Karlsruher Institut für Technologie

Module Handbook
Industrial Engineering and Management (B.Sc.)

SPO 2007/2015
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KIT Department of Economics and Management

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M-WIWI-10335 Machine Learning

Responsible: J. Marius Zöllner
Credits: 9
Part of:

- Information Engineering and Management Master: Informatics

M-WIWI-103278/M-WIWI-103337 Optimization under Uncertainty

Responsible: Steffen Rebennack
Credits: 9
Part of:

- Economics Engineering Bachelor: Compulsory Elective Modules/Compulsory Modules 1+2/Operations Research
- Industrial Engineering and Management Bachelor: Operations Research/Specialisation program, Compulsory Elective Modules/Compulsory Modules 2/Operations Research
- Information Engineering and Management Bachelor: Advanced Studies in Economics and Management/Elective Modules in Economics and Management

M-WIWI-103289 Stochastic Optimization

Responsible: Steffen Rebennack
Credits: 9
Part of:

- Information Engineering and Management Master: Economics and Management/Elective Modules in Economics and Management
- Economics Engineering Master: Operations Research, Compulsory Elective Modules 1+2/Compulsory Modules/Operations Research
- Industrial Engineering and Management Master: Operations Research, Compulsory Elective Modules/Compulsory Modules 1+2/Operations Research
- Economathematics Master: Operations Management - Data Analysis - Informatics, Elective Field

M-WIWI-103243 Optimization under uncertainty in Information Engineering and Management

Responsible: Steffen Rebennack
Credits: 5
Part of:

- Information Engineering and Management Master: Economics and Management/Compulsory Modules

M-WIWI-103200 Designing Interactive Systems

Responsible: Alexander Mädche
Credits: 9
Part of:

- Industrial Engineering and Management Master: Business Administration, Compulsory Elective Modules/Compulsory Modules 1+2/Business Administration

- Economics Engineering Master: Business Administration, Compulsory Elective Modules 1+2/Compulsory Modules/Business Administration
- Information Engineering and Management Master: Economics and Management/Elective Modules in Economics and Management, Economics and Management/Elective Modules in Business Administration

M-WIWI-103247 Intelligent Risk and Investment Advisory

Responsible: Maxim Ulrich
Credits: 9
Part of:

- Industrial Engineering and Management Master: Business Administration, Compulsory Elective Modules/Compulsory Modules 1+2/Business Administration
- Economics Engineering Master: Business Administration, Compulsory Elective Modules 1+2/Compulsory Modules/Business Administration
- Information Engineering and Management Master: Economics and Management/Elective Modules in Economics and Management, Economics and Management/Elective Modules in Business Administration
- Economathematics Master: Finance - Risk Management - Managerial Economics, Elective Field

M-WIWI-103261 Disruptive FinTech Innovations

Responsible: Maxim Ulrich
Credits: 9
Part of:

- Industrial Engineering and Management Master: Business Administration, Compulsory Elective Modules/Compulsory Modules 1+2/Business Administration
- Economics Engineering Master: Business Administration, Compulsory Elective Modules 1+2/Compulsory Modulese/Business Administration
- Information Engineering and Management Master: Economics and Management/Elective Modules in Economics and Management, Economics and Management/Elective Modules in Business Administration
- Economathematics Master: Finance - Risk Management - Managerial Economics, Elective Field

2 Notes and rules

The program exists of several **subjects** (e.g. business administration, economics, operations research). Every subject is split into **modules** and every module itself exists of one or more interrelated **module component exams**. The extent of every module is indicated by credit points (CP), which will be credited after the successful completion of the module. Some of the modules are **obligatory**. According to the interdisciplinary character of the program, a great variety of **individual specialization and deepening possibilities** exists for a large number of modules. This enables the student to customize content and time schedule of the program according to personal needs, interest and job perspective. The **module handbook** describes the modules belonging to the program. It describes particularly:

- the structure of the modules
- the extent (in CP),
- the dependencies of the modules,
- the learning outcomes,
- the assessment and examinations.

The module handbook serves as a necessary orientation and as a helpful guide throughout the studies. The module handbook does not replace the **course catalog**, which provides important information concerning each semester and variable course details (e.g. time and location of the course).

Begin and completion of a module

Each module and each examination can only be selected once. The decision on the assignment of a examination to a module (if, for example, an examination in several modules is selectable) is made by the student at the moment when he / she is registered for the appropriate examination. A module was completed or passed when the module examination was passed (grade 4.0 or better). For modules in which the module examination is carried out over several partial examinations, the following applies: The module is completed when all necessary module partial examinations have been passed. In the case of modules which offer alternative partial examinations, the module examination is concluded with the examination with which the required total credits points are reached or exceeded. The module grade, however, is combined with the weight of the predefined credit points for the module in the overall grade calculation.

Module versions

It is not uncommon for modules to be revised due to, for example, new courses or cancelled examinations. As a rule, a new module version is created, which applies to all students who are new to the module. On the other hand, students who have already started the module enjoy confidence and remain in the old module version. This students can complete the module on the same conditions as at the beginning of the module (exceptions are regulated by the examination committee). The date of the student's "'binding declaration"' on the choice of the module in the sense of §5(2) of the Study and Examination Regulation is decisive. This binding declaration is made by registering for the first examination in this module.
In the module handbook, all modules are presented in their current version. The version number is given in the module description. Older module versions can be accessed via the previous module handbooks in the archive at http://www.wiwi.kit.edu/Archiv_MHB.php.

General and partial examinations

Module examinations can be either taken in a general examination or in partial examinations. If the module examination is offered as a general examination, the entire learning content of the module will be examined in a single examamination. If the module examination is subdivided into partial examinations, the content of each course will be examined in corresponding partial examinations. Registration for examinations can be done online at the campus management portal. The following functions can be accessed on
https://campus.studium.kit.edu/exams/index.php:

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

For further and more detailed information, 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 2007/2009** 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 (http://www.sle.kit.edu/amtlicheBekanntmachungen.php).

3 Online Version

A new webbased version of the module handbook is now available. This online handbook offers more comfort in browsing modules and courses and allows a smart switching between the english and german version. Try it out!

- Industrial Engineering and Management (B.Sc.): http://www.wiwi.kit.edu/english/mhbWiingBsc_en.php
- Industrial Engineering and Management (M.Sc.): http://www.wiwi.kit.edu/english/mhbWiingMsc_en.php
- Economics Engineering (B.Sc.): http://www.wiwi.kit.edu/english/mhbTVWLBsc_eng.php
- Economics Engineering (M.Sc.): http://www.wiwi.kit.edu/english/mhbTVWLMsc_en.php
- Information Engineering and Management (B.Sc.): http://www.wiwi.kit.edu/english/mhbInwiBsc_en.php
- Information Engineering and Management (M.Sc.): http://www.wiwi.kit.edu/english/mhbInwiMsc_en.php
- Economathematics (M.Sc.): http://www.wiwi.kit.edu/english/mhbWimaMsc_en.php

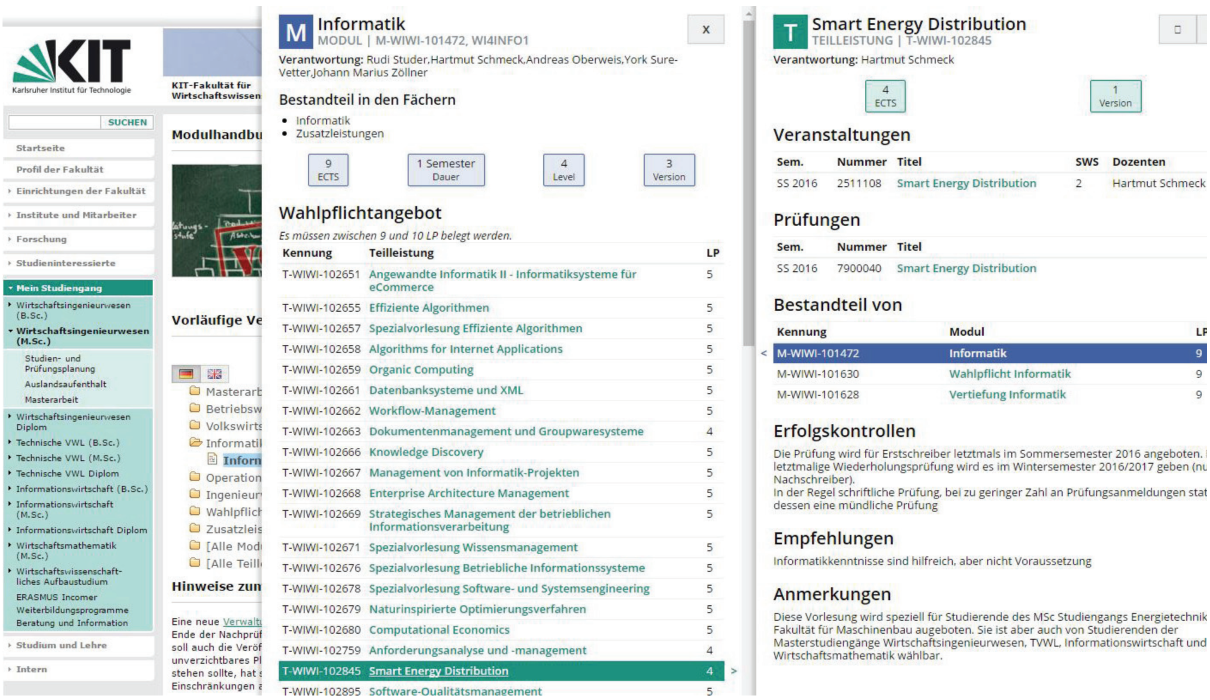

Figure 1: Screenshot of the webbased module handbook

4 Contact

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

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Part II
The Bachelor's degree program in Industrial Engineering and Management

1 Qualification objectives

Graduates of the Bachelor's degree in Industrial Engineering and Management are equipped with strategically oriented knowledge in economics, engineering sciences, mathematics and information technology acquired during the three-semester core program.

The economics section includes business-related topics from the financial industry, company management, information industry, production management, marketing and accounting as well as economic correlations of microeconomics and macroeconomics.

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 on material and energy balances, material characterization and development, engineering mechanics and electrical engineering.

The technological area is covered by the Applied and Theoretical Computer Science. 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 and technological structures and processes.

Graduates can independently solve basic engineering calculations and are able to apply important mathematical concepts and methods to solve concrete tasks.

The graduates have deeper knowledge in business administration, economics, computer science, operations research and engineering. Specialization is either done in the field of business administration or engineering depending on one's wishes. Additional knowledge in statistics, law or sociology is also offered depending on one's interests. They are able to react based on this knowledge from the different subjects and disciplines. They thereby largely operate independently in economic, technical and technological topics and survey, analyze, interpret and evaluate the situations systematically.

They are able to classify specialized problems as well as model and choose appropriate methods and procedures for solving the given tasks as well as derive improvement potentials. They know how to validate, illustrate and interpret the achieved 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 Industrial Engineering and Management master the basics of project management and are able to assume responsibility in interdisciplinary teams. They are in a position to argue and defend their position both before expert representatives and laypersons.

They have the ability to apply the acquired information on career-related activities in the industry, service sector or in the public management as well as take up a Master's degree program in Industrial Engineering and Management or any other related course.

2 SPO 2015

The Bachelor's degree program in Industrial Engineering and Management entails a six-semester standard study period. The basic program in the first three semesters is systematically structured. In the fourth to fifth semesters, a more advanced, specialization program that can be structured depending on one's personal interests and goals is offered.
The following figure 2 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.
In the **basic program** (blue), the business administration, economics, informatics, operations research, engineering sciences, statistics and mathematics modules are compulsory. In the 3rd semester, one can choose between Material Transformation and Balances, Engineering Mechanics and Material Science in the engineering basic module.

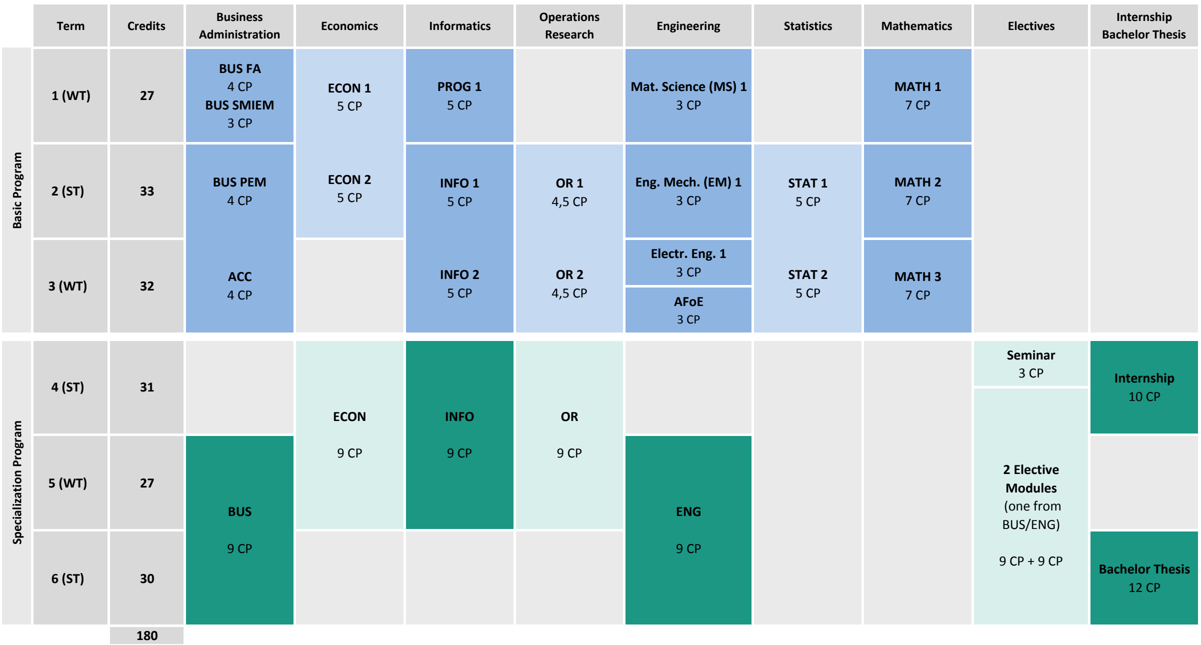

Figure 2: Structure of the Bachelor's degree program in Industrial Engineering and Management SPO 2015 (recommended)

In the **specialization program** (green), a module must be selected from each of the following areas: business administration, economics, informatics, operations research and engineering. As part of the mandatory courses, one seminar module (independent of the course) and two modules must be completed. One module can be selected from business administration or engineering subjects and the other from business administration, economics, informatics, operations research, engineering, statistics, law or 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 final 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 first three semesters. 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.

3 SPO 2007

The structure of the Bachelor's degree program in Industrial Engineering and Management (B.Sc.) 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 minor specificities, summarized in illustration 3.
The differing modules of the Bachelor's degree program in Industrial Engineering and Management SPO 2007 are listed in chapter V. Illustration 4 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.

4 Key Skills

The Bachelor's degree course in Industrial Engineering and Management 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

SPO 2007	SPO 2015
Terms	
The structure of the Bachelor's degree course in Industrial Engineering and Management is subdivided into a **Core Program** and **Specialization Program.**	The structure of the Bachelor's degree course in Industrial Engineering and Management 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**".
Within the Core Program the four modules of Engineering Sciences "**Mass and Energy Balances for Reacting Systems**", "**Materials Science**", "**Engineering Mechanics**" and "**Electrical Engineering**" (all of them with an amount of 2,5 CP) are scheduled.	Within the Basic Program the four modules of Engineering Sciences "**Materials Science**", "**Engineering Mechanics**", "**Electrical Engineering**" and "**Additional Fundamentals of Engineering**" (all of them with an amount of 3 CP) are scheduled. The course T-CIWVT-106058 "**Process fundamentals by the example of food production**" replaces the course "**Mass and Energy Balances for Reacting Systems**" and is part of the (new) module "**Additional Fundamentals of Engineering".**

Figure 3: Differences between SPO 2007 and SPO 2015

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

Industrial Engineering and Management (B.Sc.)

Semester	Core Programme						
Subject	BA	EC	INFO	OR	ENG	MATH	STAT
1	BA FA 4 CP BA SMIEM 3 CP	EC 1 5 CP	Progr 5 CP		Material Science 2,5 CP MaEBfRS 2,5 CP	Math 1 7 CP	
2	BA PEM 4 CP	EC 2 5 CP	Info 1 5 CP	OR 1 4,5 CP		Math 2 7 CP	Stat 1 5 CP
3	Acc 4 CP		Info 2 5 CP	OR 2 4,5 CP	Eng. Mechanics 2,5 CP Electr. Eng 2,5 CP	Math 3 7 CP	Stat 2 5 CP
	Internship 8 CP						

Semester	Specialization Programme							
	Compulsory						Elective	
4 5 6	BA 9 CP	EC 9 CP	INFO 9 CP	OR 9 CP	ING 9 CP	Seminar + KS 6 + 3 CP	BA/ENG 9 CP	Elective 9 CP
	Bachelor Thesis 12 CP							
	182 CP (Core Programme + Specialization Programme + Bachelorarbeit)							

Figure 4: Structure of the Bachelor's degree program in Industrial Engineering and Management SPO 2007 (recommended)

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 programme 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 III
Field structure

1 Bachelor Thesis

Identifier	Module	ECTS	Responsibility
M-WIWI-101601	Module Bachelor Thesis (S. 30)	12	Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

2 Internship

Identifier	Module	ECTS	Responsibility
M-WIWI-101419	Internship (S. 32)	10	Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

3 Business Administration

3.1 Basic Program

Identifier	Module	ECTS	Responsibility
M-WIWI-101494	Fundamentals of Business Administration 1 (S. 34)	7	Martin Ruckes,Marliese Uhrig-Homburg,Marcus Wouters
M-WIWI-101578	Fundamentals of Business Administration 2 (S. 35)	8	Martin Ruckes,Marliese Uhrig-Homburg

3.2 Specialisation Program

Identifier	Module	ECTS	Responsibility
M-WIWI-101460	CRM and Service Management (S. 58)	9	Andreas Geyer-Schulz
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings (S. 60)	9	Thomas Lützkendorf
M-WIWI-101434	eBusiness and Service Management (S. 50)	9	Christof Weinhardt
M-WIWI-101402	eFinance (S. 64)	9	Christof Weinhardt
M-WIWI-101464	Energy Economics (S. 62)	9	Wolf Fichtner
M-WIWI-101435	Essentials of Finance (S. 44)	9	Martin Ruckes,Marliese Uhrig-Homburg
M-WIWI-101424	Foundations of Marketing (S. 66)	9	Martin Klarmann
M-WIWI-102752	Fundamentals of Digital Service Systems (S. 68)	9	Gerhard Satzger,Christof Weinhardt
M-WIWI-101513	Human Resources and Organizations (S. 54)	9	Petra Nieken
M-WIWI-101437	Industrial Production I (S. 38)	9	Frank Schultmann
M-WIWI-102753	Machine Learning for Finance and Data Science (S. 52)	9	Maxim Ulrich

M-WIWI-101498	Management Accounting (S. 49)	9	Marcus Wouters
M-WIWI-101466	Real Estate Management (S. 56)	9	Thomas Lützkendorf
M-WIWI-101436	Risk and Insurance Management (S. 36)	9	Ute Werner
M-WIWI-101422	Specialization in Customer Relationship Management (S. 40)	9	Andreas Geyer-Schulz
M-WIWI-101425	Strategy and Organization (S. 37)	9	Hagen Lindstädt
M-WIWI-101421	Supply Chain Management (S. 45)	9	Stefan Nickel
M-WIWI-101465	Topics in Finance I (S. 47)	9	Martin Ruckes,Marliese Uhrig-Homburg
M-WIWI-101423	Topics in Finance II (S. 42)	9	Martin Ruckes,Marliese Uhrig-Homburg

4 Economics

4.1 Basic Program

Identifier	Module	ECTS	Responsibility
M-WIWI-101398	Introduction to Economics (S. 148)	10	Clemens Puppe

4.2 Specialisation Program

Identifier	Module	ECTS	Responsibility
M-WIWI-101499	Applied Microeconomics (S. 71)	9	Johannes Philipp Reiß
M-WIWI-101668	Economic Policy I (S. 76)	9	Ingrid Ott
M-WIWI-101501	Economic Theory (S. 73)	9	Clemens Puppe
M-WIWI-101403	Public Finance (S. 74)	9	Berthold Wigger

5 Informatics

5.1 Basic Program

Identifier	Module	ECTS	Responsibility
M-WIWI-101417	Foundations of Informatics (S. 78)	10	Hartmut Schmeck,York Sure-Vetter
M-WIWI-101581	Introduction to Programming (S. 79)	5	Johann Marius Zöllner

5.2 Specialisation Program

Identifier	Module	ECTS	Responsibility
M-WIWI-101399	Emphasis Informatics (S. 80)	9	Andreas Oberweis,Hartmut Schmeck,York Sure-Vetter

6 Operations Research

6.1 Basic Program

Identifier	Module	ECTS	Responsibility
M-WIWI-101418	Introduction to Operations Research (S. 82)	9	Stefan Nickel,Steffen Rebennack,Oliver Stein

6.2 Specialisation Program

Identifier	Module	ECTS	Responsibility
M-WIWI-101413	Applications of Operations Research (S. 83)	9	Stefan Nickel
M-WIWI-101414	Methodical Foundations of OR (S. 85)	9	Oliver Stein
M-WIWI-103278	Optimization under Uncertainty (S. 89)	9	Steffen Rebennack
M-WIWI-101400	Stochastic Methods and Simulation (S. 87)	9	Karl-Heinz Waldmann

7 Engineering Sciences

7.1 Basic Program

Identifier	Module	ECTS	Responsibility
M-ETIT-101155	Electrical Engineering (S. 93)	3	Wolfgang Menesklou
M-MACH-101259	Engineering Mechanics (S. 92)	3	Alexander Fidlin
M-MACH-101260	Materials Science (S. 91)	3	Michael Hoffmann
M-WIWI-101839	Additional Fundamentals of Engineering (S. 90)	3	Alexander Fidlin,Volker Gaukel,Michael Hoffmann

7.2 Specialisation Program

Identifier	Module	ECTS	Responsibility
M-BGU-101004	Fundamentals of construction (S. 124)	9	Shervin Haghsheno
M-BGU-102283	Introduction to Track Guided Transport Systems (S. 115)	9	Eberhard Hohnecker
M-BGU-101067	Mobility and Infrastructure (S. 117)	9	Ralf Roos
M-ETIT-101156	Control Engineering (S. 123)	9	Sören Hohmann,Mathias Kluwe
M-ETIT-101165	Energy Generation and Network Components (S. 109)	9	Bernd Hoferer,Thomas Leibfried
M-MACH-101266	Automotive Engineering (S. 95)	9	Frank Gauterin
M-MACH-101275	Combustion Engines I (S. 97)	9	Thomas Koch,Heiko Kubach
M-MACH-101303	Combustion Engines II (S. 106)	9	Heiko Kubach
M-MACH-101261	Emphasis in Fundamentals of Engineering (S. 120)	9	Michael Hoffmann
M-MACH-101262	Emphasis Materials Science (S. 94)	9	Michael Hoffmann
M-MACH-101264	Handling Characteristics of Motor Vehicles (S. 125)	9	Frank Gauterin
M-MACH-101272	Integrated Production Planning (S. 116)	9	Gisela Lanza

M-MACH-101269	Introduction to Technical Logistics (S. 101)	9	Kai Furmans
M-MACH-101286	Machine Tools and Industrial Handling (S. 100)	9	Jürgen Fleischer
M-MACH-101276	Manufacturing Technology (S. 98)	9	Volker Schulze
M-MACH-101287	Microsystem Technology (S. 118)	9	Jan Gerrit Korvink
M-MACH-101267	Mobile Machines (S. 121)	9	Marcus Geimer
M-MACH-101270	Product Lifecycle Management (S. 111)	9	Jivka Ovtcharova
M-MACH-101274	Rail System Technology (S. 110)	9	Peter Gratzfeld
M-MACH-101284	Specialization in Production Engineering (S. 99)	9	Volker Schulze
M-MACH-101265	Vehicle Development (S. 113)	9	Frank Gauterin
M-WIWI-101404	Extracurricular Module in Engineering (S. 103)	9	Prüfungsausschuss der KIT-Fakultät für Wirtschaftswissenschaften
M-WIWI-101646	Introduction to Natural Hazards and Risk Analysis 1 (S. 104)	9	Michael Kunz
M-WIWI-101648	Introduction to Natural Hazards and Risk Analysis 2 (S. 107)	9	Michael Kunz

8 Mathematics

Identifier	Module	ECTS	Responsibility
M-MATH-101676	Mathematics 1 (S. 128)	7	Günter Last
M-MATH-101677	Mathematics 2 (S. 129)	7	Günter Last
M-MATH-101679	Mathematics 3 (S. 127)	7	Günter Last

9 Statistics

Identifier	Module	ECTS	Responsibility
M-WIWI-101432	Introduction to Statistics (S. 156)	10	Oliver Grothe,Melanie Schienle

10 Compulsory Elective Modules

10.1 Seminar Module

Identifier	Module	ECTS	Responsibility
M-WIWI-101816	Seminar Module (S. 131)	3	Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

