Erfolgskontrollen ganz oder teilweise in der vorgeschriebenen Form abzulegen, entscheidet der Prüfungsausschuss über eine alternative Form der Erfolgskontrollen.

(5) Bei Lehrveranstaltungen in englischer Sprache werden die entsprechenden Erfolgskontrollen in der Regel in englischer Sprache abgenommen.

(6) Schriftliche Prüfungen (§ 4 Absatz 2 Nr. 1) sind in der Regel von zwei Prüfern nach § 15 Absatz 2 oder § 15 Absatz 3 zu bewerten. Die Note ergibt sich aus dem arithmetischen Mittel der Einzelbewertungen. Entspricht das arithmetische Mittel keiner der in § 7 Absatz 2 Satz 2 definierten Notenstufen, so ist auf die nächstliegende Notenstufe zu runden. Bei gleichem Abstand ist auf die nächst bessere Notenstufe zu runden. Das Bewertungsverfahren soll sechs Wochen nicht überschreiten. Schriftliche Einzelprüfungen dauern in der Regel mindestens 60 und höchstens 240 Minuten.

(7) Mündliche Prüfungen (§ 4 Absatz 2 Nr. 2) sind von mehreren Prüfern (Kollegialprüfung) oder von einem Prüfer in Gegenwart eines Beisitzenden als Gruppen- oder Einzelprüfungen abzunehmen und zu bewerten. Vor der Festsetzung der Note hört der Prüfer die anderen an der Kollegialprüfung mitwirkenden Prüfer an. Mündliche Prüfungen dauern in der Regel mindestens 15 Minuten und maximal 45 Minuten pro Studierendem.

(8) Die wesentlichen Gegenstände und Ergebnisse der mündlichen Prüfung in den einzelnen Fächern sind in einem Protokoll festzuhalten. Das Ergebnis der Prüfung ist dem Studierenden im Anschluss an die mündliche Prüfung bekannt zu geben.

(9) Studierende, die sich in einem späteren Prüfungszeitraum der gleichen Prüfung unterziehen wollen, werden entsprechend den räumlichen Verhältnissen als Zuhörer bei mündlichen Prüfungen zugelassen. Die Zulassung erstreckt sich nicht auf die Beratung und Bekanntgabe der Prüfungsergebnisse. Aus wichtigen Gründen oder auf Antrag des Studierenden ist die Zulassung zu versagen.

(10) Für Erfolgskontrollen anderer Art sind angemessene Bearbeitungsfristen einzuräumen und Abgabetermine festzulegen. Dabei ist durch die Art der Aufgabenstellung und durch entsprechende Dokumentation sicherzustellen, dass die erbrachte Studienleistung dem Studierenden zurechenbar ist.

(11) Schriftliche Arbeiten im Rahmen einer Erfolgskontrolle anderer Art haben dabei die folgende Erklärung zu tragen: „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." Trägt die Arbeit diese Erklärung nicht, wird diese Arbeit nicht angenommen.

(12) Bei mündlich durchgeführten Erfolgskontrollen anderer Art muss neben dem Prüfer ein Beisitzer anwesend sein, der zusätzlich zum Prüfer die Protokolle zeichnet.

§ 7 Bewertung von Prüfungen und Erfolgskontrollen

(1) Das Ergebnis einer Erfolgskontrolle wird von den jeweiligen Prüfern in Form einer Note festgesetzt.

(2) Im Bachelorzeugnis dürfen nur folgende Noten verwendet werden:

1	=	sehr gut (very good)	=	hervorragende Leistung
2	=	gut (good)	=	eine Leistung, die erheblich über den durchschnittlichen Anforderungen liegt
3	=	befriedigend (satisfactory)	=	eine Leistung, die durchschnittlichen Anforderungen entspricht
4	=	ausreichend (sufficient)	=	eine Leistung, die trotz ihrer Mängel noch den Anforderungen genügt
5	=	nicht ausreichend (failed)	=	eine Leistung, die wegen erheblicher Mängel nicht den Anforderungen genügt

Für die Bachelorarbeit und die Modulteilprüfungen sind zur differenzierten Bewertung nur folgende Noten zugelassen:

1	=	1.0, 1.3	=	sehr gut
2	=	1.7, 2.0, 2.3	=	gut
3	=	2.7, 3.0, 3.3	=	befriedigend
4	=	3.7, 4.0	=	ausreichend
5	=	4.7, 5.0	=	nicht ausreichend

Diese Noten müssen in den Protokollen und in den Anlagen (Transcript of Records und Diploma Supplement) verwendet werden.

(3) Für Erfolgskontrollen anderer Art kann die Benotung „bestanden" (passed) oder „nicht bestanden" (failed) vergeben werden.

(4) Bei der Bildung der gewichteten Durchschnitte der Fachnoten, Modulnoten und der Gesamtnote wird nur die erste Dezimalstelle hinter dem Komma berücksichtigt; alle weiteren Stellen werden ohne Rundung gestrichen.

(5) Jedes Modul, jede Lehrveranstaltung und jede Erfolgskontrolle darf jeweils nur einmal angerechnet werden.

(6) Erfolgskontrollen anderer Art dürfen in Modulteilprüfungen oder Modulprüfungen nur eingerechnet werden, wenn die Benotung nicht nach Absatz 3 erfolgt ist. Die zu dokumentierenden Erfolgskontrollen und die daran geknüpften Bedingungen werden im Studienplan oder Modulhandbuch festgelegt.

(7) Eine Modulteilprüfung ist bestanden, wenn die Note mindestens „ausreichend" (4.0) ist.