10.2 Elective Module 1

10.2.1 Business Administration

Identifier	Module	ECTS	Responsibility

M-WIWI-101460	CRM and Service Management (S. 58)	9	Andreas Geyer-Schulz
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings (S. 60)	9	Thomas Lützkendorf
M-WIWI-101434	eBusiness and Service Management (S. 50)	9	Christof Weinhardt
M-WIWI-101402	eFinance (S. 64)	9	Christof Weinhardt
M-WIWI-101464	Energy Economics (S. 62)	9	Wolf Fichtner
M-WIWI-101435	Essentials of Finance (S. 44)	9	Martin Ruckes,Marliese Uhrig-Homburg
M-WIWI-101424	Foundations of Marketing (S. 66)	9	Martin Klarmann
M-WIWI-102752	Fundamentals of Digital Service Systems (S. 68)	9	Gerhard Satzger,Christof Weinhardt
M-WIWI-101513	Human Resources and Organizations (S. 54)	9	Petra Nieken
M-WIWI-101437	Industrial Production I (S. 38)	9	Frank Schultmann
M-WIWI-102753	Machine Learning for Finance and Data Science (S. 52)	9	Maxim Ulrich
M-WIWI-101498	Management Accounting (S. 49)	9	Marcus Wouters
M-WIWI-101466	Real Estate Management (S. 56)	9	Thomas Lützkendorf
M-WIWI-101436	Risk and Insurance Management (S. 36)	9	Ute Werner
M-WIWI-101422	Specialization in Customer Relationship Management (S. 40)	9	Andreas Geyer-Schulz
M-WIWI-101425	Strategy and Organization (S. 37)	9	Hagen Lindstädt
M-WIWI-101421	Supply Chain Management (S. 45)	9	Stefan Nickel
M-WIWI-101465	Topics in Finance I (S. 47)	9	Martin Ruckes,Marliese Uhrig-Homburg
M-WIWI-101423	Topics in Finance II (S. 42)	9	Martin Ruckes,Marliese Uhrig-Homburg

10.2.2 Engineering Sciences

Identifier	Module	ECTS	Responsibility
M-BGU-101004	Fundamentals of construction (S. 124)	9	Shervin Haghsheno
M-BGU-102283	Introduction to Track Guided Transport Systems (S. 115)	9	Eberhard Hohnecker
M-BGU-101067	Mobility and Infrastructure (S. 117)	9	Ralf Roos
M-ETIT-101156	Control Engineering (S. 123)	9	Sören Hohmann,Mathias Kluwe
M-ETIT-101165	Energy Generation and Network Components (S. 109)	9	Bernd Hoferer,Thomas Leibfried
M-MACH-101266	Automotive Engineering (S. 95)	9	Frank Gauterin
M-MACH-101275	Combustion Engines I (S. 97)	9	Thomas Koch,Heiko Kubach
M-MACH-101303	Combustion Engines II (S. 106)	9	Heiko Kubach
M-MACH-101261	Emphasis in Fundamentals of Engineering (S. 120)	9	Michael Hoffmann
M-MACH-101262	Emphasis Materials Science (S. 94)	9	Michael Hoffmann
M-MACH-101264	Handling Characteristics of Motor Vehicles (S. 125)	9	Frank Gauterin
M-MACH-101272	Integrated Production Planning (S. 116)	9	Gisela Lanza
M-MACH-101269	Introduction to Technical Logistics (S. 101)	9	Kai Furmans
M-MACH-101286	Machine Tools and Industrial Handling (S. 100)	9	Jürgen Fleischer
M-MACH-101276	Manufacturing Technology (S. 98)	9	Volker Schulze
M-MACH-101287	Microsystem Technology (S. 118)	9	Jan Gerrit Korvink
M-MACH-101267	Mobile Machines (S. 121)	9	Marcus Geimer
M-MACH-101270	Product Lifecycle Management (S. 111)	9	Jivka Ovtcharova
M-MACH-101274	Rail System Technology (S. 110)	9	Peter Gratzfeld
M-MACH-101284	Specialization in Production Engineering (S. 99)	9	Volker Schulze
M-MACH-101265	Vehicle Development (S. 113)	9	Frank Gauterin
M-WIWI-101404	Extracurricular Module in Engineering (S. 103)	9	Prüfungsausschuss der KIT-Fakultät für Wirtschaftswissenschaften

M-WIWI-101646	Introduction to Natural Hazards and Risk Analysis 1 (S. 104)	9	Michael Kunz
M-WIWI-101648	Introduction to Natural Hazards and Risk Analysis 2 (S. 107)	9	Michael Kunz

10.3 Elective Module 2

10.3.1 Business Administration

Identifier	Module	ECTS	Responsibility
M-WIWI-101460	CRM and Service Management (S. 58)	9	Andreas Geyer-Schulz
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings (S. 60)	9	Thomas Lützkendorf
M-WIWI-101434	eBusiness and Service Management (S. 50)	9	Christof Weinhardt
M-WIWI-101402	eFinance (S. 64)	9	Christof Weinhardt
M-WIWI-101464	Energy Economics (S. 62)	9	Wolf Fichtner
M-WIWI-101435	Essentials of Finance (S. 44)	9	Martin Ruckes,Marliese Uhrig-Homburg
M-WIWI-101424	Foundations of Marketing (S. 66)	9	Martin Klarmann
M-WIWI-102752	Fundamentals of Digital Service Systems (S. 68)	9	Gerhard Satzger,Christof Weinhardt
M-WIWI-101513	Human Resources and Organizations (S. 54)	9	Petra Nieken
M-WIWI-101437	Industrial Production I (S. 38)	9	Frank Schultmann
M-WIWI-102753	Machine Learning for Finance and Data Science (S. 52)	9	Maxim Ulrich
M-WIWI-101498	Management Accounting (S. 49)	9	Marcus Wouters
M-WIWI-101466	Real Estate Management (S. 56)	9	Thomas Lützkendorf
M-WIWI-101436	Risk and Insurance Management (S. 36)	9	Ute Werner
M-WIWI-101422	Specialization in Customer Relationship Management (S. 40)	9	Andreas Geyer-Schulz
M-WIWI-101425	Strategy and Organization (S. 37)	9	Hagen Lindstädt
M-WIWI-101421	Supply Chain Management (S. 45)	9	Stefan Nickel
M-WIWI-101465	Topics in Finance I (S. 47)	9	Martin Ruckes,Marliese Uhrig-Homburg
M-WIWI-101423	Topics in Finance II (S. 42)	9	Martin Ruckes,Marliese Uhrig-Homburg

10.3.2 Economics

Identifier	Module	ECTS	Responsibility
M-WIWI-101499	Applied Microeconomics (S. 71)	9	Johannes Philipp Reiß
M-WIWI-101668	Economic Policy I (S. 76)	9	Ingrid Ott
M-WIWI-101501	Economic Theory (S. 73)	9	Clemens Puppe
M-WIWI-101403	Public Finance (S. 74)	9	Berthold Wigger

10.3.3 Informatics

Identifier	Module	ECTS	Responsibility

M-WIWI-101426	Electives in Informatics (S. 133)	9	Andreas Oberweis,Hartmut Schmeck,York Sure-Vetter

10.3.4 Operations Research

Identifier	Module	ECTS	Responsibility
M-WIWI-101413	Applications of Operations Research (S. 83)	9	Stefan Nickel
M-WIWI-101414	Methodical Foundations of OR (S. 85)	9	Oliver Stein
M-WIWI-103278	Optimization under Uncertainty (S. 89)	9	Steffen Rebennack
M-WIWI-101400	Stochastic Methods and Simulation (S. 87)	9	Karl-Heinz Waldmann

10.3.5 Engineering Sciences

Identifier	Module	ECTS	Responsibility
M-BGU-101004	Fundamentals of construction (S. 124)	9	Shervin Haghsheno
M-BGU-102283	Introduction to Track Guided Transport Systems (S. 115)	9	Eberhard Hohnecker
M-BGU-101067	Mobility and Infrastructure (S. 117)	9	Ralf Roos
M-ETIT-101156	Control Engineering (S. 123)	9	Sören Hohmann,Mathias Kluwe
M-ETIT-101165	Energy Generation and Network Components (S. 109)	9	Bernd Hoferer,Thomas Leibfried
M-MACH-101266	Automotive Engineering (S. 95)	9	Frank Gauterin
M-MACH-101275	Combustion Engines I (S. 97)	9	Thomas Koch,Heiko Kubach
M-MACH-101303	Combustion Engines II (S. 106)	9	Heiko Kubach
M-MACH-101261	Emphasis in Fundamentals of Engineering (S. 120)	9	Michael Hoffmann
M-MACH-101262	Emphasis Materials Science (S. 94)	9	Michael Hoffmann
M-MACH-101264	Handling Characteristics of Motor Vehicles (S. 125)	9	Frank Gauterin
M-MACH-101272	Integrated Production Planning (S. 116)	9	Gisela Lanza
M-MACH-101269	Introduction to Technical Logistics (S. 101)	9	Kai Furmans
M-MACH-101286	Machine Tools and Industrial Handling (S. 100)	9	Jürgen Fleischer
M-MACH-101276	Manufacturing Technology (S. 98)	9	Volker Schulze
M-MACH-101287	Microsystem Technology (S. 118)	9	Jan Gerrit Korvink
M-MACH-101267	Mobile Machines (S. 121)	9	Marcus Geimer
M-MACH-101270	Product Lifecycle Management (S. 111)	9	Jivka Ovtcharova
M-MACH-101274	Rail System Technology (S. 110)	9	Peter Gratzfeld
M-MACH-101284	Specialization in Production Engineering (S. 99)	9	Volker Schulze
M-MACH-101265	Vehicle Development (S. 113)	9	Frank Gauterin
M-WIWI-101404	Extracurricular Module in Engineering (S. 103)	9	Prüfungsausschuss der KIT-Fakultät für Wirtschaftswissenschaften
M-WIWI-101646	Introduction to Natural Hazards and Risk Analysis 1 (S. 104)	9	Michael Kunz
M-WIWI-101648	Introduction to Natural Hazards and Risk Analysis 2 (S. 107)	9	Michael Kunz

10.3.6 Statistics

Identifier	Module	ECTS	Responsibility
M-WIWI-101599	Statistics and Econometrics (S. 135)	9	Oliver Grothe,Melanie Schienle

10.3.7 Law

Identifier	Module	ECTS	Responsibility
M-INFO-101187	Elective Module Law (S. 137)	9	Thomas Dreier

10.3.8 Sociology

Identifier	Module	ECTS	Responsibility
M-GEISTSOZ-101168	Qualitative Social Research (S. 139)		Michaela Pfadenhauer
M-GEISTSOZ-101167	Sociology/Empirical Social Research (S. 138)	9	Gerd Nollmann

11 Additional Examinations

Identifier	Module	ECTS	Responsibility
M-BGU-101004	Fundamentals of construction (S. 124)	9	Shervin Haghsheno
M-BGU-102283	Introduction to Track Guided Transport Systems (S. 115)	9	Eberhard Hohnecker
M-BGU-101067	Mobility and Infrastructure (S. 117)	9	Ralf Roos
M-ETIT-101165	Energy Generation and Network Components (S. 109)	9	Bernd Hoferer,Thomas Leibfried
M-MACH-101266	Automotive Engineering (S. 95)	9	Frank Gauterin
M-MACH-101275	Combustion Engines I (S. 97)	9	Thomas Koch,Heiko Kubach
M-MACH-101303	Combustion Engines II (S. 106)	9	Heiko Kubach
M-MACH-101261	Emphasis in Fundamentals of Engineering (S. 120)	9	Michael Hoffmann
M-MACH-101262	Emphasis Materials Science (S. 94)	9	Michael Hoffmann
M-MACH-101264	Handling Characteristics of Motor Vehicles (S. 125)	9	Frank Gauterin
M-MACH-101272	Integrated Production Planning (S. 116)	9	Gisela Lanza
M-MACH-101269	Introduction to Technical Logistics (S. 101)	9	Kai Furmans
M-MACH-101286	Machine Tools and Industrial Handling (S. 100)	9	Jürgen Fleischer
M-MACH-101276	Manufacturing Technology (S. 98)	9	Volker Schulze
M-MACH-101287	Microsystem Technology (S. 118)	9	Jan Gerrit Korvink
M-MACH-101267	Mobile Machines (S. 121)	9	Marcus Geimer
M-MACH-101270	Product Lifecycle Management (S. 111)	9	Jivka Ovtcharova
M-MACH-101274	Rail System Technology (S. 110)	9	Peter Gratzfeld
M-MACH-101284	Specialization in Production Engineering (S. 99)	9	Volker Schulze
M-MACH-101265	Vehicle Development (S. 113)	9	Frank Gauterin
M-WIWI-101413	Applications of Operations Research (S. 83)	9	Stefan Nickel
M-WIWI-101499	Applied Microeconomics (S. 71)	9	Johannes Philipp Reiß
M-WIWI-101460	CRM and Service Management (S. 58)	9	Andreas Geyer-Schulz
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings (S. 60)	9	Thomas Lützkendorf
M-WIWI-101434	eBusiness and Service Management (S. 50)	9	Christof Weinhardt
M-WIWI-101668	Economic Policy I (S. 76)	9	Ingrid Ott
M-WIWI-101501	Economic Theory (S. 73)	9	Clemens Puppe

M-WIWI-101402	eFinance (S. 64)	9	Christof Weinhardt
M-WIWI-101630	Electives in Informatics (S. 142)	9	Andreas Oberweis,Harald Sack,Hartmut Schmeck,York Sure-Vetter,Johann Marius Zöllner
M-WIWI-101628	Emphasis in Informatics (S. 144)	9	Andreas Oberweis,Harald Sack,Hartmut Schmeck,York Sure-Vetter
M-WIWI-101464	Energy Economics (S. 62)	9	Wolf Fichtner
M-WIWI-101435	Essentials of Finance (S. 44)	9	Martin Ruckes,Marliese Uhrig-Homburg
M-WIWI-101424	Foundations of Marketing (S. 66)	9	Martin Klarmann
M-WIWI-102752	Fundamentals of Digital Service Systems (S. 68)	9	Gerhard Satzger,Christof Weinhardt
M-WIWI-101513	Human Resources and Organizations (S. 54)	9	Petra Nieken
M-WIWI-101437	Industrial Production I (S. 38)	9	Frank Schultmann
M-WIWI-101646	Introduction to Natural Hazards and Risk Analysis 1 (S. 104)	9	Michael Kunz
M-WIWI-101648	Introduction to Natural Hazards and Risk Analysis 2 (S. 107)	9	Michael Kunz
M-WIWI-102753	Machine Learning for Finance and Data Science (S. 52)	9	Maxim Ulrich
M-WIWI-101498	Management Accounting (S. 49)	9	Marcus Wouters
M-WIWI-101414	Methodical Foundations of OR (S. 85)	9	Oliver Stein
M-WIWI-103278	Optimization under Uncertainty (S. 89)	9	Steffen Rebennack
M-WIWI-101403	Public Finance (S. 74)	9	Berthold Wigger
M-WIWI-101466	Real Estate Management (S. 56)	9	Thomas Lützkendorf
M-WIWI-101436	Risk and Insurance Management (S. 36)	9	Ute Werner
M-WIWI-101422	Specialization in Customer Relationship Management (S. 40)	9	Andreas Geyer-Schulz
M-WIWI-101840	Stochastic Methods and Simulation (S. 140)	9	
M-WIWI-101425	Strategy and Organization (S. 37)	9	Hagen Lindstädt
M-WIWI-101421	Supply Chain Management (S. 45)	9	Stefan Nickel
M-WIWI-101465	Topics in Finance I (S. 47)	9	Martin Ruckes,Marliese Uhrig-Homburg
M-WIWI-101423	Topics in Finance II (S. 42)	9	Martin Ruckes,Marliese Uhrig-Homburg

Part IV
Modules

M Module: Module Bachelor Thesis [M-WIWI-101601]

Responsibility: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Bachelor Thesis

ECTS	Recurrence	Duration	Language	Version
12	Jedes Semester	1 Semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-103067	Bachelor Thesis (S. 188)	12	Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Learning Control / Examinations
The Bachelor Thesis is a written exam which shows that the student can autonomously investigate a scientific problem in Industrial Engineering and Management. 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 basic program 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.

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 Industrial Engineering and Management and has to refer to subject-specific or interdisciplinary problems.

Workload
The total workload for this module is approximately 360 hours. For further information see German version.

M Module: Internship [M-WIWI-101419]

Responsibility: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Internship

ECTS	Recurrence	Duration	Version
10	Einmalig	1 Semester	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102611	Internship (S. 316)	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. The internship is not graded.

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

- 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.

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. 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.

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

Responsibility: Martin Ruckes, Marliese Uhrig-Homburg, Marcus Wouters

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Business Administration / Basic Program

ECTS	Recurrence	Duration	Level	Version
7	Jedes Semester	1 Semester	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102817	Business Administration: Strategic Management and Information Engineering and Management (S. 201)	3	Petra Nieken, Martin Ruckes
T-WIWI-102819	Business Administration: Finance and Accounting (S. 198)	4	Martin Ruckes, Marliese Uhrig-Homburg, Marcus Wouters

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: Martin Ruckes, Marliese Uhrig-Homburg

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Business Administration / Basic Program

ECTS	Duration	Language	Level	Version
8	2 Semester	Deutsch	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102818	Business Administration: Production Economics and Marketing (S. 199)	4	Wolf Fichtner, Martin Klarmann, Thomas Lützkendorf, Martin Ruckes, Frank Schultmann
T-WIWI-102816	Financial Accounting and Cost Accounting (S. 260)	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.

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	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102603	Principles of Insurance Management (S. 410)	4,5	Ute Werner
T-WIWI-102608	Enterprise Risk Management (S. 250)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

Qualification Objectives
See German version.

Content
See German version.

Remarks
Please note:

- The examination T-WIWI-102603 Principles of Insurance Management will be offered latest until summer term 2017 (beginners only).
- The examination T-WIWI-102608 Enterprise Risk Management will be offered latest until winter term 2017/2018 (beginners only).

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	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102629	Management and Strategy (S. 347)	3,5	Hagen Lindstädt
T-WIWI-102630	Managing Organizations (S. 353)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 412)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

Qualification Objectives
See German version.

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

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	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102606	Fundamentals of Production Management (S. 286)	5,5	Frank Schultmann

Ergänzungsangebot
Non-Compulsory Block; You must choose 3,5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102820	Production Economics and Sustainability (S. 419)	3,5	Jérémy Rimbon
T-WIWI-102870	Logistics and Supply Chain Management (S. 339)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: 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	Recurrence	Duration	Language	Level	Version
9	Jedes Semester	1 Semester	Deutsch	3	2

Wahlpflichtangebot
Non-Compulsory Block; You must choose between 1 und 2 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 173)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 388)	4,5	Andreas Geyer-Schulz

Ergänzungsangebot
Non-Compulsory Block; You must choose at most 1 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 210)	4,5	Kay Mitusch
T-WIWI-105771	Foundations of Digital Services A (S. 265)	4,5	Gerhard Satzger, Christof Weinhardt

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4(1), S. 2 2nd clause 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. The module [M-WIWI-101460] *CRM and Service Management* must have been started.
2. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
3. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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, analysis 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. Regarding 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 (Extract / Transform / Load). The process of modelling a data-warehouse as well as the so-called extraction, transformation, 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 operative 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, ...)

Workload

The total amount of work for this module is approximately 270 hours (9 credits). The subdivision is based on the credits of the courses of the module.

The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam periods and the time that is required to achieve the objectives of the module as an average student with an average performance.

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

Responsibility: Martin Ruckes, Marliese Uhrig-Homburg

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	Version
9	Jedes Semester	1 Semester	3	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 262)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 228)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 253)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 204)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 313)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 239)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 483)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 179)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.
3. The module [M-WIWI-101435] *Essentials of Finance* must have been started.

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.

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

Responsibility: Martin Ruckes, Marliese Uhrig-Homburg

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	Version
9	Jedes Sommersemester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102604	Investments (S. 333)	4,5	Marliese Uhrig-Homburg
T-WIWI-102605	Financial Management (S. 263)	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
The following conditions must be met:

1. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: 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	Version
9	Jedes Semester	1 Semester	3	3

Wahlpflichtangebot
Non-Compulsory Block; You must choose between 1 und 2 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102598	Management of Business Networks (S. 348)	4,5	Christof Weinhardt
T-WIWI-102760	Management of Business Networks (Introduction) (S. 350)	3	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; You must choose at most 4 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 254)	4,5	Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 496)	4,5	Stefan Nickel
T-MACH-102089	Logistics - Organisation, Design and Control of Logistic Systems (S. 337)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: Martin Ruckes, Marliese Uhrig-Homburg

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	Version
9	Jedes Semester	1 Semester	3	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102623	Financial Intermediation (S. 262)	4,5	Martin Ruckes
T-WIWI-102643	Derivatives (S. 228)	4,5	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 253)	1,5	Jörg Franke
T-WIWI-102626	Business Strategies of Banks (S. 204)	3	Wolfgang Müller
T-WIWI-102646	International Finance (S. 313)	3	Marliese Uhrig-Homburg
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 239)	4,5	Christof Weinhardt
T-WIWI-102790	Specific Aspects in Taxation (S. 483)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102879	Asset Management (S. 179)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.
3. The module [M-WIWI-101435] *Essentials of Finance* must have been started.

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.

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	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102800	Management Accounting 1 (S. 345)	4,5	Marcus Wouters
T-WIWI-102801	Management Accounting 2 (S. 346)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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
The following courses are part of this module:

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

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

M 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	Version
9	Deutsch	3	2

Wahlpflichtangebot
Non-Compulsory Block; You must choose 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 265)	4,5	Gerhard Satzger, Christof Weinhardt
T-WIWI-102598	Management of Business Networks (S. 348)	4,5	Christof Weinhardt
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 239)	4,5	Christof Weinhardt
T-WIWI-102706	Special Topics in Information Engineering & Management (S. 477)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: 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	Recurrence	Duration	Language	Level	Version
9	Einmalig	1 Semester	Englisch	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-105712	Probabilistic Machine Learning for Finance and Data Science (S. 411)	4,5	Maxim Ulrich
T-WIWI-105714	Solving Finance Problems using Machine Learning (S. 475)	4,5	Maxim Ulrich

Learning Control / Examinations

The module M-WIWI-102753 "Machine Learning for Finance and Data Science" will not be offered from winter term 2016/2017.
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

The following conditions must be met:

1. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: 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	Version
9	Jedes Semester	2 Semester	3	2

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102909	Human Resource Management (S. 299)	4,5	Petra Nieken

Ergänzungsangebot
Non-Compulsory Block; You must choose between 4,5 and 5,5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102908	Personnel Policies and Labor Market Institutions (S. 392)	4,5	Petra Nieken
T-WIWI-102630	Managing Organizations (S. 353)	3,5	Hagen Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership (S. 412)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: 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	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102744	Real Estate Management I (S. 433)	4,5	Thomas Lützkendorf
T-WIWI-102745	Real Estate Management II (S. 434)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: 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	Version
9	Jedes Semester	1 Semester	3	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose 2 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102596	Analytical CRM (S. 173)	4,5	Andreas Geyer-Schulz
T-WIWI-102597	Operative CRM (S. 388)	4,5	Andreas Geyer-Schulz
T-WIWI-102595	Customer Relationship Management (S. 219)	4,5	Andreas Geyer-Schulz

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

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

Modeled Conditions
The following conditions must be met:

1. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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 implementation 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.

Workload
The total amount of work for this module is approximately 270 hours (9 credits). The subdivision is based on the credits of the courses of the module.
The total number of hours per course results from the time of visiting the lectures and exercises, as well as from the exam periods and the time that is required to achieve the objectives of the module as an average student with an average performance.

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 / Business Administration
Compulsory Elective Modules / Elective Module 2 / Business Administration
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102742	Design, Construction and Sustainability Assessment of Buildings I (S. 230)	4,5	Thomas Lützkendorf
T-WIWI-102743	Design, Construction and Sustainability Assessment of Buildings II (S. 231)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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.

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	Level	Version
9	Jedes Semester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102746	Introduction to Energy Economics (S. 318)	5,5	Wolf Fichtner

Ergänzungsangebot
Non-Compulsory Block; You must choose 3,5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics (S. 436)	3,5	Russell McKenna
T-WIWI-102607	Energy Policy (S. 247)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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.)
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

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

Workload

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

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	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102600	eFinance: Information Engineering and Management for Securities Trading (S. 239)	4,5	Christof Weinhardt

Ergänzungsangebot
Non-Compulsory Block; You must choose 4,5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102643	Derivatives (S. 228)	4,5	Marliese Uhrig-Homburg
T-WIWI-102646	International Finance (S. 313)	3	Marliese Uhrig-Homburg
T-WIWI-102625	Exchanges (S. 253)	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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: 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	Version
9	Jedes Semester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102805	Managing the Marketing Mix (S. 354)	4,5	Martin Klarmann

Ergänzungsangebot
Non-Compulsory Block; You must choose at least 4,5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102798	Brand Management (S. 195)	4,5	Bruno Neibecker
T-WIWI-102806	Services Marketing and B2B Marketing (S. 466)	3	Ju-Young Kim, Martin Klarmann
T-WIWI-102807	International Marketing (S. 314)	1,5	Sven Feurer

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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: Gerhard Satzger, 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	Version
9	Deutsch	3	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-105771	Foundations of Digital Services A (S. 265)	4,5	Gerhard Satzger, Christof Weinhardt
T-WIWI-105775	Foundations of Digital Services B (S. 267)	4,5	Alexander Mädche, Stefan Morana, Stefan Nickel
T-WIWI-105711	Practical Seminar Digital Services (S. 408)	4,5	Wolf Fichtner, Alexander Mädche, Stefan Nickel, Gerhard Satzger, York Sure-Vetter, Christof Weinhardt

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. The module [M-WIWI-101494] *Fundamentals of Business Administration 1* must have been passed.
2. The module [M-WIWI-101578] *Fundamentals of Business Administration 2* must have been passed.

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: Introduction to Economics [M-WIWI-101398]

Responsibility: Clemens Puppe

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Economics / Basic Program

ECTS	Recurrence	Duration	Level	Version
10	Jedes Semester	2 Semester	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102708	Economics I: Microeconomics (S. 234)	5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102709	Economics II: Macroeconomics (S. 236)	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. 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.

Remarks

Notice: The lecture *Economics I*: *Microeconomics* [2600012] 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

See German version.

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 2 / Economics
Additional Examinations

ECTS	Recurrence	Duration	Language	Level	Version
9	Jedes Semester	1 Semester	Deutsch	3	2

Wahlpflichtangebot
Non-Compulsory Block; You must choose 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 321)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102844	Industrial Organization (S. 304)	4,5	Johannes Philipp Reiß
T-WIWI-100005	Competition in Networks (S. 210)	4,5	Kay Mitusch
T-WIWI-102739	Public Revenues (S. 429)	4,5	Berthold Wigger
T-WIWI-102876	Auction & Mechanism Design (S. 180)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 233)	4,5	Nora Szech
T-WIWI-102792	Decision Theory (S. 227)	4,5	Karl-Martin Ehrhart
T-WIWI-102736	Economics III: Introduction in Econometrics (S. 238)	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.

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 2 / Economics
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	2 Semester	3	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102850	Introduction to Game Theory (S. 321)	4,5	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102610	Welfare Economics (S. 512)	4,5	Clemens Puppe
T-WIWI-102844	Industrial Organization (S. 304)	4,5	Johannes Philipp Reiß
T-WIWI-102609	Advanced Topics in Economic Theory (S. 167)	4,5	Kay Mitusch
T-WIWI-102876	Auction & Mechanism Design (S. 180)	4,5	Nora Szech
T-WIWI-102892	Economics and Behavior (S. 233)	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

The following conditions must be met:

- The module [M-WIWI-101398] *Introduction to Economics* must have been passed.

Qualification Objectives

See German version.

Recommendations

None

Remarks

The course T-WIWI-102609 - Advanced Topics in Economic Theory is currently not available.

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 2 / Economics
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102739	Public Revenues (S. 429)	4,5	Berthold Wigger
T-WIWI-102790	Specific Aspects in Taxation (S. 483)	4,5	Armin Bader, Berthold Wigger
T-WIWI-102836	Monetary and Financial Policy (S. 377)	4,5	Joachim Nagel, Berthold Wigger
T-WIWI-102877	Introduction to Public Finance (S. 329)	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:

- The module [M-WIWI-101398] *Introduction to Economics* must have been passed.

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
There are no further examination dates for the course "Monetary and Financial Policy" from winter term 2017/2018.

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 2 / Economics
Additional Examinations

ECTS	Recurrence	Duration	Language	Version
9	Jedes Semester	1 Semester	Deutsch	2

Wahlpflichtangebot
Non-Compulsory Block; You must choose 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-100005	Competition in Networks (S. 210)	4,5	Kay Mitusch
T-WIWI-103213	Basic Principles of Economic Policy (S. 189)	4,5	Ingrid Ott
T-WIWI-102739	Public Revenues (S. 429)	4,5	Berthold Wigger
T-WIWI-102908	Personnel Policies and Labor Market Institutions (S. 392)	4,5	Petra Nieken

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:

- The module [M-WIWI-101398] *Introduction to Economics* must have been passed.

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: Foundations of Informatics [M-WIWI-101417]

Responsibility: Hartmut Schmeck, York Sure-Vetter

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Informatics / Basic Program

ECTS	Recurrence	Duration	Level	Version
10	Jedes Semester	2 Semester	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102749	Foundations of Informatics I (S. 268)	5	York Sure-Vetter
T-WIWI-102707	Foundations of Informatics II (S. 270)	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 / Basic Program

ECTS	Recurrence	Duration	Language	Level	Version
5	Jedes Wintersemester	1 Semester	Deutsch	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102735	Introduction to Programming with Java (S. 328)	5	N.N., Johann Marius Zöllner

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.

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

Responsibility: Andreas Oberweis, Hartmut Schmeck, York Sure-Vetter

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Informatics / Specialisation Program

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	4

Wahlpflichtangebot
Non-Compulsory Block; You must choose 5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102747	Advanced Programming - Java Network Programming (S. 166)	5	Dietmar Ratz
T-WIWI-102748	Advanced Programming - Application of Business Software (S. 164)	5	Stefan Klink, Andreas Oberweis

Ergänzungsangebot
Non-Compulsory Block; You must choose between 4 and 5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102652	Applied Informatics I - Modelling (S. 176)	5	Andreas Oberweis, York Sure-Vetter
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 178)	5	York Sure-Vetter
T-WIWI-102660	Database Systems (S. 223)	5	Andreas Oberweis
T-WIWI-106564	Applications of AI (S. 175)	5	York Sure-Vetter
T-WIWI-104679	Foundations of mobile Business (S. 271)	5	Andreas Oberweis, Gunther Schiefer
T-WIWI-100809	Software Engineering (S. 471)	4	Andreas Oberweis
T-WIWI-102910	Special Topics of Applied Informatics (S. 478)	5	Andreas Oberweis, Hartmut Schmeck, York Sure-Vetter
T-WIWI-102664	Knowledge Management (S. 335)	4	York Sure-Vetter

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.

Conditions
Successful passing of the corresponding modules of the basic program (except *Advanced Programming - Java Network Programming* and *Advanced Programming - Application of Business Software).*

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.

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

Responsibility: Stefan Nickel, Steffen Rebennack, Oliver Stein

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Operations Research / Basic Program

ECTS	Recurrence	Duration	Level	Version
9	Jedes Sommersemester	2 Semester	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102758	Introduction to Operations Research I and II (S. 326)	9	Stefan Nickel, Steffen Rebennack, 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.

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.

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

Responsibility: Stefan Nickel

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Operations Research / Specialisation Program
Compulsory Elective Modules / Elective Module 2 / Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	6

Wahlpflichtangebot
Non-Compulsory Block; You must choose between 1 und 2 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 254)	4,5	Stefan Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 496)	4,5	Stefan Nickel

Ergänzungsangebot
Non-Compulsory Block; You must choose at most 1 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102726	Global optimization I (S. 291)	4,5	Oliver Stein
T-WIWI-106199	Modeling and OR-Software: Introduction (S. 375)	4,5	Stefan Nickel
T-WIWI-106545	Optimization under uncertainty (S. 390)	5	Steffen Rebennack

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*and*Tactical and operational Supply Chain Management*has to be taken.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- The module [M-WIWI-101418] *Introduction to Operations Research* must have been passed.

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.

Recommendations
The courses Introduction to Operations Research I and II are helpful.

Remarks
The examination Simulation I will be offered latest until winter term 2016/2017 (for beginners).
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: Operations Research / Specialisation Program
Compulsory Elective Modules / Elective Module 2 / Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	7

Wahlpflichtangebot
Non-Compulsory Block; You must choose at least 1 courses and between 4,5 and 9 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102726	Global optimization I (S. 291)	4,5	Oliver Stein
T-WIWI-103638	Global optimization I and II (S. 292)	9	Oliver Stein
T-WIWI-102724	Nonlinear Optimization I (S. 380)	4,5	Oliver Stein
T-WIWI-103637	Nonlinear Optimization I und II (S. 382)	9	Oliver Stein

Ergänzungsangebot
Non-Compulsory Block;

Identifier	Course	ECTS	Responsibility
T-WIWI-106546	Introduction to Stochastic Optimization (S. 330)	4,5	Steffen Rebennack
T-WIWI-102727	Global optimization II (S. 293)	4,5	Oliver Stein
T-WIWI-102725	Nonlinear Optimization II (S. 384)	4,5	Oliver Stein
T-WIWI-102704	Facility Location and Strategic Supply Chain Management (S. 254)	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*Nonlinear Optimization I* [2550111] and *Global Optimization I* [2550134] has to be examined.
Successful passing of the corresponding modules of the basic program.

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.

Recommendations
The courses Introduction to Operations Research I and II are helpful.

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

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

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

Responsibility: Karl-Heinz Waldmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Operations Research / Specialisation Program
Compulsory Elective Modules / Elective Module 2 / Operations Research

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	5

Wahlpflichtangebot
Non-Compulsory Block; You must choose between 1 und 2 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102710	Markov Decision Models I (S. 357)	5	Karl-Heinz Waldmann
T-WIWI-102627	Simulation I (S. 467)	4,5	Karl-Heinz Waldmann

Ergänzungsangebot
Non-Compulsory Block; You must choose at most 2 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102711	Markov Decision Models II (S. 358)	4,5	Karl-Heinz Waldmann
T-WIWI-102703	Simulation II (S. 468)	4,5	Karl-Heinz Waldmann
T-WIWI-102724	Nonlinear Optimization I (S. 380)	4,5	Oliver Stein
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 496)	4,5	Stefan Nickel

Learning Control / Examinations
The module is not offered from summer term 2017.
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:

- The module [M-WIWI-101418] *Introduction to Operations Research* must have been passed.

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.

Recommendations
The courses Introduction to Operations Research I and II are helpful.

Remarks
The examination

- T-WIWI-102627 Simulation I will be offered latest until winter term 2016/2017 (for beginners).
- T-WIWI-102703 Simulation II will be offered latest until summer term 2017 (for beginners).
- T-WIWI-102711 Markov Decision Models II will be offered latest until winter term 2016/2017 (for beginners).
- T-WIWI-102710 Markov Decision Models I will be offered latest until summer term 2017 (for beginners).

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

M Module: Optimization under Uncertainty [M-WIWI-103278]

Responsibility: Steffen Rebennack

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Operations Research / Specialisation Program
Compulsory Elective Modules / Elective Module 2 / Operations Research
Additional Examinations

ECTS	Recurrence	Duration	Version
9	Jedes Semester	1 Semester	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose between 1 und 2 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-106546	Introduction to Stochastic Optimization (S. 330)	4,5	Steffen Rebennack
T-WIWI-106545	Optimization under uncertainty (S. 390)	5	Steffen Rebennack

Ergänzungsangebot
Non-Compulsory Block; You must choose at most 1 courses.

Identifier	Course	ECTS	Responsibility
T-WIWI-102724	Nonlinear Optimization I (S. 380)	4,5	Oliver Stein
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 496)	4,5	Stefan Nickel

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 *Introduction to Stochastic Optimization*and *Optimization approaches under uncertainty*has to be taken.

Modeled Conditions
The following conditions must be met:

- The module [M-WIWI-101418] *Introduction to Operations Research* must have been passed.

Qualification Objectives
The student

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

M Module: Additional Fundamentals of Engineering [M-WIWI-101839]

Responsibility: Alexander Fidlin, Volker Gaukel, Michael Hoffmann

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Engineering Sciences / Basic Program

ECTS	Recurrence	Duration	Language	Version
3	Jedes Semester	1 Semester	Deutsch	2

Wahlpflichtangebot
Non-Compulsory Block; You must choose between 3 and 5 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-102079	Material Science II for Business Engineers (S. 360)	5	Michael Hoffmann
T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics (S. 320)	5	Alexander Fidlin
T-CIWVT-106058	Process fundamentals by the example of food production (S. 415)	3	Volker Gaukel

Learning Control / Examinations
See course description.

Conditions
None

Qualification Objectives
See German version.

Remarks
It is currently being investigated which other courses can be included in this module. In case of changes, we will inform you on our Errata page at http://www.wiwi.kit.edu/studiumAushaenge.php.

Workload
The total workload for this module is approximately 90 hours.

M Module: Materials Science [M-MACH-101260]

Responsibility: Michael Hoffmann

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory

Contained in: Engineering Sciences / Basic Program

ECTS	Recurrence	Duration	Level	Version
3	Jedes Wintersemester	1 Semester	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102078	Materials Science I (S. 363)	3	Michael Hoffmann

Learning Control / Examinations

The assessment of the module is carried out by a written examination (150 min) about the lecture*Material ScienceI*[2125760] (according to Section 4(2), 1 of the examination regulation).
The examination is offered every semester. Re-examinations are offered at every ordinary examination date. The examination at the end of the summer term is carried out by a written or oral exam.
The grade of the module corresponds to the grade of this examination.

Conditions

None.

Qualification Objectives

Students are able to specify the basics of materials science and engineering and can apply it to simple problems in various technical areas.
As major part of the module, the students know the correlation between atomic structure and bonding of solids and the macroscopic properties such as mechanical behavior or electrical conductivity. They have basic knowledge with respect to materials characterization. The students are able to analyze phase diagrams with up to two components and can derive simple correlations among composition, processing, microstructure evolution and materials properties.

Content

After an introduction to the atomic structure and interatomic bonding, elementary concepts of crystallography are given. Different types of crystal structures are explained and various types of imperfections in solids. Then, the mechanical behaviour and the physical properties of various types of materials (metals, polymers, ceramics) are discussed. The thermodynamic principles of solidification and the basic types of phase diagrams are given to understand to iron-carbon phase diagram and the manifold microstructures of steel and cast iron.

Workload

The total workload for this module is approximately 90 hours.

M Module: Engineering Mechanics [M-MACH-101259]

Responsibility: Alexander Fidlin

Organisation: Institut für Technische Mechanik

Curricular Anchorage: Compulsory

Contained in: Engineering Sciences / Basic Program

ECTS	Recurrence	Duration	Language	Level	Version
3	Jedes Wintersemester	1 Semester	Deutsch	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102208	Introduction to Engineering Mechanics I: Statics and Strength of Materials (S. 319)	3	Alexander Fidlin

Learning Control / Examinations

The assessment consists of a written examination taking place in the recess period (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.

Permitted utilities: non-programmable calculator, literature

Conditions

None

Qualification Objectives

The student

- knows and understands the basic elements of statics,
- is able to solve basic problems in statics indipendently.

Content

Statics: force ▪ moment ▪ general equilibrium conditions ▪ center of gravity ▪ inner forces in structure ▪ plane frameworks ▪ adhesion

Remarks

Starting summer 2016 the course “Introduction to Engineering Mechanics I : Statics and Strength of Materials” [2162238] will be held in summer term.

Workload

The total workload for this module is approximately 90 hours.

M Module: Electrical Engineering [M-ETIT-101155]

Responsibility: Wolfgang Menesklou

Organisation: KIT-Fakultät für Elektrotechnik und Informationstechnik

Curricular Anchorage: Compulsory

Contained in: Engineering Sciences / Basic Program

ECTS	Recurrence	Duration	Level	Version
3	Jedes Wintersemester	1 Semester	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-100533	Electrical Engineering for Business Engineers, Part I (S. 241)	3	Wolfgang Menesklou

Learning Control / Examinations

The assessment of the module is carried out by a written examination about the lecture *Electrical Engineering I* [23223] (according to Section 4(2), 1 of the examination regulation).

The grade of the module corresponds to the grade of this examination.

Qualification Objectives

The student knows and understands basic terms of electrical engineering and should be able to carry out simple calculations of DC and AC circuits.

Content

Supporting the lecture, assignments to the curriculum are distributed. These are solved into additional (voluntary) tutorials.

Workload

See German version.

M Module: Emphasis Materials Science [M-MACH-101262]

Responsibility: Michael Hoffmann

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Vertiefung Werkstoffkunde
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-102079	Material Science II for Business Engineers (S. 360)	5	Michael Hoffmann
T-MACH-102141	Constitution and Properties of Wearresistant Materials (S. 214)	4	Sven Ulrich
T-MACH-100287	Introduction to Ceramics (S. 317)	6	Michael Hoffmann
T-MACH-102102	Physical Basics of Laser Technology (S. 399)	5	Johannes Schneider
T-MACH-102137	Polymer Engineering I (S. 405)	4	Peter Elsner
T-MACH-102138	Polymerengineering II (S. 406)	4	Peter Elsner
T-MACH-102139	Failure of Structural Materials: Fatigue and Creep (S. 258)	4	Patric Gruber, Peter Gumbsch, Oliver Kraft
T-MACH-102140	Failure of Structural Materials: Deformation and Fracture (S. 256)	4	Peter Gumbsch, Oliver Kraft, Daniel Weygand
T-MACH-102157	High Performance Powder Metallurgy Materials (S. 298)	4	Rainer Oberacker
T-MACH-102179	Structural Ceramics (S. 492)	4	Michael Hoffmann
T-MACH-102170	Structural and Phase Analysis (S. 491)	4	Susanne Wagner
T-MACH-100531	Systematic Materials Selection (S. 494)	5	Stefan Dietrich

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 seperately.
The overall grade of the module is removed from the average of the partial examinations, with at least two partial exams need to be.

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

Qualification Objectives
Students acquire and deepen skills in fundamentals of materials science and engineering and can apply them to technical problems. Specific teaching objectives are agreed with the respective coordinator of the course.

Content
The module content depends on the elected courses.

M Module: Automotive Engineering [M-MACH-101266]

Responsibility: Frank Gauterin

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Fahrzeugtechnik
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-100092	Automotive Engineering I (S. 182)	6	Frank Gauterin, Hans-Joachim Unrau
T-MACH-102117	Automotive Engineering II (S. 186)	3	Frank Gauterin, Hans-Joachim Unrau
T-MACH-102156	Project Workshop: Automotive Engineering (S. 424)	4,5	Michael Frey, Frank Gauterin, Martin Gießler
T-MACH-102116	Fundamentals for Design of Motor-Vehicle Bodies I (S. 274)	1,5	Horst Dietmar Bardehle
T-MACH-102119	Fundamentals for Design of Motor-Vehicle Bodies II (S. 276)	1,5	Horst Dietmar Bardehle
T-MACH-102093	Fluid Power Systems (S. 264)	5	Marcus Geimer, Stefan Haug, Martin Scherer
T-MACH-102150	BUS-Controls (S. 197)	3	Marcus Geimer, Felix Weber
T-MACH-102203	Automotive Engineering I (S. 184)	6	Frank Gauterin, Martin Gießler

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
The following conditions must be met:

1. The module [M-MACH-101259] *Engineering Mechanics* must have been passed.
2. The module [M-MACH-101260] *Materials Science* must have been passed.
3. The module [M-ETIT-101155] *Electrical Engineering* must have been passed.
4. The module [M-WIWI-101839] *Additional Fundamentals of Engineering* must have been passed.

Qualification Objectives
The student

- knows the most important components of a vehicle,
- knows and understands the functioning and the interaction of the individual components,
- knows the basics of dimensioning the components.

Content
See course descriptions.

Recommendations
Knowledge of the content of the courses *Engineering Mechanics I* [2161238] and *Engineering Mechanics II* [1262276] is helpful.

Workload
See German version.

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

Responsibility: Thomas Koch, Heiko Kubach

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Wintersemester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102194	Combustion Engines I (S. 208)	5	Thomas Koch, Heiko Kubach
T-MACH-105564	Energy Conversion and Increased Efficiency in Internal Combustion Engines (S. 245)	4	Thomas Koch, Heiko Kubach

Learning Control / Examinations
The module examination contains of two oral examinations. The module score results from the two scores weighted according to the ECTS.

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

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: Manufacturing Technology [M-MACH-101276]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in:
Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Wintersemester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102105	Manufacturing Technology (S. 355)	9	Volker Schulze, Frederik Zanger

Learning Control / Examinations

The assessment is carried out as partial exams (according to Section 4(2), 1-3 SPO of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.
To improve the overall grade of the module up to one grading scale (0.3) there might be taken an optional term paper in the field of the wbk. The term paper may not be convalidated in the seminar module.

Conditions

Successful passing of the corresponding modules of the basic program.

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: Specialization in Production Engineering [M-MACH-101284]

Responsibility: Volker Schulze

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Version
9	Jedes Semester	2 Semester	1

Vertiefung der Produktionstechnik
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-102107	Quality Management (S. 430)	4	Gisela Lanza
T-MACH-105166	Materials and Processes for Body Leightweight Construction in the Automotive Industry (S. 361)	4	Stefan Kienzle, Dieter Steegmüller
T-MACH-105177	Metal Forming (S. 369)	3	Florian Herlan
T-MACH-105185	Control Technology (S. 217)	4	Christoph Gönnheimer
T-MACH-102148	Gear Cutting Technology (S. 288)	4	Markus Klaiber
T-MACH-102189	Production Technology and Management in Automotive Industry (S. 420)	4	Volker Michael Stauch
T-MACH-105188	Integrative Strategies in Production and Development of High Performance Cars (S. 312)	4	Karl-Hubert Schlichtenmayer, Frederik Zanger
T-MACH-105277	Safe mechatronic systems (S. 438)	4	Markus Golder

Learning Control / Examinations
The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately. The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal. To improve the overall grade of the module up to one grading scale (0.3) there might be taken an optional term paper in the field of the wbk. The term paper may not be convalidated in the seminar module.

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

Responsibility: Jürgen Fleischer

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language	Level	Version
9	Jedes Wintersemester	1 Semester	Deutsch	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102158	Machine Tools and Industrial Handling (S. 343)	9	Jürgen Fleischer

Learning Control / Examinations
The assessment is carried out as an oral exam. The examination is offered every semester. Reexaminations are offered at every ordinary examination date.

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

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

Responsibility: Kai Furmans

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Einführung in die Technische Logistik
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-102151	Material Flow in Logistic Systems (S. 359)	6	Kai Furmans
T-MACH-102092	Industrial Application of Material Handling Systems in Sorting and Distribution Systems (S. 302)	4	Jörg Föller
T-MACH-102128	Information Systems and Supply Chain Management (S. 309)	4	Christoph Kilger
T-MACH-102163	Basics of Technical Logistics (S. 190)	6	Martin Mittwollen, Jan Oellerich
T-MACH-102159	Elements and Systems of Technical Logistics (S. 243)	4	Martin Mittwollen, Jan Oellerich
T-MACH-102178	Elements of Technical Logistics and Project (S. 244)	6	Martin Mittwollen, Jan Oellerich
T-MACH-102160	Selected Applications of Technical Logistics (S. 441)	4	Vladimir Madzharov, Martin Mittwollen
T-MACH-102161	Selected Applications of Technical Logistics and Project (S. 442)	6	Vladimir Madzharov, Martin Mittwollen
T-MACH-105149	Industrial Application of Technological Logistics Instancing Crane Systems (S. 303)	4	Markus Golder
T-MACH-105174	Warehousing and Distribution Systems (S. 509)	4	Kai Furmans
T-MACH-105151	Energy Efficient Intralogistic Systems (S. 246)	4	Meike Braun, Frank Schönung
T-MACH-105165	Automotive Logistics (S. 187)	4	Kai Furmans
T-MACH-105175	Airport Logistics (S. 169)	4	André Richter
T-WIWI-103091	Production and Logistics Controlling (S. 418)	3	Helmut Wlcek
T-MACH-105200	Safe structures for machines in material handling (S. 440)	4	Markus Golder
T-MACH-105277	Safe mechatronic systems (S. 438)	4	Markus Golder

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.
To improve the overall grade of the module up to one grading scale (0.3) there might be taken an optional term paper in the field of the IFL. The term paper may not be convalidated in the seminar module.

Conditions
Successful passing of the corresponding modules of the basic program.
One of the core courses *Material Flow in Logistic Systems* [2117051] or *Basics of Technical Logistics* [2117095] is mandatory.

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

Responsibility: Prüfungsausschuss der KIT-Fakultät für Wirtschaftswissenschaften

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in:
Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences

ECTS	Recurrence	Duration	Level	Version
9	Einmalig	1 Semester	3	2

Wahlpflichtangebot
Non-Compulsory Block; You must choose between 9 and 12 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-106291	PH APL-ING-TL01 (S. 393)	3	
T-WIWI-106292	PH APL-ING-TL02 (S. 394)	3	
T-WIWI-106293	PH APL-ING-TL03 (S. 395)	3	
T-WIWI-106294	PH APL-ING-TL04 ub (S. 396)	0	
T-WIWI-106295	PH APL-ING-TL05 ub (S. 397)	0	
T-WIWI-106296	PH APL-ING-TL06 ub (S. 398)	0	

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 contain at least 9 credit points (max. 12 credits) and at least 6 hours per week (max. 8 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.

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: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language	Version
9	Jedes Semester	1 Semester	Deutsch	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose between 9 and 12 credits.