(8) Eine Modulprüfung ist dann bestanden, wenn die Modulnote mindestens „ausreichend" (4.0) ist. Die Modulprüfung und die Bildung der Modulnote werden im Studienplan oder Modulhandbuch geregelt. Die differenzierten Noten der betreffenden Erfolgskontrollen sind bei der Berechnung der Modulnoten als Ausgangsdaten zu verwenden. Enthält der Studienplan oder das Modulhandbuch keine Regelung darüber, wann eine Modulprüfung bestanden ist, so ist diese Modulprüfung dann bestanden, wenn alle dem Modul zugeordneten Modulteilprüfungen bestanden wurden.

(9) Eine Fachprüfung ist bestanden, wenn die für das Fach erforderliche Anzahl von Leistungspunkten über die im Studienplan oder Modulhandbuch definierten Modulprüfungen nachgewiesen wird.

Die Noten der Module eines Faches gehen in die Fachnote mit einem Gewicht proportional zu den ausgewiesenen Leistungspunkten der Module ein.

(10) Die Ergebnisse der Bachelorarbeit, der Modulprüfungen bzw. der Modulteilprüfungen, der Erfolgskontrollen anderer Art sowie die erworbenen Leistungspunkte werden durch das Studienbüro der Universität erfasst.

(11) Innerhalb der Regelstudienzeit, einschließlich der Urlaubssemester für das Studium an einer ausländischen Hochschule (Regelprüfungszeit), können in einem Fach auch mehr Leistungspunkte erworben werden als für das Bestehen der Fachprüfung erforderlich sind. In diesem Fall werden bei der Festlegung der Fachnote nur die Modulnoten berücksichtigt, die unter Abdeckung der erforderlichen Leistungspunkte die beste Fachnote ergeben.

Die in diesem Sinne für eine Fachprüfung nicht gewerteten Erfolgskontrollen und Leistungspunkte können im Rahmen der Zusatzfachprüfung nach § 13 nachträglich geltend gemacht werden.

(12) Die Gesamtnote der Bachelorprüfung, die Fachnoten und die Modulnoten lauten:

bis 1,5	=	sehr gut
1.6 bis 2.5	=	gut
2.6 bis 3.5	=	befriedigend
3.6 bis 4.0	=	ausreichend

(13) Zusätzlich zu den Noten nach Absatz 2 werden ECTS-Noten für Fachprüfungen, Modulprüfungen und für die Bachelorprüfung nach folgender Skala vergeben:

ECTS-Note	Quote	Definition
A	10	gehört zu den besten 10 % der Studierenden, die die Erfolgskontrolle bestanden haben
B	25	gehört zu den nächsten 25 % der Studierenden, die die Erfolgskontrolle bestanden haben
C	30	gehört zu den nächsten 30 % der Studierenden, die die Erfolgskontrolle bestanden haben
D	25	gehört zu den nächsten 25 % der Studierenden, die die Erfolgskontrolle bestanden haben
E	10	gehört zu den letzten 10 % der Studierenden, die die Erfolgskontrolle bestanden haben
FX		nicht bestanden (failed) – es sind Verbesserungen erforderlich, bevor die Leistungen anerkannt werden
F		nicht bestanden (failed) – es sind erhebliche Verbesserungen erforderlich

Die Quote ist als der Prozentsatz der erfolgreichen Studierenden definiert, die diese Note in der Regel erhalten. Dabei ist von einer mindestens fünfjährigen Datenbasis über mindestens 30 Studierende auszugehen. Für die Ermittlung der Notenverteilungen, die für die ECTS-Noten erforderlich sind, ist das Studienbüro der Universität zuständig.

§ 8 Erlöschen des Prüfungsanspruchs, Orientierungsprüfung, Wiederholung von Prüfungen und Erfolgskontrollen

(1) Die Modulteilprüfung Mikroökonomie (VWL I) im Fach Volkswirtschaftslehre (gemäß § 17 Absatz 2 Nr. 2) und die Modulteilprüfung Statistik I im Fach Statistik (gemäß § 17 Absatz 2 Nr. 7 sind bis zum Ende des Prüfungszeitraums des zweiten Fachsemesters abzulegen (Orientierungsprüfungen).

Wer die Orientierungsprüfungen einschließlich etwaiger Wiederholungen bis zum Ende des Prüfungszeitraums des dritten Fachsemesters nicht abgelegt hat, verliert den Prüfungsanspruch im Studiengang, es sei denn, dass er die Fristüberschreitung nicht zu vertreten hat; hierüber entscheidet der Prüfungsausschuss auf Antrag des Studierenden. Eine zweite Wiederholung von Prüfungen der Orientierungsprüfungen ist ausgeschlossen.

(2) Studierende können eine nicht bestandene schriftliche Prüfung (§ 4 Absatz 2 Nr. 1) einmal wiederholen. Wird eine schriftliche Wiederholungsprüfung mit „nicht ausreichend" bewertet, so findet eine mündliche Nachprüfung im zeitlichen Zusammenhang mit dem Termin der nicht bestandenen Prüfung statt. In diesem Falle kann die Note dieser Prüfung nicht besser als 4.0 (ausreichend) sein.

(3) Studierende können eine nicht bestandene mündliche Prüfung (§ 4 Absatz 2 Nr. 2) einmal wiederholen.

(4) Wiederholungsprüfungen nach Absatz 2 und Absatz 3 müssen in Inhalt, Umfang und Form (mündlich oder schriftlich) der ersten Prüfung entsprechen. Ausnahmen kann der Prüfungsausschuss auf Antrag zulassen. Fehlversuche an anderen Hochschulen sind anzurechnen.

(5) Die Wiederholung einer Erfolgskontrolle anderer Art (§ 4 Absatz 2 Nr. 3) wird im Modulhandbuch geregelt.