Identifier	Course	ECTS	Responsibility
T-PHYS-103117	Geological Hazards and Risks for external students (S. 290)	4	Ellen Gottschämmer
T-BGU-101693	Hydrology (S. 301)	4	Erwin Zehe
T-BGU-101667	Hydraulic Engineering and Water Management (S. 300)	4	Franz Nestmann
T-BGU-101636	Remote Sensing, exam (S. 435)	4	Stefan Hinz
T-BGU-101637	Systems of Remote Sensing, Prerequisite (S. 495)	1	Stefan Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite (S. 414)	1	Uwe Weidner
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 322)	3	Norbert Rösch, Sven Wursthorn
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 323)	3	Norbert Rösch, Sven Wursthorn
T-BGU-103542	Procedures of Remote Sensing (S. 413)	3	Uwe Weidner
T-PHYS-101092	Climatology (S. 207)	0	Peter Braesicke, Joaquim José Ginete Werner Pinto
T-PHYS-105594	Exam on Climatology (S. 251)	6	
T-PHYS-101557	Meteorological Hazards (S. 370)	0	Michael Kunz
T-PHYS-105954	Exam on Meteorological Hazards (S. 252)	3	Michael Kunz
T-BGU-101814	Project in Applied Remote Sensing (S. 422)	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: Combustion Engines II [M-MACH-101303]

Responsibility: Heiko Kubach

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-104609	Combustion Engines II (S. 209)	5	Rainer Koch, Heiko Kubach

Verbrennungsmotoren II
Non-Compulsory Block; You must choose at least 4 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-105044	Fundamentals of Catalytic Exhaust Gas Aftertreatment (S. 284)	4	Egbert Lox
T-MACH-105173	Analysis of Exhaust Gas and Lubricating Oil in Combustion Engines (S. 170)	4	Marcus Gohl
T-MACH-105184	Fuels and Lubricants for Combustion Engines (S. 273)	4	Bernhard Kehrwald
T-MACH-105167	Analysis Tools for Combustion Diagnostics (S. 172)	4	Uwe Wagner
T-MACH-102197	Gas Engines (S. 287)	4	Rainer Golloch
T-MACH-102199	Model Based Application Methods (S. 374)	4	Frank Kirschbaum
T-MACH-105169	Engine Measurement Techniques (S. 248)	4	Sören Bernhardt

Learning Control / Examinations
The assessment consists of an oral exam (60 min) taking place in the recess period (according to §4 (2), 2 of the examination regulation). The exam takes place in every semester. Reexaminations are offered at every ordinary examination date.

Conditions
It is only possible to choose this module in combination with the module *Combustion Engines I*. The module is passed only after the final partial exam of *Combustion Engines I* is additionally passed.
The course *Combustion Engines II* [2134131] has to be attended.
Successful passing of the corresponding modules of the basic program.

Modeled Conditions
The following conditions must be met:

- The module [M-MACH-101275] *Combustion Engines I* must have been started.

Qualification Objectives
See courses.

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: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language	Version
9	Jedes Semester	1 Semester	Deutsch	1

Wahlpflichtangebot

Non-Compulsory Block; You must choose between 9 and 12 credits.

Identifier	Course	ECTS	Responsibility
T-PHYS-103117	Geological Hazards and Risks for external students (S. 290)	4	Ellen Gottschämmer
T-BGU-101667	Hydraulic Engineering and Water Management (S. 300)	4	Franz Nestmann
T-BGU-101693	Hydrology (S. 301)	4	Erwin Zehe
T-BGU-101636	Remote Sensing, exam (S. 435)	4	Stefan Hinz
T-BGU-101637	Systems of Remote Sensing, Prerequisite (S. 495)	1	Stefan Hinz
T-BGU-101638	Procedures of Remote Sensing, Prerequisite (S. 414)	1	Uwe Weidner
T-BGU-101681	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 322)	3	Norbert Rösch, Sven Wursthorn
T-BGU-101814	Project in Applied Remote Sensing (S. 422)	1	Stefan Hinz
T-BGU-103541	Introduction to GIS for Students of Natural, Engineering and Geo Sciences (S. 323)	3	Norbert Rösch, Sven Wursthorn
T-BGU-103542	Procedures of Remote Sensing (S. 413)	3	Uwe Weidner
T-PHYS-101092	Climatology (S. 207)	0	Peter Braesicke, Joaquim José Ginete Werner Pinto
T-PHYS-105594	Exam on Climatology (S. 251)	6	
T-PHYS-101557	Meteorological Hazards (S. 370)	0	Michael Kunz
T-PHYS-105954	Exam on Meteorological Hazards (S. 252)	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:

- The module [M-WIWI-101646] *Introduction to Natural Hazards and Risk Analysis 1* must have been started.

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

Responsibility:	Bernd Hoferer, Thomas Leibfried
Organisation:	KIT-Fakultät für Elektrotechnik und Informationstechnik
Curricular Anchorage:	Compulsory Elective
Contained in:	Engineering Sciences / Specialisation Program Compulsory Elective Modules / Elective Module 1 / Engineering Sciences Compulsory Elective Modules / Elective Module 2 / Engineering Sciences Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-101924	Power Generation (S. 407)	3	Bernd Hoferer
T-ETIT-101925	Design and Operation of Power Transformers (S. 229)	3	Mitarbeiter , N. N.
T-ETIT-101927	Automation of Power Grids (S. 181)	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.
Successful passing of the corresponding modules of the basic program.

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: Rail System Technology [M-MACH-101274]

Responsibility: Peter Gratzfeld

Organisation: KIT-Fakultät für Maschinenbau
Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Wintersemester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102143	Rail System Technology (S. 431)	9	Peter Gratzfeld

Learning Control / Examinations
The assessment is carried out as a general oral exam (45 min.) (according to Section 4(2), 2 of the examination regulation) of the single courses of this module. The examination is offered every semester. Re-examinations are offered at every ordinary examination date. The overall grade of the module is the grade of the oral examination.

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

Qualification Objectives

- The students understand relations and interdependencies between rail vehicles, infrastructure and operation in a rail system.
- They deduct the fundamental requirements for rail vehicles out of it and assess concepts of rail vehicles.
- They know about major systems in a rail vehicle and evaluate their fitness in specific fields of application.
- The students realize that the typical business model in railway industry is a project. They learn main features and characteristics of project management in this area.

Content

- Overview about fundamental components of a modern rail system (vehicles, infrastructure, operation)
- History and economic impact of rail systems
- Vehicle dynamics, wheel-rail-contact, train protection, traction power supply
- Main systems of rail vehicles (electric and non-electric traction drive, bogies, brakes)
- Vehicle concepts for mass transit and main line
- Main features and characteristics of project management in railway industry (project management system, organization, main processes)

Recommendations
The lectures can be taken simultaneously.

Workload

1. Regular attendance: 63 hours
2. Self-study: 63 hours
3. Exam and preparation: 144 hours

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

Responsibility: Jivka Ovtcharova

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-105147	Product Lifecycle Management (S. 416)	6	Jivka Ovtcharova

Product Lifecycle Management
Non-Compulsory Block; You must choose at least 3 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-102125	Computer Integrated Planning of New Products (S. 213)	4	Roland Kläger
T-MACH-102153	PLM-CAD Workshop (S. 404)	4	Jivka Ovtcharova
T-MACH-102181	PLM for Product Development in Mechatronics (S. 403)	4	Martin Eigner
T-MACH-102209	Information Engineering (S. 305)	3	Jivka Ovtcharova
T-MACH-105937	Information management in production (S. 306)	4	Oliver Riedel
T-MACH-106744	Agile product innovation management - value-driven planning of new products (S. 168)		Roland Kläger

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
The course *Product Lifecycle Management* [2121350] is compulsory and has to be passed.
Successful passing of the corresponding modules of the basic program.

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: Vehicle Development [M-MACH-101265]

Responsibility: Frank Gauterin

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Fahrzeugentwicklung
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-105156	Vehicle Mechatronics I (S. 503)	3	Dieter Ammon
T-MACH-105160	Fundamentals in the Development of Commercial Vehicles I (S. 278)	1,5	Jörg Zürn
T-MACH-105161	Fundamentals in the Development of Commercial Vehicles II (S. 280)	1,5	Jörg Zürn
T-MACH-102207	Tires and Wheel Development for Passenger Cars (S. 498)	3	Günter Leister
T-MACH-105162	Fundamentals of Automobile Development I (S. 282)	1,5	Rolf Frech
T-MACH-105163	Fundamentals of Automobile Development II (S. 283)	1,5	Rolf Frech
T-MACH-102156	Project Workshop: Automotive Engineering (S. 424)	4,5	Michael Frey, Frank Gauterin, Martin Gießler
T-MACH-105172	Simulation of Coupled Systems (S. 469)	3	Marcus Geimer

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.

Qualification Objectives
The student

- knows and understands the procedures in automobile development,
- knows and understands the technical specifications at the development procedures,
- is aware of notable boundaries like legislation.

Content
See courses.

Recommendations
Knowledge of the content of the courses *Engineering Mechanics I* [2161238], *Engineering Mechanics II* [2162276] and *Basics of Automotive Engineering I* [2113805], *Basics of Automotive Engineering II* [2114835] is helpful.

Workload
See German version.

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: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language	Version
9	Jedes Wintersemester	2 Semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-104580	Introduction to Track Guided Transport Systems (S. 331)	9	Eberhard Hohnecker

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

Recommendations
None

Remarks
None

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

Responsibility: Gisela Lanza

Organisation: Werkstoffkunde

Curricular Anchorage: Compulsory Elective

Contained in:
Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Sommersemester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102106	Integrated Production Planning (S. 310)	9	Gisela Lanza

Learning Control / Examinations

The assessment is carried out as partial exams (according to Section 4(2), 1-3 SPO of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.
The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.
To improve the overall grade of the module up to one grading scale (0.3) there might be taken an optional term paper in the field of the wbk. The term paper may not be convalidated in the seminar module.

Conditions

Successful passing of the corresponding modules of the basic program.

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: Mobility and Infrastructure [M-BGU-101067]

Responsibility: Ralf Roos

Organisation: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Anchorage: Compulsory Elective

Contained in:
Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language	Level	Version
9	Jedes Sommersemester	1 Semester	Deutsch	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-101791	Mobility and Infrastructure (S. 373)	9	Ralf Roos, Peter Vortisch

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

Recommendations
None

Remarks
None

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

Responsibility: Jan Gerrit Korvink

Organisation: Institut für Mikrostrukturtechnik

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Wahlpflichtangebot
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-105182	Introduction to Microsystem Technology I (S. 324)	3	Andreas Guber, Jan Gerrit Korvink
T-MACH-105183	Introduction to Microsystem Technology II (S. 325)	3	Andreas Guber
T-MACH-100530	Physics for Engineers (S. 401)	6	Peter Gumbsch, Alexander Nesterov-Müller
T-MACH-100967	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II (S. 191)	3	Andreas Guber
T-MACH-100968	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III (S. 193)	3	Andreas Guber
T-MACH-101910	Microactuators (S. 371)	3	Manfred Kohl
T-MACH-102080	Nanotechnology with Clusterbeams (S. 378)	3	Jürgen Gspann
T-MACH-102152	Novel Actuators and Sensors (S. 386)	4	Manfred Kohl, Martin Sommer
T-MACH-102164	Practical Training in Basics of Microsystem Technology (S. 409)	3	Arndt Last
T-MACH-102165	Selected Topics on Optics and Microoptics for Mechanical Engineers (S. 443)	3	Timo Mappes
T-MACH-102172	Bionics for Engineers and Natural Scientists (S. 194)	3	Hendrik Hölscher
T-ETIT-101907	Optoelectronic Components (S. 391)	4	Wolfgang Freude

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.
This module cannot be combined with the module Microsystem Technology in the Master studies.
The course Basics of microsystemtechnology I [2141861] is compulsory and must be examined.

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: Emphasis in Fundamentals of Engineering [M-MACH-101261]

Responsibility: Michael Hoffmann

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Vertiefung ingenieurwissenschaftlicher Grundlagen
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-ETIT-100534	Electrical Engineering for Business Engineers, Part II (S. 242)	5	Wolfgang Menesklou
T-MACH-102079	Material Science II for Business Engineers (S. 360)	5	Michael Hoffmann
T-MACH-102210	Introduction to Engineering Mechanics II : Dynamics (S. 320)	5	Alexander Fidlin

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 seperately.
The overall grade of the module is removed from the average of the partial examinations, with at least two partial exams need to be.

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

Qualification Objectives
Students acquire and deepen skills in engineering fundamentals and can apply them to technical problems. Specific teaching objectives are agreed with the respective coordinator of the course.

Content
The module content depends on the elected courses.

Remarks
Starting winter term 2016/1017 the course "Introduction to Engineering Mechanics II : Dynamics" [2162276] will be held in winter term.

Workload
See German version.

M Module: Mobile Machines [M-MACH-101267]

Responsibility: Marcus Geimer

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Mobile Arbeitsmaschinen
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-102093	Fluid Power Systems (S. 264)	5	Marcus Geimer, Stefan Haug, Martin Scherer
T-MACH-105172	Simulation of Coupled Systems (S. 469)	3	Marcus Geimer
T-MACH-102150	BUS-Controls (S. 197)	3	Marcus Geimer, Felix Weber
T-MACH-105168	Mobile Machines (S. 372)	9	Marcus Geimer
T-MACH-105160	Fundamentals in the Development of Commercial Vehicles I (S. 278)	1,5	Jörg Zürn
T-MACH-105161	Fundamentals in the Development of Commercial Vehicles II (S. 280)	1,5	Jörg Zürn

Learning Control / Examinations
The assessment is carried out as a general oral exam (according to Section 4(2), 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 examination is offered every semester. Re-examinations are offered at every ordinary examination date.
The overall grade of the module is the grade of the oral examination.
The assessment may be carried out as partial oral exams (according to Section 4(2), 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.In this case 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.
The assessment procedures are described for each course of the module seperately.

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

Modeled Conditions
The following conditions must be met:

1. The module [M-MACH-101259] *Engineering Mechanics* must have been passed.
2. The module [M-MACH-101260] *Materials Science* must have been passed.
3. The module [M-ETIT-101155] *Electrical Engineering* must have been passed.
4. The module [M-WIWI-101839] *Additional Fundamentals of Engineering* must have been passed.

Qualification Objectives
The student

- knows and understands the basic structure of the machines

- masters the basic skills to develop the selected machines

Content
In the module of *Mobile Machines* [WI4INGMB15] the students will learn the structure of the machines and deepen the knowledge of the subject for developing the machines. After conclusion the module the student will know the latest developments in mobile machines and is able to evaluate the concepts and the trends of developments. The module is practically orientated and supported by industry partners.

Recommendations
Knowledge of Fluid Power Systems are helpful, otherwise it is recommended to take the course *Fluid Power Systems* [2114093].

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

M Module: Control Engineering [M-ETIT-101156]

Responsibility:	Sören Hohmann, Mathias Kluwe
Organisation:	KIT-Fakultät für Elektrotechnik und Informationstechnik
Curricular Anchorage:	Compulsory Elective
Contained in:	Engineering Sciences / Specialisation Program Compulsory Elective Modules / Elective Module 1 / Engineering Sciences Compulsory Elective Modules / Elective Module 2 / Engineering Sciences

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-100699	Modelling and Identification (S. 376)	4	Sören Hohmann
T-ETIT-101921	System Dynamics and Control Engineering (S. 493)	6	Sören Hohmann

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

Qualification Objectives
The students

- get familiar with the basic concepts of control theory,
- learn and understand the elements, the structure and the behavior of dynamic systems,
- have insight in the problems of control and intuition about methods available to solve those problems as well in frequency domain as in time domain,
- get familiar with the basic principles and methods for the theoretical and experimental modelling of dynamic systems.

Content
This module familiarizes students with the basic elements, structures and the behavior of dynamic systems. Both time continuous and time discrete models are regarded. The students gain insight into the problems of control design and methods available to solve such problems in frequency and time domain. Above that, the students learn the basic principles and methods for the theoretical and experimental modelling of dynamic systems.

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:
Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Language	Level	Version
9	Jedes Semester	2 Semester	Deutsch	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-BGU-101691	Construction Technology (S. 216)	6	Shervin Haghsheno
T-BGU-101675	Project Management (S. 423)	3	Shervin Haghsheno

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

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

Recommendations
None

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: Handling Characteristics of Motor Vehicles [M-MACH-101264]

Responsibility: Frank Gauterin

Organisation: KIT-Fakultät für Maschinenbau

Curricular Anchorage: Compulsory Elective

Contained in: Engineering Sciences / Specialisation Program
Compulsory Elective Modules / Elective Module 1 / Engineering Sciences
Compulsory Elective Modules / Elective Module 2 / Engineering Sciences
Additional Examinations

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Fahrzeugeigenschaften
Non-Compulsory Block; You must choose at least 9 credits.

Identifier	Course	ECTS	Responsibility
T-MACH-105152	Handling Characteristics of Motor Vehicles I (S. 295)	3	Hans-Joachim Unrau
T-MACH-105153	Handling Characteristics of Motor Vehicles II (S. 297)	3	Hans-Joachim Unrau
T-MACH-105154	Vehicle Comfort and Acoustics I (S. 499)	3	Frank Gauterin
T-MACH-105155	Vehicle Comfort and Acoustics II (S. 501)	3	Frank Gauterin
T-MACH-105156	Vehicle Mechatronics I (S. 503)	3	Dieter Ammon
T-MACH-102156	Project Workshop: Automotive Engineering (S. 424)	4,5	Michael Frey, Frank Gauterin, Martin Gießler
T-MACH-102177	Global Vehicle Evaluation within Virtual Road Test (S. 294)	3	Bernhard Schick
T-MACH-102206	Vehicle Ride Comfort & Acoustics I (S. 505)	4	Frank Gauterin
T-MACH-102205	Vehicle Ride Comfort & Acoustics II (S. 507)	4	Frank Gauterin

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 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. The module [M-MACH-101259] *Engineering Mechanics* must have been passed.
2. The module [M-MACH-101260] *Materials Science* must have been passed.
3. The module [M-ETIT-101155] *Electrical Engineering* must have been passed.
4. The module [M-WIWI-101839] *Additional Fundamentals of Engineering* must have been passed.

Qualification Objectives
The student

- knows and understands the characteristics of vehicles, owing to the construction and design tokens,
- knows and understands especially the factors being relevant for comfort and acoustics
- is capable of fundamentally evaluating and rating handling characteristics.

Content
See courses.

Recommendations
Knowledge of the content of the courses *Engineering Mechanics I* [2161238], *Engineering Mechanics II* [2162276] and *Basics of Automotive Engineering I* [2113805], *Basics of Automotive Engineering II* [2114835] is helpful.

Workload
See German Version.

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	Version
7	Jedes Wintersemester	1 Semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MATH-102264	Mathematics III - Final Exam (S. 368)	7	Martin Folkers, Daniel Hug, Günter Last, Steffen Winter

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	Version
7	Jedes Wintersemester	1 Semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MATH-102260	Mathematics I - Midterm Exam (S. 365)	3,5	Martin Folkers, Daniel Hug, Günter Last, Steffen Winter
T-MATH-102261	Mathematics I - Final Exam (S. 364)	3,5	Martin Folkers, Daniel Hug, Günter Last, Steffen Winter

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	Version
7	Jedes Sommersemester	1 Semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-MATH-102262	Mathematics II - Midterm Exam (S. 367)	3,5	Martin Folkers, Daniel Hug, Günter Last, Steffen Winter
T-MATH-102263	Mathematics II - Final Exam (S. 366)	3,5	Martin Folkers, Daniel Hug, Günter Last, Steffen Winter

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

Responsibility: Oliver Grothe, Melanie Schienle

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory

Contained in: Statistics

ECTS	Recurrence	Duration	Level	Version
10	Jedes Semester	2 Semester	1	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102737	Statistics I (S. 486)	5	Oliver Grothe, Melanie Schienle
T-WIWI-102738	Statistics II (S. 488)	5	Oliver Grothe, 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.

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	Recurrence	Duration	Language	Version
3	Jedes Semester	1 Semester	Deutsch	1

Wahlpflichtangebot

Non-Compulsory Block; You must choose 3 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-103485	Seminar in Informatics (Bachelor) (S. 454)	3	Andreas Oberweis, Harald Sack, Hartmut Schmeck, York Sure-Vetter, Johann Marius Zöllner
T-WIWI-103486	Seminar in Business Administration (Bachelor) (S. 446)	3	Wolf Fichtner, Hansjörg Fromm, Andreas Geyer-Schulz, Ju-Young Kim, Martin Klarmann, Peter Knauth, Hagen Lindstädt, David Lorenz, Torsten Luedecke, Thomas Lützkendorf, Alexander Mädche, Bruno Neibecker, Stefan Nickel, Petra Nieken, Martin Ruckes, Gerhard Satzger, Frank Schultmann, Thomas Setzer, Orestis Terzidis, Marliese Uhrig-Homburg, Maxim Ulrich, Christof Weinhardt, Marion Weissenberger-Eibl, Ute Werner, Marcus Wouters
T-WIWI-103487	Seminar in Economics (Bachelor) (S. 452)	3	Johannes Brumm, Jan Kowalski, Kay Mitusch, Ingrid Ott, Clemens Puppe, Johannes Philipp Reiß, Nora Szech, Berthold Wigger
T-WIWI-103488	Seminar in Operations Research (Bachelor) (S. 460)	3	Stefan Nickel, Oliver Stein, Karl-Heinz Waldmann
T-WIWI-103489	Seminar in Statistics (Bachelor) (S. 463)	3	Oliver Grothe, Melanie Schienle
T-WIWI-102755	Seminar in Engineering Science (Bachelor) (S. 453)	3	Fachvertreter ingenieurwissenschaftlicher Fakultäten
T-MATH-102265	Seminar in Mathematics (Bachelor) (S. 459)	3	Martin Folkers, Günter Last
T-INFO-101997	Seminar: Legal Studies I (S. 464)	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), Elective „Educational development for student teachers" (2-3 credits) or language courses SpZ. 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.

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

Responsibility: Andreas Oberweis, Hartmut Schmeck, York Sure-Vetter

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Compulsory Elective Modules / Elective Module 2 / Informatics

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	4

Wahlplfichtangebot

Non-Compulsory Block; You must choose between 9 and 10 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102652	Applied Informatics I - Modelling (S. 176)	5	Andreas Oberweis, York Sure-Vetter
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 178)	5	York Sure-Vetter
T-WIWI-102660	Database Systems (S. 223)	5	Andreas Oberweis
T-WIWI-106564	Applications of AI (S. 175)	5	York Sure-Vetter
T-WIWI-104679	Foundations of mobile Business (S. 271)	5	Andreas Oberweis, Gunther Schiefer
T-WIWI-100809	Software Engineering (S. 471)	4	Andreas Oberweis
T-WIWI-102910	Special Topics of Applied Informatics (S. 478)	5	Andreas Oberweis, Hartmut Schmeck, York Sure-Vetter
T-WIWI-102664	Knowledge Management (S. 335)	4	York Sure-Vetter

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.

Conditions

Successful passing of the corresponding modules of the basic program.

Modeled Conditions

The following conditions must be met:

1. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.
2. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.

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: Statistics and Econometrics [M-WIWI-101599]

Responsibility: Oliver Grothe, Melanie Schienle

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Compulsory Elective Modules / Elective Module 2 / Statistics

ECTS	Recurrence	Duration	Language	Version
9	Jedes Semester	1 Semester	Deutsch	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102736	Economics III: Introduction in Econometrics (S. 238)	5	Melanie Schienle

Ergänzungsangebot

Non-Compulsory Block; You must choose between 4 and 5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-103063	Analysis of multivariate Data (S. 171)	4,5	Oliver Grothe
T-WIWI-103064	Financial Econometrics (S. 261)	4,5	Melanie Schienle
T-WIWI-103065	Statistical Modeling of generalized regression models (S. 485)	4,5	Wolf-Dieter Heller
T-WIWI-103066	Data Mining and Applications (S. 221)	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.

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

Modeled Conditions

The following conditions must be met:

- The module [M-WIWI-101432] *Introduction to Statistics* must have been passed.

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: Elective Module Law [M-INFO-101187]

Responsibility: Thomas Dreier

Organisation: KIT-Fakultät für Informatik

Curricular Anchorage: Compulsory Elective

Contained in: Compulsory Elective Modules / Elective Module 2 / Law

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	2 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-INFO-101963	Public Law I - Basic Principles (S. 427)	3	Nikolaus Marsch
T-INFO-102042	Public Law II (S. 428)	3	Nikolaus Marsch
T-INFO-103339	Civil Law for Beginners (S. 205)	4	Thomas Dreier

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 take place in 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

Workload

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

ECTS	Recurrence	Duration	Level	Version
9	Jedes Semester	1 Semester	3	1

Compulsory

Identifier	Course	ECTS	Responsibility
T-GEISTSOZ-101959	Social Structures of Modern Societies (S. 470)	4	Gerd Nollmann
T-GEISTSOZ-101957	Special Sociology (S. 476)	4	Gerd Nollmann
T-GEISTSOZ-101958	Projectseminar (S. 426)	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: Qualitative Social Research [M-GEISTSOZ-101168]

Responsibility: Michaela Pfadenhauer

Organisation: KIT-Fakultät für Geistes- und Sozialwissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Compulsory Elective Modules / Elective Module 2 / Sociology

Level
3

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	Version
9	Jedes Semester	1 Semester	3	3

Compulsory

Identifier	Course	ECTS	Responsibility
T-WIWI-102627	Simulation I (S. 467)	4,5	Karl-Heinz Waldmann

Ergänzungsangebot

Non-Compulsory Block; You must choose at least 4,5 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102711	Markov Decision Models II (S. 358)	4,5	Karl-Heinz Waldmann
T-WIWI-102703	Simulation II (S. 468)	4,5	Karl-Heinz Waldmann
T-WIWI-102724	Nonlinear Optimization I (S. 380)	4,5	Oliver Stein
T-WIWI-102714	Tactical and Operational Supply Chain Management (S. 496)	4,5	Stefan Nickel

Learning Control / Examinations

The module is not offered from summer term 2017.
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:

- The module [M-WIWI-101418] *Introduction to Operations Research* must have been passed.

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 examination

- T-WIWI-102627 Simulation I will be offered latest until winter term 2016/2017 (for beginners).
- T-WIWI-102703 Simulation II will be offered latest until summer term 2017 (for beginners).
- T-WIWI-102711 Markov Decision Models II will be offered latest until winter term 2016/2017 (for beginners).

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

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

Responsibility: Andreas Oberweis, Harald Sack, Hartmut Schmeck, York Sure-Vetter, Johann Marius Zöllner

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Additional Examinations

ECTS	Recurrence	Duration	Version
9	Jedes Semester	1 Semester	4

Wahlplfichtangebot

Non-Compulsory Block; You must choose between 9 and 10 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102759	Requirements Analysis and Requirements Management (S. 437)	4	Ralf Kneuper
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 178)	5	York Sure-Vetter
T-WIWI-102680	Computational Economics (S. 211)	5	Pradyumn Kumar Shukla
T-WIWI-102661	Database Systems and XML (S. 225)	5	Andreas Oberweis
T-WIWI-102663	Document Management and Groupware Systems (S. 232)	4	Stefan Klink
T-WIWI-102668	Enterprise Architecture Management (S. 249)	5	Thomas Wolf
T-WIWI-106423	Information Service Engineering (S. 307)	5	Harald Sack
T-WIWI-102666	Knowledge Discovery (S. 334)	5	York Sure-Vetter
T-WIWI-102667	Management of IT-Projects (S. 351)	5	Roland Schätzle
T-WIWI-106340	Machine Learning 1 - Basic Methods (S. 340)	5	Johann Marius Zöllner
T-WIWI-106341	Machine Learning 2 – Advanced Methods (S. 341)	5	Johann Marius Zöllner
T-WIWI-102697	Business Process Modelling (S. 202)	5	Andreas Oberweis
T-WIWI-102679	Nature-Inspired Optimisation Methods (S. 379)	5	Pradyumn Kumar Shukla
T-WIWI-102874	Semantic Web Technologies (S. 444)	5	Andreas Harth, York Sure-Vetter
T-WIWI-105801	Service Oriented Computing (S. 465)	5	York Sure-Vetter
T-WIWI-102895	Software Quality Management (S. 473)	5	Andreas Oberweis
T-WIWI-102676	Special Topics of Enterprise Information Systems (S. 480)	5	Andreas Oberweis
T-WIWI-102657	Special Topics of Efficient Algorithms (S. 479)	5	Hartmut Schmeck
T-WIWI-102678	Special Topics of Software- and Systemsengineering (S. 482)	5	Andreas Oberweis
T-WIWI-102671	Special Topics of Knowledge Management (S. 481)	5	York Sure-Vetter
T-WIWI-102669	Strategic Management of Information Technology (S. 490)	5	Thomas Wolf
T-WIWI-103112	Web Science (S. 511)	5	York Sure-Vetter
T-WIWI-102662	Workflow-Management (S. 513)	5	Andreas Oberweis
T-WIWI-103523	Advanced Lab Informatics (S. 161)	4	Andreas Oberweis, Harald Sack, Hartmut Schmeck, 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.

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.

Remarks
The course “Document Management and Groupware Systems” expires after summer term 2017. Last examination date is winter term 2017/2018 (only for repeaters).

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: Andreas Oberweis, Harald Sack, Hartmut Schmeck, York Sure-Vetter

Organisation: KIT-Fakultät für Wirtschaftswissenschaften

Curricular Anchorage: Compulsory Elective

Contained in: Additional Examinations

ECTS	Recurrence	Duration	Version
9	Jedes Semester	1 Semester	4

Wahlplfichtangebot

Non-Compulsory Block; You must choose between 9 and 10 credits.

Identifier	Course	ECTS	Responsibility
T-WIWI-102759	Requirements Analysis and Requirements Management (S. 437)	4	Ralf Kneuper
T-WIWI-102651	Applied Informatics II - IT Systems for eCommerce (S. 178)	5	York Sure-Vetter
T-WIWI-102680	Computational Economics (S. 211)	5	Pradyumn Kumar Shukla
T-WIWI-102661	Database Systems and XML (S. 225)	5	Andreas Oberweis
T-WIWI-102663	Document Management and Groupware Systems (S. 232)	4	Stefan Klink
T-WIWI-102668	Enterprise Architecture Management (S. 249)	5	Thomas Wolf
T-WIWI-106423	Information Service Engineering (S. 307)	5	Harald Sack
T-WIWI-102666	Knowledge Discovery (S. 334)	5	York Sure-Vetter
T-WIWI-102667	Management of IT-Projects (S. 351)	5	Roland Schätzle
T-WIWI-106340	Machine Learning 1 - Basic Methods (S. 340)	5	Johann Marius Zöllner
T-WIWI-106341	Machine Learning 2 – Advanced Methods (S. 341)	5	Johann Marius Zöllner
T-WIWI-102697	Business Process Modelling (S. 202)	5	Andreas Oberweis
T-WIWI-102679	Nature-Inspired Optimisation Methods (S. 379)	5	Pradyumn Kumar Shukla
T-WIWI-102874	Semantic Web Technologies (S. 444)	5	Andreas Harth, York Sure-Vetter
T-WIWI-105801	Service Oriented Computing (S. 465)	5	York Sure-Vetter
T-WIWI-102895	Software Quality Management (S. 473)	5	Andreas Oberweis
T-WIWI-102676	Special Topics of Enterprise Information Systems (S. 480)	5	Andreas Oberweis
T-WIWI-102657	Special Topics of Efficient Algorithms (S. 479)	5	Hartmut Schmeck
T-WIWI-102678	Special Topics of Software- and Systemsengineering (S. 482)	5	Andreas Oberweis
T-WIWI-102671	Special Topics of Knowledge Management (S. 481)	5	York Sure-Vetter
T-WIWI-102669	Strategic Management of Information Technology (S. 490)	5	Thomas Wolf
T-WIWI-103112	Web Science (S. 511)	5	York Sure-Vetter
T-WIWI-102662	Workflow-Management (S. 513)	5	Andreas Oberweis
T-WIWI-103523	Advanced Lab Informatics (S. 161)	4	Andreas Oberweis, Harald Sack, Hartmut Schmeck, 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.

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.

Remarks

The course "Document Management and Groupware Systems" expires after summer term 2017. Last examination date is winter term 2017/2018 (only for repeaters).

Workload

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

Part V

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. 198)	4,0	Marliese Uhrig-Homburg, Martin Ruckes
T-WIWI-102817	Business Administration: Strategic Management and Information Engineering and Management (S. 201)	3,0	Martin Ruckes, Petra Nieken
T-WIWI-102818	Business Administration: Production Economics and Marketing (S. 199)	4,0	Frank Schultmann, Martin Klarmann, Martin Ruckes, Thomas Lützkendorf, Wolf Fichtner
T-WIWI-102816	Financial Accounting and Cost Accounting (S. 260)	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. 234)	5,0	Clemens Puppe, Johannes Philipp Reiß
T-WIWI-102709	Economics II: Macroeconomics (S. 236)	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 dealt 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. 328)	5,0	M. Zöllner
T-WIWI-102749	Foundations of Informatics I (S. 268)	5,0	York Sure-Vetter
T-WIWI-102707	Foundations of Informatics II (S. 270)	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.

Module: Mass and Energy Balances for Reacting Systems [WI1ING1]

Responsibility: P. Pfeifer, B. Kraushaar-Czarnetzki

ECTS	Recurrence	Duration
2,5	Every 2nd term, Winter Term	1 term

Compulsory

Identifier	Course	ECTS	Responsibility
T-CIWVT-101873	Mass and Energy Balances for Reacting Systems (S. **??**)	2,5	Peter Pfeifer

Learning Control / Examinations
The assessment is carried out by a written exam about the lecture *Mass and Energy Balances for Reacting Systems* [22130] (according §4(2), 1 of the examination regulation).
The overall grade of this module is the grade of the written exam.

Conditions
None.

Qualification Objectives
The student

- knows and understands integral mass and energy balances of simple systems in process engineering,
- can apply integral mass and balances on selected systems and processes.

Content

- Aim and approach
- Mass balance
- Water
- Nitrogen and ammonia
- Energy balance
- Natural gas
- Carbon dioxide

Workload
The total workload for this module is approximately 75.0 hours. For further information see German version.

M Module: Materials Science [WI1ING2]

Responsibility: M. Hoffmann

ECTS	Recurrence	Duration
2,5	Every 2nd term, Winter Term	1 term

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102078	Materials Science I (S. 363)	2,5	Michael Hoffmann

Learning Control / Examinations
The assessment of the module is carried out by a written examination (150 min) about the lecture *Material Science I* [2125760] (according to Section 4(2), 1 of the examination regulation).
The examination is offered every semester. Re-examinations are offered at every ordinary examination date. The examination at the end of the summer term is carried out by a written or oral exam.
The grade of the module corresponds to the grade of this examination.

Conditions
None.

Qualification Objectives
Students are able to specify the basics of materials science and engineering and can apply it to simple problems in various technical areas.
As major part of the module, the students know the correlation between atomic structure and bonding of solids and the macroscopic properties such as mechanical behavior or electrical conductivity. They have basic knowledge with respect to materials characterization. The students are able to analyze phase diagrams with up to two components and can derive simple correlations among composition, processing, microstructure evolution and materials properties.

Content
After an introduction to the atomic structure and interatomic bonding, elementary concepts of crystallography are given. Different types of crystal structures are explained and various types of imperfections in solids. Then, the mechanical behaviour and the physical properties of various types of materials (metals, polymers, ceramics) are discussed. The thermodynamic principles of solidification and the basic types of phase diagrams are given to understand to iron-carbon phase diagram and the manifold microstructures of steel and cast iron.

Workload
The total workload for this module is approximately 75.0 hours. For further information see German version.

M Module: Engineering Mechanics [WI1ING3]

Responsibility: A. Fidlin

ECTS	Recurrence	Duration
2,5	Every 2nd term, Winter Term	1 term

Compulsory

Identifier	Course	ECTS	Responsibility
T-MACH-102208	Introduction to Engineering Mechanics I : Statics and Strength of Materials (S. 319)	2,5	Alexander Fidlin

Learning Control / Examinations
The assessment of the module is carried out by a written examination about the lecture *Engineering Mechanics* [2161208] (according to Section 4(2), 1 of the examination regulation).
The overall grade of the module is the grade of the written examination.

Conditions
None.

Qualification Objectives
The student

- knows and understoods the basic elements of statics,
- is able to solve basic problems in statics indipendently.

Content
Statics: force ▪ moment ▪ general equilibrium conditions ▪ center of gravity ▪ inner forces in structure ▪ plane frameworks ▪ adhesion

Workload
The total workload for this module is approximately 75.0 hours. For further information see German version.

Remarks
Starting summer 2016 the course "Introduction to Engineering Mechanics I : Statics and Strength of Materials" [2161238] will be held in summer term.

M Module: Electrical Engineering [WI1ING4]

Responsibility: W. Menesklou

ECTS	Recurrence	Duration
2,5	Every 2nd term, Winter Term	1 term

Compulsory

Identifier	Course	ECTS	Responsibility
T-ETIT-100533	Electrical Engineering I (S. 241)	2,5	Wolfgang Menesklou

Learning Control / Examinations
The assessment of the module is carried out by a written examination about the lecture *Electrical Engineering I* [23223] (according to Section 4(2), 1 of the examination regulation).
The grade of the module corresponds to the grade of this examination.

Conditions
None.

Qualification Objectives
The student knows and understands basic terms of electrical engineering and should be able to carry out simple calculations of DC and AC circuits.

Content
Supporting the lecture, assignments to the curriculum are distributed. These are solved into additional (voluntary) tutorials.

Workload
The total workload for this module is approximately 75.0 hours. For further information see German version.

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. 365)	3,5	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter
T-MATH-102261	Mathematics I - Final Exam (S. 364)	3,5	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter
T-MATH-102262	Mathematics II - Midterm Exam (S. 367)	3,5	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter
T-MATH-102263	Mathematics II - Final Exam (S. 366)	3,5	Daniel Hug, Günter Last, Martin Folkers, Steffen Winter
T-MATH-102264	Mathematics III - Final Exam (S. 368)	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. 486)	5,0	Melanie Schienle
T-WIWI-102738	Statistics II (S. 488)	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. 454)	3,0	Andreas Oberweis, Hartmut Schmeck, Johann Marius Zöllner, Rudi Studer, York Sure-Vetter
T-WIWI-103486	Seminar in Business Administration (Bachelor) (S. 446)	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. 452)	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. 460)	3,0	Karl-Heinz Waldmann, Oliver Stein, Stefan Nickel
T-WIWI-103489	Seminar in Statistics (Bachelor) (S. 463)	3,0	Melanie Schienle, Oliver Grothe, Wolf-Dieter Heller
T-WIWI-102755	Seminar in Seminar in Engineering Science (Bachelor) (S. 453)	3,0	Martin Ruckes
T-MATH-102265	Seminar in Mathematics (Bachelor) (S. 459)	3,0	Günter Last, Martin Folkers
T-INFO-101997	Seminar: Legal Studies I (S. 464)	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. 316)	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 VI
Module component exams

T Course: Advanced Lab Informatics [T-WIWI-103523]

Responsibility: Andreas Oberweis, Harald Sack, Hartmut Schmeck, York Sure-Vetter, Johann Marius Zöllner
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
4	deutsch/englisch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2512200		Praktikum (P)	3	Murat Citak, Andreas Fritsch, Andreas Oberweis, Andreas Schoknecht, Meike Ullrich
WS 16/17	2512100	Security	Praktikum (P)	4	Kaibin Bao, Hartmut Schmeck
WS 16/17	2512310	Smart Services and the IoT	Seminar / Praktikum (S/P)		Johannes Kunze von Bischhoffshausen, Maria Maleshkova, York Sure-Vetter, Tobias Weller
WS 16/17	2512307	Applications of Semantic MediaWiki	Seminar / Praktikum (S/P)	3	Matthias Frank, Maria Maleshkova, Achim Rettinger, Rudi Studer, York Sure-Vetter, Tobias Weller
WS 16/17	2512101		Praktikum (P)	3	Andreas Drescher, Andreas Oberweis, Frederic Toussaint
WS 16/17	2512301		Seminar / Praktikum (S/P)	3	Maribel Acosta Deibe, Andreas Harth, Tobias Christof Käfer, Rudi Studer, York Sure-Vetter
SS 2017	2512101		Praktikum (P)	3	Andreas Drescher, Andreas Oberweis, Frederic Toussaint
SS 2017	2512500		Praktikum (P)	3	Johann Marius Zöllner
SS 2017	2512300		Seminar / Praktikum (S/P)	3	Aditya Mogadala, Achim Rettinger, York Sure-Vetter, Steffen Thoma
SS 2017	2512200		Praktikum (P)	3	Andreas Drescher, Andreas Oberweis

Learning Control / Examinations
The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015)consists of:

- a practical work
- a presentation and
- 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.

V Event excerpt: Smart Services and the IoT (WS 16/17)

Content
Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

V Event excerpt: 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

V Event excerpt: (SS 2017)

Aim
Die Studierenden können Kenntnisse aus der Vorlesung Maschinelles Lernen auf einem ausgewählten Gebiet der aktuellen Forschung im Bereich Robotik oder kognitive Automobile praktisch anwenden.
Die Studierenden beherrschen die Analyse und Lösung entsprechender Problemstellungen im Team.
Die Studierenden können ihre Konzepte und Ergebnisse evaluieren, dokumentieren und präsentieren.

Content
Umsetzung einzelner, durch die Studenten ausgewählter Verfahren des Maschinellen Lernens an einer konkreten Aufgabenstellung entweder aus dem Bereich Robotik oder kognitive Automobile.

Die einzelnen Projekte erfordern die Analyse der gestellten Aufgabe, Auswahl geeigneter Lernverfahren, Spezifikation und Implementierung und Evaluierung eines Lösungsansatzes. Schließlich ist die gewählte Lösung zu dokumentieren und in einem Kurzvortrag vorzustellen.

Workload
Der Arbeitsaufwand von 4 SWS setzt sich zusammen aus Präsenzzeit am Versuchsort zur praktischen Umsetzung der gewählten Lösung, sowie der Zeit für Literaturrecherchen und Planung/Spezifikation der geplanten Lösung. Zusätzlich

wird ein kurzer Bericht und eine Präsentation der durchgeführten Arbeit erstellt.

V Event excerpt: (SS 2017)

Content

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

Literature

Detailed references are indicated together with the respective subjects. For general background information look up the following textbooks:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

V Event excerpt: (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	Recurrence	Version
5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511028		Übung (Ü)	2	Murat Citak, Meike Ullrich
WS 16/17	2511026	Advanced Programming - Application of Business Software	Vorlesung (V)	2	Stefan Klink
WS 16/17	2511027		Übung (Ü)	1	Murat Citak, Stefan Klink, Meike Ullrich

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:

- The course [T-WIWI-102747] *Advanced Programming - Java Network Programming* must not have been started.

Recommendations
Knowledge of the course "Grundlagen der Informatik I und II" are helpful.

V Event excerpt: Advanced Programming - Application of Business Software (WS 16/17)

Aim
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	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	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:

- The course [T-WIWI-102748] *Advanced Programming - Application of Business Software* must not have been started.

V Event excerpt: Advanced Programming - Java Network Programming (SS 2017)

Aim
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
Contained in: [M-WIWI-101501] Economic Theory

ECTS	Recurrence	Version
4,5	Unregelmäßig	1

Learning Control / Examinations

The course T-WIWI-102609 - Advanced Topics in Economic Theory is currently not available. The course restarts in summer term 2018.
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: Agile product innovation management - value-driven planning of new products [T-MACH-106744]

Responsibility: Roland Kläger
Contained in: [M-MACH-101270] Product Lifecycle Management

T Course: Airport Logistics [T-MACH-105175]

Responsibility: André Richter
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117056	Airport logistics	Vorlesung (V)	2	André Richter

Learning Control / Examinations
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Conditions
none

V Event excerpt: Airport logistics (WS 16/17)

Aim
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
„Gepäcklogistik auf Flughäfen" à http://www.springer.com/de/book/9783642328527

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	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2134150	Analysis of Exhaust Gas und Lubricating Oil in Combustion Engines	Vorlesung (V)	2	Marcus Gohl

Learning Control / Examinations
Letter of attendance or oral exam (25 minutes, no auxillary means)

Conditions
none

V Event excerpt: Analysis of Exhaust Gas und Lubricating Oil in Combustion Engines (SS 2017)

Aim
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-101599] Statistics and Econometrics

ECTS	Recurrence	Version
4,5	Jedes Wintersemester	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	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2134134	Analysis tools for combustion diagnostics	Vorlesung (V)	2	Jürgen Pfeil

Learning Control / Examinations
oral examination, Duration: 25 min., no auxiliary means

Conditions
none

V Event excerpt: Analysis tools for combustion diagnostics (SS 2017)

Aim
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-101422] Specialization in Customer Relationship Management
[M-WIWI-101460] CRM and Service Management

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2540523		Übung (Ü)	2	Andreas Geyer-Schulz
SS 2017	2540522	Analytical CRM	Vorlesung (V)	2	Andreas Geyer-Schulz

Learning Control / Examinations
Assessment consists of a written exam of 1 hour length following §4 (2), 1 of the examination regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation (versions prior 2015) or following §4 (3) of the examination regulation (version 2015), respectively.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/).

V Event excerpt: Analytical CRM (SS 2017)

Aim
The Student

- understands the principal scientific methods from statistics and informatics used in analytical CRM and their application to enterprise decision problems and independently applies these methods to standard cases,
- understands the components for creating and managing a data warehouse from operative system sources including the processes and steps involved and applies these methods to a simple example, and
- uses his knowledge to conduct a standard CRM analysis on enterprise data for a busines decision problem and deduces and justifies a recommendation for appropriate action.

Content
The course Analytical CRM deals with methods and techniques for analysis concerning the management and improval of customer relationships. Knowledge about customers is aggregated and used for enterprise decision problems like product line planning, customer loyality, etc. A necessary precondition for these analyses is the transformation of data stemming from operative systems into a common data warehouse that assembles all necessary information. This requires transformation of data models and processes for creating and managing a data warehouse, like ETL processes, data quality and monitoring. The generation of customer oriented and flexible reports for different business purposes is covered. The course finally treats several different statistical analysis methods like clustering, regression etc. that are necessary for generating important indicators (like customer lifetime value, customer segmenatation). As external data source, customer surveys are introduced.

Workload
The total workload for this course is approximately 135 hours (4.5 credits):
Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Literature
Ponnia, Paulraj. Data Warehousing Fundamentals: A Comprehensive Guide for IT Professionals. Wiley, New York, 2001.
Duda, Richard O. und Hart, Peter E. und Stork, David G. Pattern Classification. Wiley-Interscience, New York, 2. Ausgabe, 2001.
Maddala, G. S. Introduction to Econometrics. Wiley, Chichester, 3rd Ed., 2001.
Theil, H. Principles of Econometrics. Wiley, New York, 1971.

T Course: Applications of AI [T-WIWI-106564]

Responsibility: York Sure-Vetter
Contained in: [M-WIWI-101399] Emphasis Informatics
[M-WIWI-101426] Electives in Informatics

ECTS	Recurrence	Version
5	Jedes Wintersemester	1

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
The course T-WIWI-102664 "Knowledge management" must not have been started.

Modeled Conditions
The following conditions must be met:

1. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.
2. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.
3. The course [T-WIWI-102664] *Knowledge Management* must not have been started.

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

T Course: Applied Informatics I - Modelling [T-WIWI-102652]

Responsibility: Andreas Oberweis, York Sure-Vetter
Contained in: [M-WIWI-101399] Emphasis Informatics
[M-WIWI-101426] Electives in Informatics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Wintersemester	2

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	Andreas Oberweis, Andreas Schoknecht, York Sure-Vetter, Steffen Thoma

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

Modeled Conditions
1 of 2 conditions must be met:

1. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.
2. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.

V Event excerpt: Applied Informatics I - Modelling (WS 16/17)

Aim
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: York Sure-Vetter
Contained in: [M-WIWI-101399] Emphasis Informatics
[M-WIWI-101426] Electives in Informatics
[M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511033		Übung (Ü)	1	Agnes Koschmider
SS 2017	2511032	Applied Informatics II: IT Systems for e-Commerce	Vorlesung (V)	2	Agnes Koschmider

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

Modeled Conditions
1 of 2 conditions must be met:

1. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.
2. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.

Recommendations
Knowledge of content of the modules Foundations in Informatics [IW1INF1] and Algorithms I [IW2INF2] is expected.

V Event excerpt: Applied Informatics II: IT Systems for e-Commerce (SS 2017)

Aim
The student learns about concepts and technologies for designing big, distributed application architectures. Students apply industryrelevant 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-101423] Topics in Finance II
[M-WIWI-101465] Topics in Finance I

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2530219	Asset Management	Vorlesung (V)	2	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.

V Event excerpt: Asset Management (WS 16/17)

Aim
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	Recurrence	Version
4,5	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2560551		Übung (Ü)	1	Nora Szech
SS 2017	2560550	Auction and Mechanism Design	Vorlesung (V)	2	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.

V Event excerpt: Auction and Mechanism Design (SS 2017)

Aim
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	Version
3	1

Conditions
none

T Course: Automotive Engineering I [T-MACH-100092]

Responsibility: Frank Gauterin, Hans-Joachim Unrau
Contained in: [M-MACH-101266] Automotive Engineering

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2113805	Automotive Engineering I	Vorlesung (V)	4	Frank Gauterin, Hans-Joachim Unrau

Learning Control / Examinations
Written examination

Duration: 120 minutes

Auxiliary means: none

Modeled Conditions
The following conditions must be met:

- The course [T-MACH-102203] *Automotive Engineering I* must not have been started.

V Event excerpt: Automotive Engineering I (WS 16/17)

Aim
The students know the movements and the forces at the vehicle and are familiar with active and passive security. They have proper knowledge about operation of engines and alternative drives, the necessary transmission between engine and drive wheels and the power distribution. They have an overview of the components necessary for the drive and have the basic knowledge, to analyze, to judge and to develop the complex system "vehicle".

Content
1. History and future of the automobile
2. Driving mechanics: driving resistances and driving performances, mechanics of the longitudinal and transverse forces, passive safety

3. Engines: combustion engine, alternative drives (e.g. electric motor, fuel cell)

4. Transmission: clutches (e.g. friction clutch, visco clutch), transmission (e.g. mechanical transmission, hydraulic fluid transmission)

5. Power transmission and distribution: drive shafts, cardon joints, differentials

Workload
regular attendance: 45 hours
self-study: 195 hours

Literature

1. Mitschke, M./ Wallentowitz, H.: Dynamik der Kraftfahrzeuge, Springer-Verlag, Berlin, 2004

2. Braes, H.-H.; Seiffert, U.: Handbuch Kraftfahrzeugtechnik, Vieweg&Sohn Verlag, 2005

3. Gnadler, R.: Script to the lecture 'Automotive Engineering I'

T Course: Automotive Engineering I [T-MACH-102203]

Responsibility: Frank Gauterin, Martin Gießler
Contained in: [M-MACH-101266] Automotive Engineering

ECTS	Language	Recurrence	Version
6	englisch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2113809	Automotive Engineering I	Vorlesung (V)	4	Frank Gauterin, Martin Gießler

Learning Control / Examinations
Written examination

Duration: 120 minutes

Auxiliary means: none

Modeled Conditions
The following conditions must be met:

- The course [T-MACH-100092] *Automotive Engineering I* must not have been started.

V Event excerpt: Automotive Engineering I (WS 16/17)

Aim
The students know the movements and the forces at the vehicle and are familiar with active and passive security. They have proper knowledge about operation of engines and alternative drives, the necessary transmission between engine and drive wheels and the power distribution. They have an overview of the components necessary for the drive and have the basic knowledge, to analyze, to judge and to develop the complex system "vehicle".