(6) Eine zweite Wiederholung derselben schriftlichen oder mündlichen Prüfung ist nur in Ausnahmefällen zulässig. Einen Antrag auf Zweitwiederholung hat der Studierende schriftlich beim Prüfungsausschuss zu stellen. Über den ersten Antrag auf Zweitwiederholung entscheidet der Prüfungsausschuss, wenn er den Antrag genehmigt. Wenn der Prüfungsausschuss diesen Antrag ablehnt, entscheidet der Rektor. Über weitere Anträge auf Zweitwiederholung entscheidet nach Stellungnahme des Prüfungsausschusses der Rektor. Absatz 2 Satz 2 und Satz 3 gilt entsprechend.

Bei nicht bestandener Erfolgskontrolle sind dem Kandidaten Umfang und Frist der Wiederholung in geeigneter Weise bekannt zu machen.

(7) Die Wiederholung einer bestandenen Erfolgskontrolle ist nicht zulässig.

(8) Eine Fachprüfung ist nicht bestanden, wenn mindestens ein Modul des Faches nicht bestanden ist.

(9) Die Bachelorarbeit kann bei einer Bewertung mit „nicht ausreichend” einmal wiederholt werden. Eine zweite Wiederholung der Bachelorarbeit ist ausgeschlossen.

(10) Ist gemäß § 34 Absatz 2 Satz 3 LHG die Bachelorprüfung bis zum Beginn der Vorlesungszeit des zehnten Fachsemesters einschließlich etwaiger Wiederholungen nicht vollständig abgelegt, so erlischt der Prüfungsanspruch im Studiengang, es sei denn, dass der Studierende die Fristüberschreitung nicht zu vertreten hat. Die Entscheidung darüber trifft der Prüfungsausschuss.

(11) Der Prüfungsanspruch erlischt endgültig, wenn mindestens einer der folgenden Gründe vorliegt:

1. Der Prüfungsausschuss lehnt einen Antrag auf Fristverlängerung nach Absatz 1 oder Absatz 10 ab.
2. Die Bachelorarbeit ist endgültig nicht bestanden.
3. Eine Erfolgskontrolle nach § 4 Absatz 2 Nr. 1 und 2 ist in einem Fach endgültig nicht bestanden.
4. Der Prüfungsausschuss hat dem Studierenden nach § 9 Absatz 5 den Prüfungsanspruch entzogen.

Eine Erfolgskontrolle ist dann endgültig nicht bestanden, wenn keine Wiederholungsmöglichkeit im Sinne von Absatz 2 mehr besteht oder gemäß Absatz 6 genehmigt wird. Dies gilt auch sinngemäß für die Bachelorarbeit.

§ 9 Versäumnis, Rücktritt, Täuschung, Ordnungsverstoß

(1) Der Studierende kann bei Erfolgskontrollen gemäß § 4 Absatz 2 Nr. 1 ohne Angabe von Gründen noch vor Ausgabe der Prüfungsaufgaben zurücktreten. Bei mündlichen Erfolgskontrollen muss der Rücktritt spätestens drei Werktage vor dem betreffenden Prüfungstermin erklärt werden. Die verbindlichen Regelungen zur ordentlichen Abmeldung werden gemäß § 6 Absatz 2 bekannt gegeben. Eine durch Widerruf abgemeldete Prüfung gilt als nicht angemeldet.

(2) Eine Modulprüfung wird mit „nicht ausreichend" bewertet, wenn der Studierende einen Prüfungstermin ohne triftigen Grund versäumt oder wenn er nach Beginn der Prüfung ohne triftigen

Grund von der Prüfung zurücktritt. Dasselbe gilt, wenn die Bachelorarbeit nicht innerhalb der vorgesehenen Bearbeitungszeit erbracht wird, es sei denn, der Studierende hat die Fristüberschreitung nicht zu vertreten.

(3) Der für den Rücktritt nach Beginn der Prüfung oder das Versäumnis geltend gemachte Grund muss dem Prüfungsausschuss unverzüglich schriftlich angezeigt und glaubhaft gemacht werden. Bei Krankheit des Studierenden oder eines von ihm allein zu versorgenden Kindes oder pflegebedürftigen Angehörigen kann in Zweifelsfällen die Vorlage des Attestes eines vom Prüfungsausschuss benannten Arztes oder ein amtsärztliches Attest verlangt werden.

Die Anerkennung des Rücktritts ist ausgeschlossen, wenn bis zum Eintritt des Hinderungsgrundes bereits Prüfungsleistungen erbracht worden sind und nach deren Ergebnis die Prüfung nicht bestanden werden kann.

Wird der Grund anerkannt, wird ein neuer Termin anberaumt. Die bereits vorliegenden Prüfungsergebnisse sind in diesem Fall anzurechnen.

Bei Modulprüfungen, die aus mehreren Prüfungen bestehen, werden die Prüfungsleistungen dieses Moduls, die bis zu einem anerkannten Rücktritt bzw. einem anerkannten Versäumnis einer Prüfungsleistung dieses Moduls erbracht worden sind, angerechnet.

(4) Versucht der Studierende das Ergebnis einer Erfolgskontrolle durch Täuschung oder Benutzung nicht zugelassener Hilfsmittel zu beeinflussen, gilt die betreffende Erfolgskontrolle als mit „nicht ausreichend" (5.0) bewertet.

(5) Ein Studierender, der den ordnungsgemäßen Ablauf der Prüfung stört, kann vom jeweiligen Prüfer oder der aufsichtsführenden Person von der Fortsetzung der Modulprüfung ausgeschlossen werden. In diesem Fall wird die betreffende Prüfungsleistung mit „nicht ausreichend" (5.0) bewertet. In schwerwiegenden Fällen kann der Prüfungsausschuss den Studierenden von der Erbringung weiterer Prüfungsleistungen ausschließen.

(6) Der Studierende kann innerhalb einer Frist von einem Monat verlangen, dass Entscheidungen gemäß Absatz 4 und Absatz 5 vom Prüfungsausschuss überprüft werden. Belastende Entscheidungen des Prüfungsausschusses sind unverzüglich schriftlich mitzuteilen. Sie sind zu begründen und mit einer Rechtsbehelfsbelehrung zu versehen. Vor einer Entscheidung ist Gelegenheit zur Äußerung zu geben.

(7) Näheres regelt die Allgemeine Satzung der Universität Karlsruhe (TH) zur Redlichkeit bei Prüfungen und Praktika.

§ 10 Mutterschutz, Elternzeit

(1) Auf Antrag sind die Mutterschutzfristen, wie sie im jeweils gültigen Gesetz zum Schutz der erwerbstätigen Mutter (MuSchG) festgelegt sind, entsprechend zu berücksichtigen. Dem Antrag sind die erforderlichen Nachweise beizufügen. Die Mutterschutzfristen unterbrechen jede Frist nach dieser Prüfungsordnung. Die Dauer des Mutterschutzes wird nicht in die Frist eingerechnet.

(2) Gleichfalls sind die Fristen der Elternzeit nach Maßgabe des jeweiligen gültigen Gesetzes (BErzGG) auf Antrag zu berücksichtigen. Der Studierende muss bis spätestens vier Wochen vor dem Zeitpunkt, von dem er die Elternzeit antreten will, dem Prüfungsausschuss unter Beifügung der erforderlichen Nachweise schriftlich mitteilen, in welchem Zeitraum er Elternzeit in Anspruch nehmen will. Der Prüfungsausschuss hat zu prüfen, ob die gesetzlichen Voraussetzungen vorliegen, die bei einem Arbeitnehmer den Anspruch auf Elternzeit auslösen würden, und teilt dem Studierenden das Ergebnis sowie die neu festgesetzten Prüfungszeiten unverzüglich mit. Die Bearbeitungszeit der Bachelorarbeit kann nicht durch Elternzeit unterbrochen werden. Die gestellte Arbeit gilt als nicht vergeben. Nach Ablauf der Elternzeit erhält der Studierende ein neues Thema.

§ 11 Bachelorarbeit

(1) Voraussetzung für die Zulassung zur Bachelorarbeit ist, dass der Studierende sich in der Regel im 3. Studienjahr befindet und nicht mehr als eine der Fachprüfungen der ersten drei Fachsemester laut § 17 Absatz 2 noch nachzuweisen ist.

Vor Zulassung sind Betreuer, Thema und Anmeldedatum dem Prüfungsausschuss bekannt zu geben und im Falle einer Betreuung außerhalb der Fakultät für Wirtschaftswissenschaften durch den Prüfungsausschuss zu genehmigen.

Auf Antrag des Studierenden sorgt der Vorsitzende des Prüfungsausschusses dafür, dass der Studierende innerhalb von vier Wochen nach Antragstellung von einem Betreuer ein Thema für die Bachelorarbeit erhält. Die Ausgabe des Themas erfolgt in diesem Fall über den Vorsitzenden des Prüfungsausschusses.

(2) Thema, Aufgabenstellung und Umfang der Bachelorarbeit sind vom Betreuer so zu begrenzen, dass sie mit dem in Absatz 3 festgelegten Arbeitsaufwand bearbeitet werden kann.

(3) Der Bachelorarbeit werden 12 Leistungspunkte zugeordnet. Die empfohlene Bearbeitungsdauer beträgt drei Monate. Die maximale Bearbeitungsdauer beträgt einschließlich einer Verlängerung vier Monate. Die Bachelorarbeit soll zeigen, dass der Studierende in der Lage ist, ein Problem aus seinem Fach selbstständig und in begrenzter Zeit nach wissenschaftlichen Methoden zu bearbeiten. Sie kann auch in englischer Sprache abgefasst werden.

(4) Die Bachelorarbeit kann von jedem Prüfer nach § 15 Absatz 2 vergeben und betreut werden. Soll die Bachelorarbeit außerhalb der Fakultät angefertigt werden, so bedarf dies der Genehmigung des Prüfungsausschusses gemäß Absatz 1. Dem Studierenden ist Gelegenheit zu geben, für das Thema Vorschläge zu machen. Die Bachelorarbeit kann auch in Form einer Gruppenarbeit zugelassen werden, wenn der als Prüfungsleistung zu bewertende Beitrag des einzelnen Studierenden aufgrund objektiver Kriterien, die eine eindeutige Abgrenzung ermöglichen, deutlich unterscheidbar ist und die Anforderung nach Absatz 3 erfüllt.

(5) Bei der Abgabe der Bachelorarbeit hat der Studierende schriftlich zu versichern, dass er die Arbeit selbstständig verfasst hat und keine anderen als die angegebenen Quellen und Hilfsmittel benutzt hat, die wörtlich oder inhaltlich übernommenen Stellen als solche kenntlich gemacht und die Satzung der Universität Karlsruhe (TH) zur Sicherung guter wissenschaftlicher Praxis in der jeweils gültigen Fassung beachtet hat. Wenn diese Erklärung nicht enthalten ist, wird die Arbeit nicht angenommen. Bei Abgabe einer unwahren Versicherung wird die Bachelorarbeit mit „nicht ausreichend" (5.0) bewertet.

(6) Der Zeitpunkt der Ausgabe des Themas der Bachelorarbeit und der Zeitpunkt der Abgabe der Bachelorarbeit sind beim Prüfungsausschuss aktenkundig zu machen. Das Thema kann nur einmal und nur innerhalb des ersten Monats der Bearbeitungszeit zurückgegeben werden. Ein neues Thema ist binnen vier Wochen zu stellen und auszugeben. Auf begründeten Antrag des Studierenden kann der Prüfungsausschuss die in Absatz 3 festgelegte Bearbeitungszeit um höchstens einen Monat verlängern. Wird die Bachelorarbeit nicht fristgerecht abgeliefert, gilt sie als mit „nicht ausreichend" bewertet, es sei denn, dass der Studierende dieses Versäumnis nicht zu vertreten hat. § 8 gilt entsprechend.