Content
1. History and future of the automobile

2. Driving mechanics: driving resistances and driving performances, mechanics of the longitudinal and transverse forces, passive safety

3. Engines: combustion engine, alternative drives (e.g. electric motor, fuel cell)

4. Transmission: clutches (e.g. friction clutch, visco clutch), transmission (e.g. mechanical transmission, hydraulic fluid transmission)

5.Power transmission and distribution: drive shafts, cardon joints, differentials

Workload
regular attendance: 45 hours
self-study: 195 hours

Literature

1. Mitschke, M./ Wallentowitz, H.: Dynamik der Kraftfahrzeuge, Springer-Verlag, Berlin, 2004

2. Braes, H.-H.; Seiffert, U.: Handbuch Kraftfahrzeugtechnik, Vieweg&Sohn Verlag, 2005

3. Gnadler, R.: Script to the lecture 'Automotive Engineering I'

T Course: Automotive Engineering II [T-MACH-102117]

Responsibility: Frank Gauterin, Hans-Joachim Unrau
Contained in: [M-MACH-101266] Automotive Engineering

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114835	Automotive Engineering II	Vorlesung (V)	2	Hans-Joachim Unrau

Learning Control / Examinations
Written Examination

Duration: 90 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Automotive Engineering II (SS 2017)

Aim
The students have an overview of the modules, which are necessary for the road holding of a motor vehicle and the power transmission between vehicle bodywork and roadway. They have knowledge of different wheel suspensions, the tyres, the steering elements and the brakes. They know different execution forms, the function and the influence on the driving or brake behavior. They are able to develop the appropriate components correctly. They are ready to analyze, to judge and to optimize the complex relationship of the different components under consideration of boundary conditions.

Content
1. Chassis: Wheel suspensions (rear axles, front axles, kinematics of axles), tyres, springs, damping devices
2. Steering elements: Manual steering, servo steering, steer by wire
3. Brakes: Disc brake, drum brake, retarder, comparison of the designs

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature

1. Heißing, B./Ersoy, M.: Fahrwerkhandbuch: Grundlagen, Fahrdynamik, Komponenten, Systeme, Mechatronik, Perspektiven, Vieweg-Verlag, Wiesbaden, 2011

2. Breuer, B./Bill, K.-H.: Bremsenhandbuch: Grundlagen - Komponenten - Systeme - Fahrdynamik, Vieweg-Verlag, Wiesbaden, 2012

3. Gnadler, R.: Script to the lecture 'Automotive Engineering II'

T Course: Automotive Logistics [T-MACH-105165]

Responsibility: Kai Furmans
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2118085	Automotive Logistics	Vorlesung (V)	2	Kai Furmans

Learning Control / Examinations
The assessment consists of a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

Conditions
none

V Event excerpt: Automotive Logistics (SS 2017)

Aim
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-103067]

Responsibility: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften
Contained in: [M-WIWI-101601] Module Bachelor Thesis

ECTS	Version
12	1

Learning Control / Examinations
see module description

Conditions
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	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2560281		Übung (Ü)	1	David Bälz, Ingrid Ott
SS 2017	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].

V Event excerpt: Basic Principles of Economic Policy (SS 2017)

Aim
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: Martin Mittwollen, Jan Oellerich
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117095	Basics of Technical Logistics	Vorlesung / Übung (VÜ)	4	Martin Mittwollen, Jan Oellerich

Learning Control / Examinations
The assessment consists of a written exam (90 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Conditions
none

V Event excerpt: Basics of Technical Logistics (WS 16/17)

Aim
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
- Model real machines applying knowledge from lessons and calculate their dimensions.

Content

- effect model of conveyor machines
- elements 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: 48h
rework: 132h

Literature
Recommendations during lessons

T Course: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II [T-MACH-100967]

Responsibility: Andreas Guber
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2142883	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II	Vorlesung (V)	2	Andreas Guber

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine II (SS 2017)

Aim
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-MACH-101287] Microsystem Technology

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2142879	BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III	Vorlesung (V)	2	Andreas Guber

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: BioMEMS - Microsystems Technologies for Life-Sciences and Medicine III (SS 2017)

Aim
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	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2142140	Bionics for Engineers and Natural Scientists	Vorlesung (V)	2	Christian Greiner, Hendrik Hölscher, Stefan Walheim

Learning Control / Examinations
written or oral exam

Conditions
none

V Event excerpt: Bionics for Engineers and Natural Scientists (SS 2017)

Aim
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	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2572178		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

V Event excerpt: Brand Management (WS 16/17)

Aim
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: BUS-Controls [T-MACH-102150]

Responsibility: Marcus Geimer, Felix Weber
Contained in: [M-MACH-101266] Automotive Engineering
[M-MACH-101267] Mobile Machines

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114092	BUS-Controls	Vorlesung (V)	2	Marcus Geimer, Felix Weber

Learning Control / Examinations
The assessment consists of an oral exam taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
none

V Event excerpt: BUS-Controls (SS 2017)

Aim
The students will get an overview of the theoretic and practical functioning of different bus systems.

After the practical oriented lessons the students will be able to visualize the communication structure of different applications, design basic systems and evaluate the complexity of programming of the complete system.

Content

- Knowledge of the basics of data communication in networks
- Overview of the operating mode of current field buses
- Explicit observation of the operating mode and application areas of CAN buses
- Practical programming of an example application (hardware is provided)

Workload

- regular attendance: 21 hours
- self-study: 92 hours

Literature
Elective literature:

- Etschberger, K.: Controller Area Network, Grundlagen, Protokolle, Bausteine, Anwendungen; München, Wien: Carl Hanser Verlag, 2002.
- Engels, H.: CAN-Bus - CAN-Bus-Technik einfach, anschaulich und praxisnah dargestellt; Poing: Franzis Verlag, 2002.

T Course: Business Administration: Finance and Accounting [T-WIWI-102819]

Responsibility: Martin Ruckes, Marliese Uhrig-Homburg, Marcus Wouters
Contained in: [M-WIWI-101494] Fundamentals of Business Administration 1

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2610027		Tutorium (Tu)	2	Jan-Oliver Strych
WS 16/17	2610026	Business Administration: Finance and Accounting	Vorlesung (V)	2	Martin Ruckes, Marcus Wouters

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.

V Event excerpt: Business Administration: Finance and Accounting (WS 16/17)

Aim
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: Wolf Fichtner, Martin Klarmann, Thomas Lützkendorf, Martin Ruckes, Frank Schultmann
Contained in: [M-WIWI-101578] Fundamentals of Business Administration 2

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2600004	Business Administration: Production Economics and Marketing	Vorlesung (V)	2	Wolf Fichtner, Martin Klarmann
SS 2017	2500025		Tutorium (Tu)	2	Assistenten, Martin Klarmann, Jan-Oliver Strych
SS 2017	2600024	Business Administration: Production Economics and Marketing	Vorlesung (V)	2	Martin Klarmann, Frank Schultmann

Learning Control / Examinations
The assessment consists of a written exam (90 minutes) according to Section 4(2), 1 of the examination regulation.

Conditions
None

V Event excerpt: Business Administration: Production Economics and Marketing (SS 2017)

Aim
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.

V Event excerpt: Business Administration: Production Economics and Marketing (SS 2017)

Aim
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	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2600023		Vorlesung (V)	2	Alexander Klopfer, Hagen Lindstädt, Jan-Oliver Strych, Christof Weinhardt

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	Recurrence	Version
5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511210	Business Process Modelling	Vorlesung (V)	2	Andreas Oberweis
WS 16/17	2511211		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

V Event excerpt: Business Process Modelling (WS 16/17)

Aim
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-101423] Topics in Finance II
[M-WIWI-101465] Topics in Finance I

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	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

V Event excerpt: Business Strategies of Banks (WS 16/17)

Aim
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 Beginners [T-INFO-103339]

Responsibility: Thomas Dreier
Contained in: [M-INFO-101187] Elective Module Law

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	24012	Civil Law for Beginners	Vorlesung (V)	4	Yvonne Matz

V Event excerpt: Civil Law for Beginners (WS 16/17)

Aim
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. Stellvertrettung), 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

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt ca. 120 Stunden (4.0 Credits) davon 45 h Präsenz, 45 h Vor- und Nachbereitungszeit sowie 30 h für die Klausurvorbereitung
\begintabular|l|c|r|
\hline
Aktivität & & Arbeitsaufwand \\
\hline
\itshape Präsenzzeit & & \\
Besuch der Vorlesung & 15 x x 2 90min & 45h 00m \\
\hline
Vor- / Nachbereitung der Vorlesung & 15 x 150min & 37h 30m \\
Skript 2x wiederholen & 2 x 12h & 24h 00m \\
Prüfung vorbereiten & & 13h 30m \\
\hline
Summe & & 120h 00m \\
\hline
\endtabular

Literature
Wird in der Vorlesung bekannt gegeben

Weiterführende Literatur
Literaturangaben werden in den Vorlesungsfolien angekündigt.

T Course: Climatology [T-PHYS-101092]

Responsibility: Peter Braesicke, Joaquim José Ginete Werner Pinto

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
0	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	Recurrence	Version
5	deutsch	Jedes Wintersemester	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

Conditions
none

V Event excerpt: Combustion Engines I (WS 16/17)

Aim
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: Rainer Koch, Heiko Kubach
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2134151	Combustion Engines II	Vorlesung / Übung (VÜ)	3	Thomas Koch

Learning Control / Examinations
oral examination, duration: 25 minutes, no auxiliary means

Conditions
none

Recommendations
Fundamentals of Combustion Engines I helpful

V Event excerpt: Combustion Engines II (SS 2017)

Aim
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	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2561205		Übung (Ü)	1	Cornelia Gremm, Kay Mitusch
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.

V Event excerpt: Competition in Networks (WS 16/17)

Aim
Bachelor
The Students

- will use their basic knowledge of microeconomic in a problem-oriented way and learn to apply theoretical instruments to practical issues.
- will have a vivid idea of economics characteristics and basic questions of network industries as telecom, utilities and transport sectors
- understand the special characteristics of network industries regarding the cost situation and competitive conditions

Master
The Students

- will know the basic understanding of network industries concerning competition, competitive distortion, state intervention, pricing and financing
- will know the special characteristics of network industries like telecom, utilities, IT and transport sectors
- will be able to apply and adjust abstract concepts and formal methods to these fields

Content
Anknüpfend an die Mikroökonomie im Grundstudium (VWL 1) wird zunächst das "partialökonomische Modell" dargestellt, welches der adäquate Analyserahmen für die Industrieökonomik und viele wirtschaftspolitische Anwendungen ist. Sodann wird der für die Netzwerkökonomie zentrale Begriff der Kostensubadditivität (bzw. natürliches Monopol) dargestellt und in seinen Implikationen diskutiert. Weitere Themen: vertikale Beziehungen in Netzsektoren, Verkehrsmodellierung, Preise in Stromnetzen und Prinzipien der Infrastrukturfinanzierung nach Ramsey und Shapley.

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: Pradyumn Kumar Shukla
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	englisch	Jedes Wintersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2590459		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
The credits have been changed to 5 starting summer term 2016.

V Event excerpt: Computational Economics (WS 16/17)

Aim
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 Integrated Planning of New Products [T-MACH-102125]

Responsibility: Roland Kläger
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Recurrence	Version
4	Jedes Semester	1

Learning Control / Examinations
Oral examination

Conditions
none

T Course: Constitution and Properties of Wearresistant Materials [T-MACH-102141]

Responsibility: Sven Ulrich
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2194643	Constitution and Properties of Wear resistant materials	Vorlesung (V)	2	Sven Ulrich

Learning Control / Examinations
oral examination (30 min)

no tools or reference materials

Conditions
none

V Event excerpt: Constitution and Properties of Wear resistant materials (SS 2017)

Aim
Basic understanding of constitution of wear-resistant materials, of the relations between constitution, properties and performance, of principles of increasing of hardness and toughness of materials as well as of the characteristics of the various groups of wear-resistant materials.

Content
introduction

materials and wear

unalloyed and alloyed tool steels

high speed steels

stellites and hard alloys

hard materials

hard metals

ceramic tool materials

superhard materials

new developments

Workload
regular attendance: 22 hours
self-study: 98 hours

Literature

Laska, R. Felsch, C.: Werkstoffkunde für Ingenieure, Vieweg Verlag, Braunschweig, 1981

Schedler, W.: Hartmetall für den Praktiker, VDI-Verlage, Düsseldorf, 1988

Schneider, J.: Schneidkeramik, Verlag moderne Industrie, Landsberg am Lech, 1995

Copies with figures and tables will be distributed

T Course: Construction Technology [T-BGU-101691]

Responsibility: Shervin Haghsheno
Contained in: [M-BGU-101004] Fundamentals of construction

ECTS	Recurrence	Version
6	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	6200410		Vorlesung (V)	3	Sascha Gentes, Shervin Haghsheno, Harald Schneider
SS 2017	6200411		Übung (Ü)	1	Sascha Gentes, Shervin Haghsheno, Harald Schneider

Learning Control / Examinations
written exam with 90 minutes

Conditions
None

Recommendations
None

Remarks
None

T Course: Control Technology [T-MACH-105185]

Responsibility: Christoph Gönnheimer
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2150683	Control Technology	Vorlesung (V)	2	Christoph Gönnheimer

Learning Control / Examinations
The assessment is carried out as an oral exam. The examination is offered every semester. Reexaminations are offered at every ordinary examination date. In case of a great number of participating students assessment is carried out as a written exam. Oral exams then are only carried out in the event of repetition.

Conditions
none

V Event excerpt: Control Technology (SS 2017)

Aim
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: Customer Relationship Management [T-WIWI-102595]

Responsibility: Andreas Geyer-Schulz
Contained in: [M-WIWI-101460] CRM and Service Management

ECTS	Language	Recurrence	Version
4,5	deutsch/englisch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2540509		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 regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation (versions prior 2015) or following §4 (3) of the examination regulation (version 2015), respectively.
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

V Event excerpt: Customer Relationship Management (WS 16/17)

Aim
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):
Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m

- Preparation of the examination: 31h 00m

Sum: 135h 00m

Literature
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-101599] Statistics and Econometrics

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2520375		Vorlesung (V)	2/4	Rheza Nakhaeizadeh

Learning Control / Examinations

- Oral examination 70%
- Conduction of a small empirical study 30%

Conditions
None

V Event excerpt: (SS 2017)

Aim
After completing of the course the students:

- know the definition of Data Mining
- are familiar with the CRISP-DM
- are Familiar with at least six important Data Mining Tasks
- can recognize whether a given problem can be formulated as a data mining problem
- are familiar with the most important Data Mining Algorithms like Decision Tree, K-Means, Artificial Neural Networks, Association Rules, Regression Analysis
- are familiar with evaluation of DM-algorithms
- will be able to use a DM-Tool

Content
Part one: Data Mining
Why Data Mining?

- What is Data Mining?
- History of Data Mining
- Conferences and Journals on Data Mining
- Potential Applications
- Data Mining Process:
- Business Understanding
- Data Understanding
- Data Preparation
- Modeling
- Evaluation
- Deployment
- Interdisciplinary aspects of Data Mining
- Data Mining tasks
- Data Mining Algorithms (Decision Trees, Association Rules,
- Regression, Clustering, Neural Networks)

- Fuzzy Mining
- OLAP and Data Warehouse
- Data Mining Tools
- Trends in Data Mining

Part two: Examples of application of Data Mining

- Success parameters of Data Mining Projects
- Application in industry
- Application in Commerce

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature
U. Fayyad, G. Piatetsky-Shapiro, P. Smyth, R. Uthurusamy, editors, Advances in Knowledge Discovery and Data Mining, AAAI/MIT Press, 1996 (order on-line from Amazon.com or from MIT Press).

- Jiawei Han, Micheline Kamber, Data Mining : Concepts and Techniques, 2nd edition, Morgan Kaufmann, ISBN 1558609016, 2006.
- David J. Hand, Heikki Mannila and Padhraic Smyth, Principles of Data Mining , MIT Press, Fall 2000
- Trevor Hastie, Robert Tibshirani, Jerome Friedman, The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Springer Verlag, 2001.
- Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson Addison wesley (May, 2005). Hardcover: 769 pages. ISBN: 0321321367
- Ripley, B.D. (1996) Pattern Recognition and Neural Networks, Cambridge: Cambridge University Press.
- Ian witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques, 2nd Edition, Morgan Kaufmann, ISBN 0120884070, 2005.

T Course: Database Systems [T-WIWI-102660]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101399] Emphasis Informatics
[M-WIWI-101426] Electives in Informatics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511200	Database Systems	Vorlesung (V)	2	Daniel Sommer
SS 2017	2511201		Übung (Ü)	1	Daniel Sommer

Learning Control / Examinations
The assessment consists of an 1h written exam in the first week after lecture period.

Conditions
None

Modeled Conditions
1 of 2 conditions must be met:

1. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.
2. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.

V Event excerpt: Database Systems (SS 2017)

Aim
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	Recurrence	Version
5	deutsch	Jedes Wintersemester	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		Übung (Ü)	1	Timm Caporale, Andreas Fritsch, 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

V Event excerpt: Database Systems and XML (WS 16/17)

Aim
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

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2520365	Decision Theory	Vorlesung (V)	2	Karl-Martin Ehrhart
SS 2017	2520366		Übung (Ü)	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.

V Event excerpt: Decision Theory (SS 2017)

Aim
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-101423] Topics in Finance II
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101402] eFinance

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2530550	Derivatives	Vorlesung (V)	2	Marliese Uhrig-Homburg
SS 2017	2530551		Übung (Ü)	1	Stefan Fiesel, Marliese Uhrig-Homburg

Learning Control / Examinations
See German version.

Conditions
None

Recommendations
None

V Event excerpt: Derivatives (SS 2017)

Aim
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: Mitarbeiter , N. N.
Contained in: [M-ETIT-101165] Energy Generation and Network Components

ECTS	Version
3	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	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2586405		Übung (Ü)	1	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.

V Event excerpt: Design and Construction of Buildings (WS 16/17)

Aim
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	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2585404	Sustainability Assessment of Buildings	Vorlesung (V)	2	Thomas Lützkendorf, Benjamin Ströbele
SS 2017	2585403		Übung (Ü)	1	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.

V Event excerpt: Sustainability Assessment of Buildings (SS 2017)

Aim
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	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511212	Document Management and Groupware Systems	Vorlesung (V)	2	Stefan Klink

Learning Control / Examinations
The course expires after summer term 2017. Last examination date is winter term 2017/2018 (only for repeaters).
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

V Event excerpt: Document Management and Groupware Systems (SS 2017)

Aim
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	Recurrence	Version
4,5	englisch	Jedes Wintersemester	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 (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.

V Event excerpt: Economics and Behavior (WS 16/17)

Aim

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-101398] Introduction to Economics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Wintersemester	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

V Event excerpt: Economics I: Microeconomics (WS 16/17)

Aim
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-101398] Introduction to Economics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2600014	Economics II: Macroeconomics	Vorlesung (V)	4	Johannes Brumm
SS 2017	2560015		Tutorium (Tu)		Johannes Brumm, Lorenz Kemper

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

V Event excerpt: Economics II: Macroeconomics (SS 2017)

Aim
Die Studierenden...
- lernen die grundlegenden Kennzahlen, Fachbegriffe und Konzepte der Makroökonomie kennen.
- verstehen es, mithilfe von Modellen komplexe Zusammenhänge auf ihre Grundbestandteile zu reduzieren.
- können wirtschaftspolitische Debatten verstehen und sich selbstständig eine Meinung dazu bilden.

Content
Klassische Theorie der Gesamtwirtschaftlichen Produktion
Kapitel 1: Bruttoinlandsprodukt
Kapitel 2: Geld und Inflation
Kapitel 3: Offene Volkswirtschaft I
Kapitel 4: Arbeitslosigkeit
Wachstum: Die Ökonomie in der langen Frist
Kapitel 5: Wachstum I
Kapitel 6: Wachstum II
Konjunktur: Die Ökonomie in der kurzen Frist
Kapitel 7: Konjunktur und die gesamtwirtschaftliche Nachfrage I
Kapitel 8: Konjunktur und die gesamtwirtschaftliche Nachfrage II
Kapitel 9: Offene Volkswirtschaft II
Kapitel 10: Gesamtwirtschaftliches Angebot
Fortgeschrittene Themen der Makroökonomie
Kapitel 11: Dynamisches Modell der Gesamtwirtschaft
Kapitel 12: Mikroökonomische Fundierung
Kapitel 13: Makroökonomische Wirtschaftspolitik

Workload
Gesamtaufwand bei 5 Leistungspunkten: ca. 150 Stunden
Präsenzzeit: 45 Stunden
Vor – und Nachbereitung der LV: 67,5 Stunden
Prüfung und Prüfungsvorbereitung: 37,5 Stunden

Literature
Als Grundlage dieser Veranstaltung dient das bekannte Lehrbuch „Makroökonomik“ von Greg Mankiw. Der Herausgeberverlag Schäffer-Poeschel hat angekündigt, kurz vor Beginn unserer Vorlesung eine neue, siebte Auflage des Lehrbuchs zu veröffentlichen. Wir können sowohl diese als auch ihren Vorgänger als begleitende Lektüre empfehlen.

T Course: Economics III: Introduction in Econometrics [T-WIWI-102736]

Responsibility: Melanie Schienle
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101599] Statistics and Econometrics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2520016	Economics III: Introduction in Econometrics	Vorlesung (V)	2	Melanie Schienle
SS 2017	2520017		Übung (Ü)	2	Rebekka Gätjen, Melanie Schienle

Learning Control / Examinations
The assessment consists of an 1h written exam according to Section 4(2), 1 of the examination regulation.

Conditions
None

V Event excerpt: Economics III: Introduction in Econometrics (SS 2017)

Aim
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: eFinance: Information Engineering and Management for Securities Trading [T-WIWI-102600]

Responsibility: Christof Weinhardt

Contained in: [M-WIWI-101423] Topics in Finance II
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101434] eBusiness and Service Management
[M-WIWI-101402] eFinance

ECTS	Language	Recurrence	Version
4,5	englisch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2540455		Übung (Ü)	1	Benedikt Notheisen, Christof Weinhardt
WS 16/17	2540454	eFinance: Information Engineering and Management for Securities Trading	Vorlesung (V)	2	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). 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

V Event excerpt: eFinance: Information Engineering and Management for Securities Trading (WS 16/17)

Aim

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: Electrical Engineering for Business Engineers, Part I [T-ETIT-100533]

Responsibility: Wolfgang Menesklou
Contained in: [M-ETIT-101155] Electrical Engineering

ECTS	Language	Version
3	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	23225		Übung (Ü)	2	Wolfgang Menesklou
WS 16/17	23223		Vorlesung (V)	2	Wolfgang Menesklou

T Course: Electrical Engineering for Business Engineers, Part II [T-ETIT-100534]

Responsibility: Wolfgang Menesklou
Contained in: [M-MACH-101261] Emphasis in Fundamentals of Engineering

ECTS	Version
5	1

T Course: Elements and Systems of Technical Logistics [T-MACH-102159]

Responsibility: Martin Mittwollen, Jan Oellerich
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Wintersemester	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

Learning Control / Examinations
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Conditions
none

Recommendations
previous / parallel visit of LV 21177095 “Basics of Technical Logistics”

V Event excerpt: Elements and systems of Technical Logistics (WS 16/17)

Aim
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.

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: 36h
rework: 84h

Literature
recommendations during lectures

T Course: Elements of Technical Logistics and Project [T-MACH-102178]

Responsibility: Martin Mittwollen, Jan Oellerich
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Wintersemester	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

Learning Control / Examinations
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Conditions
none

Recommendations
Knowledge out of **Basics of Technical Logistics** preconditioned

V Event excerpt: Elements and systems of Technical Logistics plus project (WS 16/17)

Aim
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
- 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: 48h
rework: 132h

Literature
recommendations during lectures

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	Recurrence	Version
4	deutsch	Jedes Wintersemester	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

Learning Control / Examinations
oral exam, 25 minutes, no auxillary means

Conditions
none

V Event excerpt: Energy Conversion and Increased Efficiency in Internal Combustion Engines (WS 16/17)

Aim
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	Recurrence	Version
4	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117500	Energy efficient intralogistic systems	Vorlesung (V)	2	Meike Braun, Frank Schönung

Learning Control / Examinations
Oral, 30 min. examination dates after the end of each lesson period.

Conditions
none

Recommendations
The content of course "Basics of Technical Logistics" should be known.

Remarks
Visit the IFL homepage of the course for the course dates and/or possible limitations of course participation.

V Event excerpt: Energy efficient intralogistic systems (WS 16/17)

Aim
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 necessary drives,
- Model based on this material handling systems and calculate and measure 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	Recurrence	Version
3,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2581959	Energy Policy	Vorlesung (V)	2	Martin Wietschel

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 every semester. Re-examinations are offered at every ordinary examination date.

V Event excerpt: Energy Policy (SS 2017)

Aim
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	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2134137	Engine measurement techniques	Vorlesung (V)	2	Sören Bernhardt

Learning Control / Examinations
oral examination, Duration: 0,5 hours, no auxiliary means

Conditions
The course *Combustion Engines A* / Combustion Engines I has to be completed beforehand.

Modeled Conditions
The following conditions must be met:

- The course [T-MACH-102194] *Combustion Engines I* must have been passed.

V Event excerpt: Engine measurement techniques (SS 2017)

Aim
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	Recurrence	Version
5	deutsch	Jedes Wintersemester	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		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

V Event excerpt: Enterprise Architecture Management (WS 16/17)

Aim
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	Recurrence	Version
4,5	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2530326		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).
The examination will be offered latest until winter term 2017/2018 (beginners only).