(7) Die Bachelorarbeit wird von einem Betreuer sowie in der Regel von einem weiteren Prüfer bewertet. Einer der beiden muss Juniorprofessor oder Professor sein. Bei nicht übereinstimmender Beurteilung der beiden Prüfer setzt der Prüfungsausschuss im Rahmen der Bewertung der beiden Prüfer die Note der Bachelorarbeit fest. Der Bewertungszeitraum soll sechs Wochen nicht überschreiten.

§ 12 Berufspraktikum

(1) Während des Bachelorstudiums ist ein mindestens achtwöchiges Berufspraktikum, welches mit acht Leistungspunkten bewertet wird, abzuleisten.

(2) Der Studierende setzt sich dazu in eigener Verantwortung mit geeigneten Unternehmen in Verbindung. Der Praktikant wird von einem Prüfer nach § 15 Absatz 2 und einem Mitarbeiter des Unternehmens betreut.

(3) Am Ende des Berufspraktikums ist dem Prüfer ein kurzer Bericht abzugeben und eine Kurzpräsentation über die Erfahrungen im Berufspraktikum zu halten.

(4) Das Berufspraktikum ist abgeschlossen, wenn eine mindestens achtwöchige Tätigkeit nachgewiesen wird, der Bericht abgegeben und die Kurzpräsentation gehalten wurde. Die Durchführung des Berufspraktikums ist im Studienplan oder Modulhandbuch zu regeln. Das Berufspraktikum geht nicht in die Gesamtnote ein.

§ 13 Zusatzmodule, Zusatzleistungen

(1) Der Studierende kann sich weiteren Prüfungen in Modulen unterziehen. § 3, § 4 und § 8 Absatz 10 der Prüfungsordnung bleiben davon unberührt.

(2) Maximal zwei Zusatzmodule mit jeweils mindestens neun Leistungspunkten werden auf Antrag des Studierenden in das Bachelorzeugnis aufgenommen und entsprechend gekennzeichnet.

Zusatzmodule müssen nicht im Studienplan oder Modulhandbuch definiert sein. Im Zweifelsfall entscheidet der Prüfungsausschuss.

Zusatzmodule werden bei der Festsetzung der Gesamtnote nicht mit einbezogen. Alle Zusatzleistungen werden im Transcript of Records automatisch aufgenommen und als Zusatzleistungen gekennzeichnet. Zusatzleistungen werden mit den nach § 7 vorgesehenen Noten gelistet. Diese Zusatzleistungen gehen nicht in die Festsetzung der Gesamt-, Fach- und Modulnoten ein.

(3) Der Studierende hat bereits bei der Anmeldung zu einer Prüfung in einem Modul diese als Zusatzleistung zu deklarieren.

§ 14 Prüfungsausschuss

(1) Für den Bachelorstudiengang Technische Volkswirtschaftslehre wird ein Prüfungsausschuss gebildet. Er besteht aus fünf stimmberechtigten Mitgliedern: vier Professoren, Juniorprofessoren, Hochschul- oder Privatdozenten, einem Vertreter der Gruppe der wissenschaftlichen Mitarbeiter nach § 10 Absatz 1 Satz 2 Nr. 2 LHG und einem Vertreter der Studierenden mit beratender Stimme. Die Amtszeit der nichtstudentischen Mitglieder beträgt zwei Jahre, die des studentischen Mitglieds ein Jahr.

(2) Der Vorsitzende, sein Stellvertreter, die weiteren Mitglieder des Prüfungsausschusses sowie deren Stellvertreter werden vom Fakultätsrat bestellt, die Mitglieder der Gruppe der wissenschaftlichen Mitarbeiter nach § 10 Absatz 1 Satz 2 Nr. 2 LHG und der Vertreter der Studierenden auf Vorschlag der Mitglieder der jeweiligen Gruppe; Wiederbestellung ist möglich. Der Vorsitzende und dessen Stellvertreter müssen Professor oder Juniorprofessor sein. Der Vorsitzende des Prüfungsausschusses nimmt die laufenden Geschäfte wahr und wird durch ein Prüfungssekretariat unterstützt.

(3) Der Prüfungsausschuss regelt die Auslegung und die Umsetzung der Prüfungsordnung in die Prüfungspraxis der Fakultät. Er achtet darauf, dass die Bestimmungen der Prüfungsordnung eingehalten werden. Er berichtet regelmäßig dem Fakultätsrat über die Entwicklung der Prüfungen und Studienzeiten sowie über die Verteilung der Fach- und Gesamtnoten und gibt Anregungen zur Reform des Studienplans und der Prüfungsordnung.

(4) Der Prüfungsausschuss kann die Erledigung seiner Aufgaben in dringenden Angelegenheiten und für alle Regelfälle auf den Vorsitzenden des Prüfungsausschusses übertragen.

(5) Die Mitglieder des Prüfungsausschusses haben das Recht, an Prüfungen teilzunehmen. Die Mitglieder des Prüfungsausschusses, die Prüfer und die Beisitzenden unterliegen der Amtsverschwiegenheit. Sofern sie nicht im öffentlichen Dienst stehen, sind sie durch den Vorsitzenden zur Verschwiegenheit zu verpflichten.

(6) In Angelegenheiten des Prüfungsausschusses, die eine an einer anderen Fakultät zu absolvierende Prüfungsleistung betreffen, ist auf Antrag eines Mitgliedes des Prüfungsausschusses ein fachlich zuständiger und von der betroffenen Fakultät zu nennender Professor, Juniorprofessor, Hochschul- oder Privatdozent hinzuzuziehen. Er hat in diesem Punkt Stimmrecht.

(7) Belastende Entscheidungen des Prüfungsausschusses sind schriftlich mitzuteilen. Sie sind zu begründen und mit einer Rechtsbehelfsbelehrung zu versehen. Widersprüche gegen Entscheidungen des Prüfungsausschusses sind innerhalb eines Monats nach Zugang der Entscheidung schriftlich oder zur Niederschrift an den Prüfungsausschuss zu richten. Hilft der Prüfungsausschuss dem Widerspruch nicht ab, ist er zur Entscheidung dem für die Lehre zuständigen Mitglied des Rektorats vorzulegen.

§ 15 Prüfer und Beisitzende

(1) Der Prüfungsausschuss bestellt die Prüfer und die Beisitzenden. Er kann die Bestellung dem Vorsitzenden übertragen.

(2) Prüfer sind Hochschullehrer und habilitierte Mitglieder sowie wissenschaftliche Mitarbeiter der jeweiligen Fakultät, denen die Prüfungsbefugnis übertragen wurde. Bestellt werden darf nur, wer mindestens die dem jeweiligen Prüfungsgegenstand entsprechende fachwissenschaftliche Qualifikation erworben hat. Bei der Bewertung der Bachelorarbeit muss ein Prüfer Hochschullehrer sein.

(3) Soweit Lehrveranstaltungen von anderen als den unter Absatz 2 genannten Personen durchgeführt werden, sollen diese zum Prüfer bestellt werden, wenn die Fakultät ihnen eine diesbezügliche Prüfungsbefugnis erteilt hat.

(4) Zum Beisitzenden darf nur bestellt werden, wer einen dem jeweiligen Prüfungsgegenstand entsprechenden akademischen Abschluss erworben hat.

§ 16 Anrechnung von Studienzeiten, Anerkennung von Studienleistungen und Modulprüfungen

(1) Studienzeiten und gleichwertige Studienleistungen und Modulprüfungen, die in gleichen oder anderen Studiengängen an anderen Hochschulen erbracht wurden, werden auf Antrag angerechnet. Gleichwertigkeit ist festzustellen, wenn Leistungen in Inhalt, Umfang und in den Anforderungen denjenigen des Studiengangs im Wesentlichen entsprechen. Dabei ist kein schematischer Vergleich, sondern eine Gesamtbetrachtung vorzunehmen. Bezüglich des Umfangs einer zur Anerkennung vorgelegten Studienleistung und Modulprüfung werden die Grundsätze des ECTS herangezogen; die inhaltliche Gleichwertigkeitsprüfung orientiert sich an den Qualifikationszielen des Moduls.

(2) Werden Leistungen angerechnet, so werden die Noten – soweit die Notensysteme vergleichbar sind – übernommen und in die Berechnung der Modulnoten und der Gesamtnote einbezogen. Falls es sich dabei um Leistungen handelt, die im Rahmen eines Auslandsstudiums erbracht werden, während der Studierende an der Universität Karlsruhe (TH) für Wirtschaftsingenieurwesen immatrikuliert ist, kann der Prüfungsausschuss für ausgewählte Sprachen die Dokumentation anerkannter Studienleistungen im Transcript of Records mit ihrer fremdsprachlichen Originalbezeichnung festlegen. Liegen keine Noten vor, wird die Leistung nicht anerkannt. Der Studierende hat die für die Anrechnung erforderlichen Unterlagen vorzulegen.

(3) Bei der Anrechnung von Studienzeiten und der Anerkennung von Studienleistungen und Modulprüfungen, die außerhalb der Bundesrepublik erbracht wurden, sind die von der Kultusministerkonferenz und der Hochschulrektorenkonferenz gebilligten Äquivalenzvereinbarungen sowie Absprachen im Rahmen der Hochschulpartnerschaften zu beachten.

(4) Absatz 1 gilt auch für Studienzeiten, Studienleistungen und Modulprüfungen, die in staatlich anerkannten Fernstudien und an anderen Bildungseinrichtungen, insbesondere an staatlichen oder staatlich anerkannten Berufsakademien erworben wurden.

(5) Die Anerkennung von Teilen der Bachelorprüfung kann versagt werden, wenn in einem Studiengang mehr als die Hälfte aller Erfolgskontrollen und/oder mehr als die Hälfte der erforderlichen Leistungspunkte und/oder die Bachelorarbeit anerkannt werden sollen.

(6) Zuständig für die Anrechnungen ist der Prüfungsausschuss. Vor Feststellungen über die Gleichwertigkeit sind die zuständigen Fachvertreter zu hören. Der Prüfungsausschuss entscheidet in Abhängigkeit von Art und Umfang der anzurechnenden Studien- und Prüfungsleistungen über die Einstufung in ein höheres Fachsemester.

II. Bachelorprüfung

§ 17 Umfang und Art der Bachelorprüfung

(1) Die Bachelorprüfung besteht aus den Fachprüfungen nach Absatz 2 und Absatz 3, dem Seminarmodul nach Absatz 4 sowie der Bachelorarbeit nach § 11.

(2) In den ersten drei Semestern sind Fachprüfungen aus folgenden Fächern durch den Nachweis von Leistungspunkten in einem oder mehreren Modulen abzulegen:

1. Volkswirtschaftslehre im Umfang von 15 Leistungspunkten,
2. Betriebswirtschaftslehre im Umfang von 15 Leistungspunkten,
3. Informatik im Umfang von 15 Leistungspunkten,
4. Operations Research im Umfang von 9 Leistungspunkten,
5. Recht im Umfang von 10 Leistungspunkten,
6. Mathematik im Umfang von 21 Leistungspunkten,
7. Statistik im Umfang von 10 Leistungspunkten,
8. wahlweise Physik oder Chemie im Umfang von je 16 Leistungspunkten.