Conditions
None

Recommendations
None

V Event excerpt: (WS 16/17)

Aim
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: 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:

- The course [T-PHYS-101092] *Climatology* must have been passed.

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:

- The course [T-PHYS-101557] *Meteorological Hazards* must have been passed.

T Course: Exchanges [T-WIWI-102625]

Responsibility: Jörg Franke
Contained in: [M-WIWI-101423] Topics in Finance II
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101402] eFinance

ECTS	Language	Recurrence	Version
1,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2530296	Exchanges	Vorlesung (V)	1	Jörg Franke

Learning Control / Examinations
See German version.

Conditions
None

Recommendations
None

V Event excerpt: Exchanges (SS 2017)

Aim
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: 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	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550487		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.

Recommendations
None

Remarks
The lecture is held in every winter term. The planned lectures and courses for the next three years are announced online.

V Event excerpt: Facility Location and Strategic Supply Chain Management (WS 16/17)

Aim
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: Failure of Structural Materials: Deformation and Fracture [T-MACH-102140]

Responsibility: Peter Gumbsch, Oliver Kraft, Daniel Weygand
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2181711	Failure of structural materials: deformation and fracture	Vorlesung / Übung (VÜ)	3	Peter Gumbsch, Daniel Weygand

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: Failure of structural materials: deformation and fracture (WS 16/17)

Aim
The student

- has the basic understanding of mechanical processes to explain the relationship between externally applied load and materials strength.
- can explain the foundation of linear elastic fracture mechanics and is able to determine if this concept can be applied to a failure by fracture.
- can decribe the main empirical materials models for deformation and fracture and can apply them.
- has the physical understanding to describe and explain phenomena of failure.

Content

1. Introduction
2. linear elasticity
3. classification of stresses
4. Failure due to plasticity
   - tensile test
   - dislocations
   - hardening mechanisms
   - guidelines for dimensioning
5. composite materials
6. fracture mechanics
   - hypotheses for failure
   - linear elasic fracture mechanics
   - crack resitance
   - experimental measurement of fracture toughness
   - defect measurement
   - crack propagation
   - application of fracture mechanics
   - atomistics of fracture

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature

- Engineering Materials, M. Ashby and D.R. Jones (2nd Edition, Butterworth-Heinemann, Oxford, 1998); worth reading, relatively simple but comprehensive
- Mechanical Behavior of Materials, Thomas H. Courtney (2nd Edition, McGraw Hill, Singapur); classic on the mechanical behavior of materials, extensive and good
- Bruchvorgänge in metallischen Werkstoffen, D. Aurich (Werkstofftechnische Verlagsgesellschaft Karlsruhe), relatively simple but yet comprehensive overview of metallic materials

T Course: Failure of Structural Materials: Fatigue and Creep [T-MACH-102139]

Responsibility: Patric Gruber, Peter Gumbsch, Oliver Kraft
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2181715	Failure of Structural Materials: Fatigue and Creep	Vorlesung (V)	2	Patric Gruber, Peter Gumbsch

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: Failure of Structural Materials: Fatigue and Creep (WS 16/17)

Aim
The student

- has the basic understanding of mechanical processes to explain the relationships between externally applied load and materials strength.
- can describe the main empirical materials models for fatigue and creep and can apply them.
- has the physical understanding to describe and explain phenomena of failure.
- can use statistical approaches for reliability predictions.
- can use its acquired skills, to select and develop materials for specific applications.

Content
1 Fatigue
1.1 Introduction
1.2 Statistical Aspects
1.3 Lifetime
1.4 Fatigue Mechanisms
1.5 Material Selection
1.6 Thermomechanical Loading
1.7 Notches and Shape Optimization
1.8 Case Study: ICE-Desaster

2 Creep
2.1 Introduction
2.2 High Temperature Plasticity
2.3 Phänomenological DEsciption of Creep
2.4 Creep Mechanisms
2.5 Alloying Effects

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature

- Engineering Materials, M. Ashby and D.R. Jones (2nd Edition, Butterworth-Heinemann, Oxford, 1998); worth reading, relatively simple but comprehensive
- Mechanical Behavior of Materials, Thomas H. Courtney (2nd Edition, McGraw Hill, Singapur); classic on the mechanical behavior of materials, extensive and good
- Bruchvorgänge in metallischen Werkstoffen, D. Aurich (Werkstofftechnische Verlagsgesellschaft Karlsruhe), relatively simple but yet comprehensive overview of metallic materials
- Fatigue of Materials, Subra Suresh (2nd Edition, Cambridge University Press); standard work on fatigue, all classes of materials, extensive, for beginners and advanced student

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	Recurrence	Version
4	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2600002		Vorlesung (V)	2	Jan-Oliver Strych
WS 16/17	2600003		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

V Event excerpt: (WS 16/17)

Aim
Students

- are able to understand IFRS annual reports,
- know differences between HGB and IFRS,
- are able to understand and implement selected IFRS rules,
- can analyse how liquid the firm is,
- can analyse and assess financial reports,
- are able to measure the value added in firms,
- have skills about budgeting and benchmarking, and
- can understand and implement reporting systems.

Content
1. Introduction to accounting standards (IFRS, HGB)
2. Annual report and financial statements
3. Selected topics in financial accounting
4. Operational efficiency analysis
5. Financial Statement Analysis
6. Value-based management
7. Taxes
8. Creative accounting and compliance
9. Budgeting and benchmarking
10. Reporting

Workload
The total workload for this course is approximately 120 hours. For further information see German version.

T Course: Financial Econometrics [T-WIWI-103064]

Responsibility: Melanie Schienle
Contained in: [M-WIWI-101599] Statistics and Econometrics

ECTS	Recurrence	Version
4,5	Jedes Wintersemester	1

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-101423] Topics in Finance II
[M-WIWI-101465] Topics in Finance I

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2530233		Übung (Ü)	1	Daniel Hoang, Martin Ruckes
WS 16/17	2530232	Financial Intermediation	Vorlesung (V)	2	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

V Event excerpt: Financial Intermediation (WS 16/17)

Aim
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	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2530216	Financial Management	Vorlesung (V)	2	Martin Ruckes
SS 2017	2530217		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.

V Event excerpt: Financial Management (SS 2017)

Aim
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: Fluid Power Systems [T-MACH-102093]

Responsibility: Marcus Geimer, Stefan Haug, Martin Scherer
Contained in: [M-MACH-101266] Automotive Engineering
[M-MACH-101267] Mobile Machines

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2114093	Fluid Technology	Vorlesung (V)	2	Lars Brinkschulte, Marcus Geimer, Martin Scherer

Learning Control / Examinations
The assessment consists of a writen exam (90 minutes) taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
none

V Event excerpt: Fluid Technology (WS 16/17)

Aim
The students will be able to

- know and understand physical principles of fluid power systems
- know the current components and their operating mode
- know the advantages and disadvantages of different components
- dimension the components for a given purpose
- calculate simple systems

Content
In the range of hydrostatics the following topics will be introduced:

- Hydraulic fluids
- Pumps and motors
- Valves
- Accessories
- Hydraulic circuits.

In the range of pneumatics the following topics will be introduced:

- Compressors
- Motors
- Valves
- Pneumatic circuits.

Workload

- regular attendance: 21 hours
- self-study: 92 hours

Literature
Scritum for the lecture *Fluidtechnik*
Institute of Vehicle System Technology
downloadable

T Course: Foundations of Digital Services A [T-WIWI-105771]

Responsibility: Gerhard Satzger, Christof Weinhardt
Contained in: [M-WIWI-101422] Specialization in Customer Relationship Management
[M-WIWI-101434] eBusiness and Service Management
[M-WIWI-102752] Fundamentals of Digital Service Systems

ECTS	Language	Recurrence	Version
4,5	englisch	Jedes Sommersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2595466	Foundations of Digital Services A	Vorlesung (V)	2	Niklas Kühl, Gerhard Satzger, York Sure-Vetter, Christof Weinhardt

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.

V Event excerpt: Foundations of Digital Services A (SS 2017)

Aim
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: Alexander Mädche, Stefan Morana, Stefan Nickel
Contained in: [M-WIWI-102752] Fundamentals of Digital Service Systems

ECTS	Recurrence	Version
4,5	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2540425		Übung (Ü)	1	Alexander Mädche
WS 16/17	2540423		Vorlesung (V)	2	Alexander Mädche, Stefan Morana, Stefan Nickel

Learning Control / Examinations
The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations).

Conditions
None.

Remarks
The course will start from winter term 2016/17.

V Event excerpt: (WS 16/17)

Aim

- The students get an overview on basic concepts and definitions of digital service systems.
- Understand key characteristics and impact of digital service systems.
- Understand typical tasks of functional areas (e.g. marketing, logistics, finance & accounting) and how they are supported by contemporary digital service systems.

Content
During the last decades, we witnessed a growing importance of Information Systems (IS) in the business world along with faster and faster innovation cycles. Ranging from the enrichment of routine working tasks (e.g., employee portals to integrate disparate applications, data, and processes to the e-enabled integration of entire business eco-systems - IS have become a vital backbone of businesses and a fundamental backbone of digital service systems.
The course is designed to introduce students to the nature, role, and potentials of digital service systems. The lecture and exercises address contemporary challenges and functionalities of digital service systems including real-time data reporting, integration of data and processes across functions, as well as modern user interfaces. The exercises include hands-on-sessions with SAP S/4HANA. The students execute various tasks within this system.

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

Literature
Provided in the lecture

T Course: Foundations of Informatics I [T-WIWI-102749]

Responsibility: York Sure-Vetter
Contained in: [M-WIWI-101417] Foundations of Informatics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511012		Übung (Ü)		Patrick Philipp, Achim Rettinger, York Sure-Vetter, Tobias Weller
SS 2017	2511010	Foundations of Informatics I	Vorlesung (V)	2	Achim Rettinger, York Sure-Vetter
SS 2017	2511011	Exercises to Foundations of Informatics I	Übung (Ü)		Patrick Philipp, Achim Rettinger, York Sure-Vetter, Tobias Weller

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

V Event excerpt: Foundations of Informatics I (SS 2017)

Aim
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	Recurrence	Version
5	deutsch	Jedes Wintersemester	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	2511013		Tutorium (Tu)	1	Hartmut Schmeck

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.

V Event excerpt: Foundations of Informatics II (WS 16/17)

Aim
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-101399] Emphasis Informatics
[M-WIWI-101426] Electives in Informatics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511226		Vorlesung (V)	2	Gunther Schiefer
SS 2017	2511227		Übung (Ü)	1	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

Modeled Conditions
1 of 2 conditions must be met:

1. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.
2. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.

V Event excerpt: (SS 2017)

Aim
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. Mobilfunktechnologie
5. Mobilfunkmarkt
6. Mobile Anwendungen
7. Digitale Funktechnologien
8. Ortung & Kontext

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	Recurrence	Version
4	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2133108	Fuels and Lubricants for Combustion Engines	Vorlesung (V)	2	Bernhard Kehrwald

Learning Control / Examinations
oral examination, Duration: ca. 25 min., no auxiliary means

Conditions
none

V Event excerpt: Fuels and Lubricants for Combustion Engines (WS 16/17)

Aim
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 for Design of Motor-Vehicle Bodies I [T-MACH-102116]

Responsibility: Horst Dietmar Bardehle
Contained in: [M-MACH-101266] Automotive Engineering

ECTS	Language	Recurrence	Version
1,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2113814	Fundamentals for Design of Motor-Vehicles Bodies I	Vorlesung (V)	1	Horst Dietmar Bardehle

Learning Control / Examinations
Oral group examination

Duration: 30 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Fundamentals for Design of Motor-Vehicles Bodies I (WS 16/17)

Aim
The students have an overview of the fundamental possibilities for design and manufacture of motor-vehicle bodies. They know the complete process, from the first idea, through the concept to the dimensioned drawings (e.g. with FE-methods). They have knowledge about the fundamentals and their correlations, to be able to analyze and to judge relating components as well as to develop them accordingly.

Content
1. History and design

2. Aerodynamics

3. Design methods (CAD/CAM, FEM)

4. Manufacturing methods of body parts

5. Fastening technologie

6. Body in white / body production, body surface

Workload
regular attendance: 10,5 hours
self-study: 49,5 hours

Literature

1. Automobiltechnische Zeitschrift ATZ, Friedr. Vieweg & Sohn Verlagsges. mbH, Wiesbaden
2. Automobil Revue, Bern (Schweiz)
3. Automobil Produktion, Verlag Moderne Industrie, Landsberg

T Course: Fundamentals for Design of Motor-Vehicle Bodies II [T-MACH-102119]

Responsibility: Horst Dietmar Bardehle
Contained in: [M-MACH-101266] Automotive Engineering

ECTS	Language	Recurrence	Version
1,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114840	Fundamentals for Design of Motor-Vehicles Bodies II	Vorlesung (V)	1	Horst Dietmar Bardehle

Learning Control / Examinations
Oral group examination

Duration: 30 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Fundamentals for Design of Motor-Vehicles Bodies II (SS 2017)

Aim
The students know that, often the design of seemingly simple detail components can result in the solution of complex problems. They have knowledge in testing procedures of body properties. They have an overview of body parts such as bumpers, window lift mechanism and seats. They understand, as well as, parallel to the normal electrical system, about the electronic side of a motor vehicle. Based on this they are ready to analyze and to judge the relation of these single components. They are also able to contribute competently to complex development tasks by imparted knowledge in project management.

Content
1. Body properties/testing procedures

2. External body-parts

3. Interior trim

4. Compartment air conditioning

5. Electric and electronic features

6. Crash tests

7. Project management aspects, future prospects

Workload
regular attendance: 10,5 hours
self-study: 49,5 hours

Literature
1. Automobiltechnische Zeitschrift ATZ, Friedr. Vieweg & Sohn Verlagsges. mbH, Wiesbaden
2. Automobil Revue, Bern (Schweiz)
3. Automobil Produktion, Verlag Moderne Industrie, Landsberg

T Course: Fundamentals in the Development of Commercial Vehicles I [T-MACH-105160]

Responsibility: Jörg Zürn
Contained in: [M-MACH-101265] Vehicle Development
[M-MACH-101267] Mobile Machines

ECTS	Language	Recurrence	Version
1,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2113812	Fundamentals in the Development of Commercial Vehicles I	Vorlesung (V)	1	Jörg Zürn

Learning Control / Examinations
Oral group examination

Duration: 30 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Fundamentals in the Development of Commercial Vehicles I (WS 16/17)

Aim
The students have proper knowledge about the process of commercial vehicle development starting from the concept and the underlying original idea to the real design. They know that the customer requirements, the technical realisability, the functionality and the economy are important drivers.
The students are able to develop parts and components. Furthermore they have knowledge about different cab concepts, the interior and the interior design process. Consequently they are ready to analyze and to judge concepts of commercial vehicles as well as to participate competently in the commercial vehicle development.

Content
1. Introduction, definitions, history
2. Development tools
3. Complete vehicle
4. Cab, bodyshell work
5. Cab, interior fitting
6. Alternative drive systems
7. Drive train
8. Drive system diesel engine
9. Intercooled diesel engines

Workload
regular attendance: 10,5 hours
self-study: 49,5 hours

Literature
1. Marwitz, H., Zittel, S.: ACTROS – die neue schwere Lastwagenbaureihe von Mercedes-Benz, ATZ 98, 1996, Nr. 9

2. Alber, P., McKellip, S.: ACTROS – Optimierte passive Sicherheit, ATZ 98, 1996

3. Morschheuser, K.: Airbag im Rahmenfahrzeug, ATZ 97, 1995, S. 450 ff.

T Course: Fundamentals in the Development of Commercial Vehicles II [T-MACH-105161]

Responsibility: Jörg Zürn
Contained in: [M-MACH-101265] Vehicle Development
[M-MACH-101267] Mobile Machines

ECTS	Language	Recurrence	Version
1,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114844	Fundamentals in the Development of Commercial Vehicles II	Vorlesung (V)	1	Jörg Zürn

Learning Control / Examinations
Oral group examination

Duration: 30 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Fundamentals in the Development of Commercial Vehicles II (SS 2017)

Aim
The students know the advantages and disadvantages of different drives. Furthermore they are familiar with components, such as transfer box, propeller shaft, powered and non-powered frontaxle etc. Beside other mechanical components, such as chassis, axle suspension and braking system, also electric and electronic systems are known. Consequently the student are able to analyze and to judge the general concepts as well as to adjust them precisely with the area of application.

Content
1. Gear boxes of commercial vehicles
2. Intermediate elements of the drive train
3. Axle systems
4. Front axles and driving dynamics
5. Chassis and axle suspension
6. Braking System
7. Systems
8. Excursion

Workload
regular attendance: 10,5 hours
self-study: 49,5 hours

Literature
1. Schittler, M., Heinrich, R., Kerschbaum, W.: Mercedes-Benz Baureihe 500 – neue V-Motorengeneration für schwere Nutzfahrzeuge, MTZ 57 Nr. 9, S. 460 ff., 1996

2. Robert Bosch GmbH (Hrsg.): Bremsanlagen für Kraftfahrzeuge, VDI-Verlag, Düsseldorf, 1. Auflage, 1994

3. Rubi, V., Strifler, P. (Hrsg. Institut für Kraftfahrwesen RWTH Aachen): Industrielle Nutzfahrzeugentwicklung, Schriftenreihe Automobiltechnik, 1993

T Course: Fundamentals of Automobile Development I [T-MACH-105162]

Responsibility: Rolf Frech
Contained in: [M-MACH-101265] Vehicle Development

ECTS	Language	Recurrence	Version
1,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2113810	Fundamentals of Automobile Development I	Vorlesung (V)	1	Rolf Frech

Learning Control / Examinations
Written examination

Duration: 90 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Fundamentals of Automobile Development I (WS 16/17)

Aim
The students have an overview of the fundamentals of the development of automobiles. They know the development process, the national and the international legal requirements that are to be met. They have knowledge about the thermo-management, aerodynamics and the design of an automobile. They are ready to judge goal conflicts in the field of automobile development and to work out approaches to solving a problem.

Content
1. Process of automobile development
2. Conceptual dimensioning and design of an automobile
3. Laws and regulations – National and international boundary conditions
4. Aero dynamical dimensioning and design of an automobile I
5. Aero dynamical dimensioning and design of an automobile II
6. Thermo-management in the conflict of objectives between styling, aerodynamic and packaging guidelines I
7. Thermo-management in the conflict of objectives between styling, aerodynamic and packaging guidelines II

Workload
regular attendance: 10,5 hours
self-study: 49,5 hours

Literature
The scriptum will be provided during the first lessons

T Course: Fundamentals of Automobile Development II [T-MACH-105163]

Responsibility: Rolf Frech
Contained in: [M-MACH-101265] Vehicle Development

ECTS	Language	Recurrence	Version
1,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114842	Fundamentals of Automobile Development II	Vorlesung (V)	1	Rolf Frech

Learning Control / Examinations
Written examination

Duration: 90 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Fundamentals of Automobile Development II (SS 2017)

Aim
The students are familiar with the selection of appropriate materials and the choice of adequate production technology. They have knowledge of the acoustical properties of the automobiles, covering both the interior sound and exterior noise. They have an overview of the testing procedures of the automobiles. They know in detail the evaluation of the properties of the complete automobile. They are ready to participate competently in the development process of the complete vehicle.

Content
1. Application-oriented material and production technology I
2. Application-oriented material and production technology II
3. Overall vehicle acoustics in the automobile development
4. Drive train acoustics in the automobile development
5. Testing of the complete vehicle
6. Properties of the complete automobile

Workload
regular attendance: 10,5 hours
self-study: 49,5 hours

Literature
The scriptum will be provided during the first lessons.

T Course: Fundamentals of Catalytic Exhaust Gas Aftertreatment [T-MACH-105044]

Responsibility: Egbert Lox
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2134138	Fundamentals of catalytic exhaust gas aftertreatment	Vorlesung (V)	2	Olaf Deutschmann, Jan-Dierk Grunwaldt, Egbert Lox

Learning Control / Examinations
oral examination, Duration: 25 min., no auxiliary means

Conditions
none

V Event excerpt: Fundamentals of catalytic exhaust gas aftertreatment (SS 2017)

Aim
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	Recurrence	Version
5,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2581951		Übung (Ü)	2	Richard Carl Müller, Elias Naber
SS 2017	2581950	Fundamentals of Production Management	Vorlesung (V)	2	Frank Schultmann, Rebekka Volk

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

V Event excerpt: Fundamentals of Production Management (SS 2017)

Aim

- 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	Recurrence	Version
4	Jedes Sommersemester	1

Learning Control / Examinations
Oral examination, duration 25 min., no auxillary means

Conditions
none

T Course: Gear Cutting Technology [T-MACH-102148]

Responsibility: Markus Klaiber
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149655	Gear Cutting Technology	Vorlesung (V)	2	Markus Klaiber

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: Gear Cutting Technology (WS 16/17)

Aim
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: Geological Hazards and Risks for external students [T-PHYS-103117]

Responsibility: Ellen Gottschämmer

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
WS 16/17	4060122		Übung (Ü)	1	James Daniell, Ellen Gottschämmer, Friedemann Wenzel
WS 16/17	4060121	Geological Hazards and Risk	Vorlesung (V)	2	James Daniell, Ellen Gottschämmer, Friedemann Wenzel

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	Recurrence	Version
4,5	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2550144		Übung (Ü)		Oliver Stein
SS 2017	2550135		Übung (Ü)	1	Oliver Stein
SS 2017	2550134		Vorlesung (V)	2	Oliver Stein

Learning Control / Examinations
Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO) and possibly of a compulsory prerequisite.
The exam is offered in the lecture of semester and the following semester.
The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Conditions
None

Modeled Conditions
The following conditions must be met:

- The course [T-WIWI-103638] *Global optimization I and II* must not have been started.

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: Oliver Stein
Contained in: [M-WIWI-101414] Methodical Foundations of OR

ECTS	Recurrence	Version
9	Jedes Semester	1

Learning Control / Examinations
The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.
The examination is held in the semester of the lecture and in the following semester.

Conditions
None

Modeled Conditions
The following conditions must be met:

1. The course [T-WIWI-102726] *Global optimization I* must not have been started.
2. The course [T-WIWI-102727] *Global optimization II* must not have been started.

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	Recurrence	Version
4,5	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2550144		Übung (Ü)		Oliver Stein
SS 2017	2550136		Vorlesung (V)	2	Oliver Stein
SS 2017	2550135		Übung (Ü)	1	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 and possibly of a compulsory prerequisite.
The examination is held in the semester of the lecture and in the following semester.
The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Conditions

None

Modeled Conditions

The following conditions must be met:

- The course [T-WIWI-103638] *Global optimization I and II* must not have been started.

Remarks

Part I and II of the lecture are held consecutively in the *same*semester.

T Course: Global Vehicle Evaluation within Virtual Road Test [T-MACH-102177]

Responsibility: Bernhard Schick
Contained in: [M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Recurrence	Version
3	Jedes Sommersemester	1

Learning Control / Examinations
Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: CarMaker Simulation Environment

Conditions
none

T Course: Handling Characteristics of Motor Vehicles I [T-MACH-105152]

Responsibility: Hans-Joachim Unrau
Contained in: [M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2113807	Handling Characteristics of Motor Vehicles I	Vorlesung (V)	2	Hans-Joachim Unrau

Learning Control / Examinations
Verbally

Duration: 30 up to 40 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Handling Characteristics of Motor Vehicles I (WS 16/17)

Aim
The students know the basic connections between drivers, vehicles and environment. They can build up a vehicle simulation model, with which forces of inertia, aerodynamic forces and tyre forces as well as the appropriate moments are considered. They have proper knowledge in the area of tyre characteristics, since a special meaning comes to the tire behavior during driving dynamics simulation. Consequently they are ready to analyze the most importent influencing factors on the driving behaviour and to contribute to the optimization of the handling characteristics.

Content
1. Problem definition: Control loop driver - vehicle - environment (e.g. coordinate systems, modes of motion of the car body and the wheels)

2. Simulation models: Creation from motion equations (method according to D'Alembert, method according to Lagrange, programme packages for automatically producing of simulation equations), model for handling characteristics (task, motion equations)

3. Tyre behavior: Basics, dry, wet and winter-smooth roadway

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature
1. Willumeit, H.-P.: Modelle und Modellierungsverfahren in der Fahrzeugdynamik,
B. G. Teubner Verlag, 1998

2. Mitschke, M./Wallentowitz, H.: Dynamik von Kraftfahrzeugen, Springer-Verlag, Berlin, 2004

3. Gnadler, R.; Unrau, H.-J.: Reprint collection to the lecture Handling Characteristics of Motor Vehicles I

T Course: Handling Characteristics of Motor Vehicles II [T-MACH-105153]

Responsibility: Hans-Joachim Unrau
Contained in: [M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114838	Handling Characteristics of Motor Vehicles II	Vorlesung (V)	2	Hans-Joachim Unrau

Learning Control / Examinations
Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Handling Characteristics of Motor Vehicles II (SS 2017)

Aim
The students have an overview of common test methods, with which the handling of vehicles is gauged. They are able to interpret results of different stationary and transient testing methods. Apart from the methods, with which e.g. the driveability in curves or the transient behaviour from vehicles can be registered, also the influences from cross-wind and from uneven roadways on the handling characteristics are well known. They are familiar with the stability behavior from single vehicles and from vehicles with trailer. Consequently they are ready to judge the driving behaviour of vehicles and to change it by specific vehicle modifications.