Die Module, die ihnen zugeordneten Leistungspunkte und die Zuordnung der Module zu den Fächern sind im Studienplan oder Modulhandbuch festgelegt. Zur entsprechenden Modulprüfung kann nur zugelassen werden, wer die Anforderungen nach § 5 erfüllt.

(3) Im vierten bis sechsten Semester sind Fachprüfungen im Umfang von fünf Modulen mit je neun Leistungspunkten abzulegen. Die Module verteilen sich folgendermaßen auf die Fächer:

1. Volkswirtschaftslehre: zwei Module,
2. Betriebswirtschaftslehre: ein Modul,
3. Wahlbereich: zwei Module aus den Fächern Volkswirtschaftslehre, Betriebswirtschaftslehre, Recht, Soziologie, Informatik, Operations Research, Ingenieurwissenschaften/Naturwissenschaften. Auf die Fächer Recht und Soziologie darf dabei in Summe höchstens ein Modul entfallen.

Die in den Fächern zur Auswahl stehenden Module sowie die diesen zugeordneten Lehrveranstaltungen werden im Studienplan oder Modulhandbuch bekannt gegeben. Der Studienplan oder das Modulhandbuch kann auch Mehrfachmodule definieren, die aus 18 Leistungspunkten (Doppelmodul) bzw. 27 Leistungspunkten (Dreifachmodul) bestehen und für Fachprüfungen nach 1. bis 7. bei in Summe mindestens gleicher Leistungspunktezahl entsprechend anrechenbar sind. Auch die Mehrfachmodule mit ihren zugeordneten Lehrveranstaltungen, Leistungspunkten und Fächern bzw. Fächerkombinationen sind im Studienplan oder Modulhandbuch geregelt.

(4) Ferner sind im Rahmen des Seminarmoduls bestehend aus zwei Seminaren mindestens sechs Leistungspunkte nachzuweisen. Neben den hier im Umfang von drei Leistungspunkten vermittelten Schlüsselqualifikationen müssen zusätzliche Schlüsselqualifikationen im Umfang von mindestens drei Leistungspunkten erworben werden.

(5) Als weitere Prüfungsleistung ist eine Bachelorarbeit gemäß § 11 anzufertigen. Der Bachelorarbeit werden 12 Leistungspunkte zugeordnet.

(6) Prüfungen nach § 17 Absatz 3 können in einem Fach nur absolviert werden, wenn eine eventuelle Prüfung dieses Fachs nach § 17 Absatz 2 erfolgreich absolviert wurde. Auf Antrag eines Studierenden kann der Prüfungsausschuss hierzu Ausnahmen genehmigen.

§ 18 Leistungsnachweise für die Bachelorprüfung

Voraussetzung für die Anmeldung zur letzten Prüfung der Bachelorprüfung nach § 17 Absatz 1 ist die Bescheinigung über das erfolgreich abgeleistete Berufspraktikum nach § 12. In Ausnahmefällen, die der Studierende nicht zu vertreten hat, kann der Prüfungsausschuss die nachträgliche Vorlage dieses Leistungsnachweises genehmigen.

§ 19 Bestehen der Bachelorprüfung, Bildung der Gesamtnote

(1) Die Bachelorprüfung ist bestanden, wenn alle in § 17 genannten Prüfungsleistungen mindestens mit „ausreichend" bewertet wurden.

(2) Die Gesamtnote der Bachelorprüfung errechnet sich als ein mit Leistungspunkten gewichteter Notendurchschnitt. Dabei werden die Noten gemäß § 17 Absatz 3 und 4 sowie der Bachelorarbeit jeweils mit dem doppelten Gewicht der Noten gemäß § 17 Absatz 2 berücksichtigt.

(3) Hat der Studierende die Bachelorarbeit mit der Note 1.0 und die Bachelorprüfung mit einem Durchschnitt von 1.1 oder besser abgeschlossen, so wird das Prädikat „mit Auszeichnung" (with distinction) verliehen.

§ 20 Bachelorzeugnis, Bachelorurkunde, Transcript of Records und Diploma Supplement

(1) Über die Bachelorprüfung wird nach Bewertung der letzten Prüfungsleistung eine Bachelorurkunde und ein Zeugnis erstellt. Die Ausfertigung von Bachelorurkunde und Zeugnis soll nicht später als sechs Wochen nach der Bewertung der letzten Prüfungsleistung erfolgen. Bachelorurkunde und Bachelorzeugnis werden in deutscher und englischer Sprache ausgestellt. Bachelorurkunde und Zeugnis tragen das Datum der letzten nachgewiesenen Prüfungsleistung. Sie werden dem Studierenden gleichzeitig ausgehändigt. In der Bachelorurkunde wird die Verleihung des akademischen Bachelorgrades beurkundet. Die Bachelorurkunde wird vom Rektor und vom Dekan unterzeichnet und mit dem Siegel der Universität versehen.

(2) Das Zeugnis enthält die in den Fachprüfungen, den zugeordneten Modulprüfungen sowie dem Seminarmodul und der Bachelorarbeit erzielten Noten, deren zugeordnete Leistungspunkte und ECTS-Noten und die Gesamtnote und die ihr entsprechende ECTS-Note. Das Zeugnis ist vom Dekan der Fakultät und vom Vorsitzenden des Prüfungsausschusses zu unterzeichnen.

(3) Weiterhin erhält der Studierende als Anhang ein Diploma Supplement in deutscher und englischer Sprache, das den Vorgaben des jeweils gültigen ECTS User's Guide entspricht. Das Diploma Supplement enthält eine Abschrift der Studiendaten des Studierenden (Transcript of Records).

(4) Die Abschrift der Studiendaten (Transcript of Records) enthält in strukturierter Form alle erbrachten Prüfungsleistungen. Dies beinhaltet alle Fächer, Fachnoten und ihre entsprechende ECTS-Note samt den zugeordneten Leistungspunkten, die dem jeweiligen Fach zugeordneten Module mit den Modulnoten, entsprechender ECTS-Note und zugeordneten Leistungspunkten

sowie die den Modulen zugeordneten Lehrveranstaltungen samt Noten und zugeordneten Leistungspunkten. Aus der Abschrift der Studiendaten soll die Zugehörigkeit von Lehrveranstaltungen zu den einzelnen Modulen und die Zugehörigkeit der Module zu den einzelnen Fächern deutlich erkennbar sein. Angerechnete Studienleistungen sind im Transcript of Records aufzunehmen.

(5) Die Bachelorurkunde, das Bachelorzeugnis und das Diploma Supplement einschließlich des Transcript of Records werden vom Studienbüro der Universität ausgestellt.

III. Schlussbestimmungen

§ 21 Bescheid über Nicht-Bestehen, Bescheinigung von Prüfungsleistungen

(1) Der Bescheid über die endgültig nicht bestandene Bachelorprüfung wird dem Studierenden durch den Prüfungsausschuss in schriftlicher Form erteilt. Der Bescheid ist mit einer Rechtsbehelfsbelehrung zu versehen.

(2) Hat der Studierende die Bachelorprüfung endgültig nicht bestanden, wird ihm auf Antrag und gegen Vorlage der Exmatrikulationsbescheinigung eine schriftliche Bescheinigung ausgestellt, die die erbrachten Prüfungsleistungen und deren Noten sowie die zur Prüfung noch fehlenden Prüfungsleistungen enthält und erkennen lässt, dass die Prüfung insgesamt nicht bestanden ist. Dasselbe gilt, wenn der Prüfungsanspruch erloschen ist.

§ 22 Aberkennung des Bachelorgrades

(1) Hat der Studierende bei einer Prüfungsleistung getäuscht und wird diese Tatsache nach der Aushändigung des Zeugnisses bekannt, so können die Noten der Modulprüfungen, bei denen getäuscht wurde, berichtigt werden. Gegebenenfalls kann die Modulprüfung für „nicht ausreichend” (5.0) und die Bachelorprüfung für „nicht bestanden“ erklärt werden.

(2) Waren die Voraussetzungen für die Zulassung zu einer Prüfung nicht erfüllt, ohne dass der Studierende darüber täuschen wollte, und wird diese Tatsache erst nach Aushändigung des Zeugnisses bekannt, wird dieser Mangel durch das Bestehen der Prüfung geheilt. Hat der Studierende die Zulassung vorsätzlich zu Unrecht erwirkt, so kann die Modulprüfung für „nicht ausreichend” (5.0) und die Bachelorprüfung für „nicht bestanden“ erklärt werden.

(3) Vor einer Entscheidung ist Gelegenheit zur Äußerung zu geben.

(4) Das unrichtige Zeugnis ist zu entziehen und gegebenenfalls ein neues zu erteilen. Mit dem unrichtigen Zeugnis ist auch die Bachelorurkunde einzuziehen, wenn die Bachelorprüfung auf Grund einer Täuschung für nicht bestanden erklärt wurde.

(5) Eine Entscheidung nach Absatz 1 und Absatz 2 Satz 2 ist nach einer Frist von fünf Jahren ab dem Datum des Zeugnisses ausgeschlossen.

(6) Die Aberkennung des akademischen Grades richtet sich nach den gesetzlichen Vorschriften.

§ 23 Einsicht in die Prüfungsakten

(1) Nach Abschluss der Bachelorprüfung wird dem Studierenden auf Antrag innerhalb eines Jahres Einsicht in seine Bachelorarbeit, die darauf bezogenen Gutachten und in die Prüfungsprotokolle gewährt.

(2) Die Einsichtnahme in die schriftlichen Modulprüfungen bzw. Prüfungsprotokolle erfolgt zu einem durch den Prüfer festgelegten, angemessenen Termin innerhalb der Vorlesungszeit. Der Termin ist mit einem Vorlauf von mindestens 14 Tagen anzukündigen und angemessen bekannt zu geben.

(3) Prüfungsunterlagen sind mindestens fünf Jahre aufzubewahren.

§ 24 In-Kraft-Treten

(1) Diese Studien- und Prüfungsordnung tritt am 1. Oktober 2007 in Kraft.

(2) Gleichzeitig tritt die Prüfungsordnung der Universität Karlsruhe (TH) für den Diplomstudiengang Technische Volkswirtschaftslehre vom 22. Dezember 1995, zuletzt geändert durch Satzung vom 17. September 1999 (Amtliche Bekanntmachung der Universität Karlsruhe (TH), Nr. 4 vom 9. März 2000) außer Kraft, behält jedoch ihre Gültigkeit bis zum 30. September 2013 für Prüflinge, die auf Grundlage der Prüfungsordnung der Universität Karlsruhe (TH) für den Studiengang Technische Volkswirtschaftslehre vom 22. Dezember 1995 ihr Studium an der Universität Karlsruhe (TH) aufgenommen haben. Über eine Fristverlängerung darüber hinaus entscheidet der Prüfungsausschuss auf Antrag des Studierenden.

Über einen Antrag an den Prüfungsausschuss können Studierende, die auf Grundlage der Prüfungsordnung der Universität Karlsruhe (TH) für den Studiengang Technische Volkswirtschaftslehre vom 22. Dezember 1995 ihr Studium an der Universität Karlsruhe (TH) aufgenommen haben, ihr Studium auf Grundlage dieser Prüfungsordnung fortsetzen. Der Prüfungsausschuss stellt dabei fest, ob und wie die bisher erbrachten Prüfungsleistungen in den neuen Studienplan integriert werden können und nach welchen Bedingungen das Studium nach einem Wechsel fortgeführt werden kann.

Karlsruhe, den 06. März 2007

Professor Dr. sc. tech. Horst Hippler
(Rektor)

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