Content
1. Vehicle handling: Bases, steady state cornering, steering input step, single sine, double track switching, slalom, cross-wind behavior, uneven roadway

2. stability behavior: Basics, stability conditions for single vehicles and for vehicles with trailer

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature
1. Zomotor, A.: Fahrwerktechnik: Fahrverhalten, Vogel Verlag, 1991
2. Mitschke, M./Wallentowitz, H.: Dynamik von Kraftfahrzeugen, Springer-Verlag, Berlin, 2004

3. Gnadler, R. Unrau, H.-J.: Reprint collection to the lecture Handling Characteristics of Motor Vehicles II

T Course: High Performance Powder Metallurgy Materials [T-MACH-102157]

Responsibility: Rainer Oberacker
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2126749	Advanced powder metals	Vorlesung (V)	2	Rainer Oberacker

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: Advanced powder metals (SS 2017)

Aim
The students know the basics of powder metallurgy. They are able to assess the conditions for applying either powder metallurgy or competing production methods. They have knowledge on production, properties and application of the most important PM materials.

Content
The lecture gives an overview on production, properties and application of structural and functional powder metallurgy material. The following groups of materials are presented: PM High Speed Steels, Cemented Carbides, PM Metal Matrix Composites, PM Specialities, PM Soft Magnetic and Hard Magnetic Materials.

Workload
regular attendance: 22 hours
self-study: 98 hours

Literature

- W. Schatt ; K.-P. Wieters ; B. Kieback. ".Pulvermetallurgie: Technologien und Werkstoffe", Springer, 2007
- R.M. German. "Powder metallurgy and particulate materials processing. Metal Powder Industries Federation, 2005
- F. Thümmler, R. Oberacker. "Introduction to Powder Metallurgy", Institute of Materials, 1993

T Course: Human Resource Management [T-WIWI-102909]

Responsibility: Petra Nieken
Contained in: [M-WIWI-101513] Human Resources and Organizations

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2573003	Human Resource Management	Vorlesung (V)	2	Petra Nieken
WS 16/17	2573004	Übungen zu Human Resource Management	Übung (Ü)	1	Mitarbeiter, 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. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Conditions
None

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

V Event excerpt: Human Resource Management (WS 16/17)

Aim
The student

- understands the processes and instruments of human resource management.
- analyzes different methods of human resource planning and selection and evaluates their usefulness.
- analyzes different processes of talent management and evaluates the strengths and weaknesses.
- understands the challenges of human resource management and its link to corporate strategy.

Content
The students acquire basic knowledge in the fields of human resource planning, selection and talent management. Different processes and instruments and their link to corporate strategy are evaluated based on microeconomic and behavioral approaches. The results are tested and discussed based on empirical data.

Workload
The total workload for this course is approximately 135 hours.
Lecture 32h
Preparation of lecture 52h
Exam preparation 51h

Literature

- Personnel Economics in Practice, Lazear & Gibbs, John Wiley & Sons, 2014
- Strategic Human Resources. Frameworks for General Managers, Baron & Kreps, John Wiley & Sons, 1999

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	Recurrence	Version
4	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	6200512		Übung (Ü)	1	Frank Seidel
WS 16/17	6200511		Vorlesung (V)	2	Franz Nestmann

Learning Control / Examinations
written exam with 60 minutes

Conditions
None

Recommendations
None

Remarks
None

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	Recurrence	Version
4	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	6200514		Übung (Ü)	1	Uwe Ehret, Jan Wienhöfer, Erwin Zehe
WS 16/17	6200513		Vorlesung (V)	2	Uwe Ehret, Jan Wienhöfer, Erwin Zehe

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	Recurrence	Version
4	Jedes Sommersemester	1

Learning Control / Examinations
oral 30 min

Conditions
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	Recurrence	Version
4	Jedes Wintersemester	1

Learning Control / Examinations
The assessment consists of an oral exam according to §4 (2), 2 of the examination regulation. It may be a written exam (according to §4 (2), 1 of the examination regulation) in the case of large number of participants.

Conditions
none

T Course: Industrial Organization [T-WIWI-102844]

Responsibility: Johannes Philipp Reiß
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101501] Economic Theory

ECTS	Language	Recurrence	Version
4,5	deutsch	Unregelmäßig	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2560238	Industrial Organization	Vorlesung (V)	2	Johannes Philipp Reiß, Martin Schmidt
SS 2017	2560239		Übung (Ü)	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.

Remarks
This course is not given in summer 2017.

V Event excerpt: Industrial Organization (SS 2017)

Aim
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	Recurrence	Version
3	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2122014	Information Engineering	Seminar (S)	2	Mitarbeiter, Jivka Ovtcharova

Learning Control / Examinations
Non exam assessment (following §4(2), 3 of the examination regulation).

Conditions
none

T Course: Information management in production [T-MACH-105937]

Responsibility: Oliver Riedel
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Recurrence	Version
4	Jedes Sommersemester	1

Learning Control / Examinations
oral exam
(more than 50 persons: written exam)

Conditions
none

T Course: Information Service Engineering [T-WIWI-106423]

Responsibility: Harald Sack
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511606		Vorlesung (V)	2	Harald Sack
SS 2017	2511607		Übung (Ü)	1	Harald Sack

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 summer term 2017.

V Event excerpt: (SS 2017)

Aim

- The students know the fundamentals and measures of information theory and are able to apply those in the context of Information Service Engineering.
- The students have basic skills of natural language processing and are enabled to apply natural language processing technology to solve and evaluate simple text analysis tasks.
- The students have fundamental skills of knowledge representation with ontologies as well as basic knowledge of Semantic Web and Linked Data technologies. The students are able to apply these skills for simple representation and analysis tasks.
- The students have fundamental skills of information retrieval and are enabled to conduct and to evaluate simple information retrieval tasks.
- The students apply their skills of natural language processing, Linked Data engineering, and Information Retrieval to conduct and evaluate simple knowledge mining tasks.
- The students know the fundamentals of recommender systems as well as of semantic and exploratory search.

Content
- Information, Natural Language and the Web
- Natural Language Processing

- NLP and Basic Linguistic Knowledge
- NLP Applications, Techniques & Challenges
- Evaluation, Precision and Recall
- Regular Expressions and Automata
- Tokenization
- Language Model and N-Grams
- Part-of-Speech Tagging

- Linked Data Engineering

- Knowledge Representations and Ontologies
- What's in an URI?
- Resource Description Framework (RDF)
- Creating new Models with RDFS
- Querying RDF(S) with SPARQL
- More Expressivity with Web Ontology Language (OWL)
- The Web of Data
- Vocabularies and Ontologies in the Web of Data
- Wikipedia, DBpedia, and Wikidata

- Information Retrieval

- Information Retrieval Models
- Retrieval Evaluation
- Web Information Retrieval
- Document Crawling, Text Processing, and Indexing
- Query Processing and Result Representation
- Question Answering

- Knowledge Mining

- From Data to Knowledge
- Data Mining
- Machine Learning Basics for Knowledge Mining
- Mining Knowledge from Wikipedia
- Named Entity Resolution

- Exploratory Search and Recommender Systems

- Semantic Search and Entity Centric Search
- Collaborative Filtering and Content Based Recommendations
- From Search to Intelligent Browsing
- Linked Data Based Exploratory Search
- Fact Ranking

Literature

- D. Jurafsky, J.H. Martin, Speech and Language Processing, 2nd ed. Pearson Int., 2009.
- S. Hitzler, S. Rudolph, Foundations of Semantic Web Technologies, Chapman / Hall, 2009.
- R. Baeza-Yates, B. Ribeiro-Neto, Modern Information Retrieval, 2nd ed., Addison Wesley, 2010.#

T Course: Information Systems and Supply Chain Management [T-MACH-102128]

Responsibility: Christoph Kilger
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2118094	Information Systems in Logistics and Supply Chain Management	Vorlesung (V)	2	Christoph Kilger

Learning Control / Examinations
oral / written (if necessary)
examination aids: none

Conditions
none

V Event excerpt: Information Systems in Logistics and Supply Chain Management (SS 2017)

Aim
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	Recurrence	Version
9	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2150660	Integrated production planning	Vorlesung / Übung (VÜ)	6	Gisela Lanza

Learning Control / Examinations
The assessment is carried out as an oral exam. The examination is offered every semester. Re-examinations are offered at every ordinary examination date.

Conditions
none

V Event excerpt: Integrated production planning (SS 2017)

Aim
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, Frederik Zanger
Contained in: [M-MACH-101284] Specialization in Production Engineering

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2150601	Integrative Strategies in Production and Development of High Performance Cars	Vorlesung (V)	2	Karl-Hubert Schlichtenmayer

Learning Control / Examinations
The assessment is carried out as an written exam. The examination is offered every semester. Reexaminations are offered at every ordinary examination date.

Conditions
none

V Event excerpt: Integrative Strategies in Production and Development of High Performance Cars (SS 2017)

Aim
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-101423] Topics in Finance II
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101402] eFinance

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	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.

V Event excerpt: International Finance (SS 2017)

Aim
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: Sven Feurer
Contained in: [M-WIWI-101424] Foundations of Marketing

ECTS	Language	Recurrence	Version
1,5	englisch	Jedes Wintersemester	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).

V Event excerpt: International Marketing (WS 16/17)

Aim
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: Internship [T-WIWI-102611]

Responsibility: Martin Ruckes
Contained in: [M-WIWI-101419] Internship

ECTS	Version
10	1

Learning Control / Examinations
see module description

Conditions
Kein

T Course: Introduction to Ceramics [T-MACH-100287]

Responsibility: Michael Hoffmann
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2125757	Introduction to Ceramics	Vorlesung (V)	3	Michael Hoffmann

Learning Control / Examinations
The assessment consists of an oral exam (30 min) taking place at a specific date.
The re-examination is offered at a specific date.

Conditions
None

V Event excerpt: Introduction to Ceramics (WS 16/17)

Aim
The students know the most relevant crystal structures and defects of non metallic inorganic materials, are able to read binary and ternary phase diagrams and are familar with powdertechnological shaping techniques, sintering and grain growth. They know the basics of the linear elastic fracture mechanics, are familar with Weibull statistics, K-concept, subcritical crack growth, creep and the opportunities for microstructural reinforcement of ceramics. The students are able to explain the correlation among chemical bonding, crystal and defect structures and the electrical properties of ceramics.

Content
After a short introduction to interatomic bonding, fundamental concepts of crystallography, the stereographic projection and the most important symmetry elements will be given. Different types of crystal structures are explained and the relevance of imperfections are analysed with respect to the mechanical and electrical properties of ceramics. Then, the impact of surfaces, interfaces and grain boundaries for the preparation, microstructural evolution and the resulting properties is discussed. Finally, an introduction is given to ternary phase diagrams.
The second part of the course covers structure, preparation and application aspects of nonmetallic inorganic glasses, followed by an introduction to the properties and processing methods of fine-grained technical powders. The most relevant shaping methods, such as pressing, slip casting, injection moulding and extrusion are introduced. Subsequently, the basics of science of sintering and the mechanisms for normal and abnormal grain growth are discussed. Mechanical properties of ceramics are analysed using basic principles of linear elastic fracture mechanics, Weibull statistics, concepts for subcritical crack growth and creep models to explain the behaviour at elevated temperatures. Furthermore it is demonstrated that mechanical properties can be siginificantly enhanced by various types of microstructural toughening mechanisms. The electronic and ionic conductivity of ceramic materials are explained based on defect-chemical considerations and band structure models. Finally, the characteristics of a dielectric, pyroelectric, and piezoelectric behaviour is discussed.

Workload
regular attendance: 45 hours
self-study: 135 hours

Literature

- H. Salmang, H. Scholze, “Keramik”, Springer
- Kingery, Bowen, Uhlmann, “Introduction To Ceramics”, Wiley
- Y.-M. Chiang, D. Birnie III and W.D. Kingery, “Physical Ceramics”, Wiley
- S.J.L. Kang, “Sintering, Densification, Grain Growth & Microstructure”, Elsevier

T Course: Introduction to Energy Economics [T-WIWI-102746]

Responsibility: Wolf Fichtner
Contained in: [M-WIWI-101464] Energy Economics

ECTS	Language	Recurrence	Version
5,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2581010	Introduction to Energy Economics	Vorlesung (V)	2	Wolf Fichtner
SS 2017	2581011		Übung (Ü)	2	Patrick Jochem, Hannes Schwarz

V Event excerpt: Introduction to Energy Economics (SS 2017)

Aim
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 Engineering Mechanics I: Statics and Strength of Materials [T-MACH-102208]

Responsibility: Alexander Fidlin
Contained in: [M-MACH-101259] Engineering Mechanics

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2162238	Introduction to Engineering Mechanics I: Statics and Strength of Materials	Vorlesung (V)	2	Aydin Boyaci
SS 2017	2162239		Übung (Ü)	1	Jimmy Alberto Aramendiz Fuentes, Aydin Boyaci

Learning Control / Examinations
The assessment consists of a written examination taking place in the recess period (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.
Permitted utilities: non-programmable calculator, literature

Conditions
None

V Event excerpt: Introduction to Engineering Mechanics I: Statics and Strength of Materials (SS 2017)

Aim
The student

- knows and understoods the basic elements of statics,
- is able to solve basic calculations in statics indipendently.

Content
Statics: force · moment · general equilibrium condistions · center of mass · inner force in structure · plane frameworks · theory of adhesion

T Course: Introduction to Engineering Mechanics II : Dynamics [T-MACH-102210]

Responsibility: Alexander Fidlin
Contained in: [M-WIWI-101839] Additional Fundamentals of Engineering
[M-MACH-101261] Emphasis in Fundamentals of Engineering

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2161276	Introduction to Engineering Mechanics II : Dynamics	Vorlesung (V)	2	Alexander Fidlin

Learning Control / Examinations
The assessment consists of a written examination (75 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination is offered every semester. Re-examinations are offered at every ordinary examination date.
Permitted utilities: non-programmable calculator, literature.

Conditions
None

V Event excerpt: Introduction to Engineering Mechanics II : Dynamics (WS 16/17)

Aim
Der Studierende versteht die grundlegenden Elemente der Technischen Dynamik. Er ist in der Lage einfache dynamische Modelle aufzustellen und Berechnungen selbständig durchzuführen.

Content

- Kinematische Grundbegriffe
- Kinetik des Massenpunktes
- Kinematik starrer Körper
- Ebene
- Kinetik des starren Körpers
- Stoßvorgänge
- Schwingungssysteme

Workload
Gesamtaufwand bei 4,5 LP ca. 90 Std.

- Präsenszeit: 45 Stunden
- Vor- /Nachbereitung: 20 Stunden
- Prüfung und Prüfungsvorbereitung: 25 Stunden

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	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2520525	Introduction to Game Theory	Vorlesung (V)	2	Markus Fels, Johannes Philipp Reiß
SS 2017	2520526		Übung (Ü)	1	Johannes Philipp Reiß, Martin Schmidt

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.

V Event excerpt: Introduction to Game Theory (SS 2017)

Aim
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: Norbert Rösch, Sven Wursthorn

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:

- The course [T-BGU-103541] *Introduction to GIS for Students of Natural, Engineering and Geo Sciences* must have been passed.

T Course: Introduction to GIS for Students of Natural, Engineering and Geo Sciences [T-BGU-103541]

Responsibility: Norbert Rösch, Sven Wursthorn
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: Andreas Guber, Jan Gerrit Korvink
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Recurrence	Version
3	englisch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2141861	Introduction to Microsystem Technology I	Vorlesung (V)	2	Jan Gerrit Korvink

Learning Control / Examinations
written examination for implementation in a major field, 30 min oral exam for elective subject

Conditions
none

V Event excerpt: Introduction to Microsystem Technology I (WS 16/17)

Aim
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	Recurrence	Version
3	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2142874	Introduction to Microsystem Technology II	Vorlesung (V)	2	Vlad Badilita, Jan Gerrit Korvink

Learning Control / Examinations
written examination for major field, oral exam (30 min) for elective field

Conditions
none

V Event excerpt: Introduction to Microsystem Technology II (SS 2017)

Aim
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: Stefan Nickel, Steffen Rebennack, Oliver Stein
Contained in: [M-WIWI-101418] Introduction to Operations Research

ECTS	Language	Recurrence	Version
9	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2530043	Introduction to Operations Research II	Vorlesung (V)	2	Oliver Stein
WS 16/17	2530044		Tutorium (Tu)		Peter Kirst, Syrine Mejri, Oliver Stein
SS 2017	2550040	Introduction to Operations Research I	Vorlesung (V)	2+2	Steffen Rebennack

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].

V Event excerpt: Introduction to Operations Research I (SS 2017)

Aim
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

V Event excerpt: Introduction to Operations Research II (WS 16/17)

Aim
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
Integer and Combinatorial Programming: Basic notions, cutting plane metehods, branch and bound methods, branch and cut methods, heuristics.
Nonlinear Programming: Basic notions, optimality conditions, solution methods for convex and nonconvex optimization problems.
Dynamic and stochastic models and methods: dynamical programming, Bellman method, lot sizing models, dyanical and stochastic inventory models, queuing theory.

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: N.N., Johann Marius Zöllner
Contained in: [M-WIWI-101581] Introduction to Programming

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511000	Introduction to Programming with Java	Vorlesung (V)	3	Johann Marius Zöllner
WS 16/17	2511002		Tutorium (Tu)	1	Niklas Kühl, Jonas Lehner, N.N.
WS 16/17	2511004		Tutorium (Tu)	1	Niklas Kühl, Jonas Lehner, N. N.
WS 16/17	2511003		Praktische Übung (PÜ)	2	Niklas Kühl, Jonas Lehner, 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.

Remarks
see german version

V Event excerpt: Introduction to Programming with Java (WS 16/17)

Aim
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 Public Finance [T-WIWI-102877]

Responsibility: Berthold Wigger
Contained in: [M-WIWI-101403] Public Finance

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	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

V Event excerpt: Introduction to Public Finance (WS 16/17)

Aim
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: Introduction to Stochastic Optimization [T-WIWI-106546]

Responsibility: Steffen Rebennack
Contained in: [M-WIWI-101414] Methodical Foundations of OR
[M-WIWI-103278] Optimization under Uncertainty

ECTS	Recurrence	Version
4,5	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2550471		Übung (Ü)		Steffen Rebennack
SS 2017	2550470		Vorlesung (V)		Steffen Rebennack

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 every the semester.

Conditions
None.

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	Language	Recurrence	Version
9	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	6200518	Basics of Track Guided Transport Systems	Vorlesung (V)	2	Eberhard Hohnecker
SS 2017	6234802	Facilities and Rolling Stock of Public Transport	Vorlesung (V)	1	Eberhard Hohnecker
SS 2017	6234801	Operation Track Guided Systems	Vorlesung (V)	2	Eberhard Hohnecker
SS 2017	6234803	Exercises on Facilities and Rolling Stock of Public Transport	Übung (Ü)	1	Eberhard Hohnecker, Mitarbeiter/innen

Learning Control / Examinations
written exam with 90 minutes

Conditions
None

Recommendations
None

Remarks
None

V Event excerpt: Facilities and Rolling Stock of Public Transport (SS 2017)

Content
- - Gestaltung von Bahnhofsanlagen
- - Gestaltung von Abstellanlagen und Güterbahnhöfen
- - Grundlagen Traktion / elektrische Bahnanlagen
- - Grundlagen Eisenbahnfahrzeuge und Fahrzeugtechnik

Literature
Fiedler, Grundlagen der Bahntechnik, Werner-Verlag, Düsseldorf
Pachl, Systemtechnik des Schienenverkehrs, Teubner-Verlag, Stuttgart
Janicki, Fahrzeugtechnik, Eisenbahn-Fachverlag, Heidelberg

V Event excerpt: Operation Track Guided Systems (SS 2017)

Content
- Operation Systems
- International Comparison of Operating Modes
- Signalling Systems
- International Comaparison of Railway Signalling
- Basics of Operational Planning
- Railway Timetable Construction

Literature
Fiedler, Grundlagen der Bahntechnik, Werner-Verlag, Düsseldorf
Hausmann, Enders, Grundlagen des Bahnbetriebs, Bahn-Fachverlag, Heidelberg

Pachl, Systemtechnik des Schienenverkehrs, Teubner-Verlag, Stuttgar

V Event excerpt: Basics of Track Guided Transport Systems (WS 16/17)

Aim

Die Studierenden erhalten einen grundlegenden Überblick über das Fachgebiet "Spurgeführte Transportsysteme" und sind in
der Lage, Zusammenhänge zwischen den Komponenten Eisenbahnfahrweg, -fahrzeuge und -betrieb zu erkennen, zu beurteilen
und in verkehrstechnische oder städtebauliche Planungen einzubringen.

Content

- definitions and classifications
- basics of rail vehicles
- track guided operation
- railway alignment

Literature

Zilch, Diederichs, Katzenbach, Beckmann (Hrsg): Handbuch für Bauingenieure, Springer-Verlag 2012

T Course: Investments [T-WIWI-102604]

Responsibility: Marliese Uhrig-Homburg
Contained in: [M-WIWI-101435] Essentials of Finance

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2530575	Investments	Vorlesung (V)	2	Marliese Uhrig-Homburg
SS 2017	2530576		Übung (Ü)	1	Jelena Ristic, 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.

V Event excerpt: Investments (SS 2017)

Aim
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: York Sure-Vetter
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	englisch	Jedes Wintersemester	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, Tobias Weller

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

V Event excerpt: Knowledge Discovery (WS 16/17)

Aim
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: York Sure-Vetter
Contained in: [M-WIWI-101399] Emphasis Informatics
[M-WIWI-101426] Electives in Informatics

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Wintersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511301	Exercises to Knowledge Management	Übung (Ü)	1	Sebastian Bader, Andreas Harth, Rudi Studer, Andreas Thalhammer, Stefan Zander
WS 16/17	2511300	Knowledge Management	Vorlesung (V)	2	Andreas Harth, Rudi Studer, Stefan Zander

Learning Control / Examinations
The course has been renamed to "Applications of Artifical Intelligence" in summer term 2017. The examination will be offered latest until summer term 2018 (repeaters only).
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

Modeled Conditions
1 of 3 conditions must be met:

1. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.
2. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.
3. The course [T-WIWI-106564] *Applications of AI* must not have been started.

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

V Event excerpt: Knowledge Management (WS 16/17)

Aim
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: Logistics - Organisation, Design and Control of Logistic Systems [T-MACH-102089]

Responsibility: Kai Furmans
Contained in: [M-WIWI-101421] Supply Chain Management

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	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".

V Event excerpt: Logistics - Organisation, Design, and Control of Logistic Systems (SS 2017)

Aim
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

- 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	Language	Recurrence	Version
3,5	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2581996	Logistics and Supply Chain Management	Vorlesung (V)	2	Marcus Wiens

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

V Event excerpt: Logistics and Supply Chain Management (SS 2017)

Aim

- The students know the central tasks and challenges of modern logistics management.
- The students apply key concepts in the area of logistics.
- The students apply methods of risk evaluation and risk management in supply chains.
- The students know key incentive-schemes and planning-tools relevant to supply chain management.
- The students apply exemplary methods to solve practical problems.

Content

- Introduction: Basic Terms and Concepts
- Logistics Systems and Supply Chain Management
- Supply Chain Risk Management
- Extensions and Applications

Workload
Toatl effort required will account for approximately 105h (3.5 credits).

Literature
will be announced in the course

T Course: Machine Learning 1 - Basic Methods [T-WIWI-106340]

Responsibility: Johann Marius Zöllner
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	24150	Machine Learning 1 - Basic methods	Vorlesung (V)	2	Rüdiger Dillmann, Johann Marius Zöllner

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 2017/2018.

V Event excerpt: Machine Learning 1 - Basic methods (WS 16/17)

Aim

- Studierende erlangen Kenntnis der grundlegenden Methoden im Bereich des Maschinellen Lernens.
- Studierende können Methoden des Maschinellen Lernens einordnen, formal beschreiben und bewerten.
- Die Studierenden können ihr Wissen für die Auswahl geeigneter Modelle und Methoden für ausgewählte Probleme im Bereich des Maschinellen Lernens einsetzen.

Content
Das Themenfeld Wissensakquisition und Maschinelles Lernen ist ein stark expandierendes Wissensgebiet und Gegenstand zahlreicher Forschungs- und Entwicklungsvorhaben. Der Wissenserwerb kann dabei auf unterschiedliche Weise erfolgen. So kann ein System Nutzen aus bereits gemachten Erfahrungen ziehen, es kann trainiert werden, oder es zieht Schlüsse aus umfangreichem Hintergrundwissen.
Die Vorlesung behandelt sowohl symbolische Lernverfahren, wie induktives Lernen (Lernen aus Beispielen, Lernen durch Beobachtung), deduktives Lernen (Erklärungsbasiertes Lernen) und Lernen aus Analogien, als auch subsymbolische Techniken wie Neuronale Netze, Support Vektor-Maschinen, Genetische Algorithmen und Reinforcement Lernen. Die Vorlesung führt in die Grundprinzipien sowie Grundstrukturen lernender Systeme und der Lerntheorie ein und untersucht die bisher entwickelten Algorithmen. Der Aufbau sowie die Arbeitsweise lernender Systeme wird an einigen Beispielen, insbesondere aus den Gebieten Robotik, autonome mobile Systeme und Bildverarbeitung vorgestellt und erläutert.

Workload
Vorlesung mit 2 SWS, plus Nachbereitung durch die Studierenden.

T Course: Machine Learning 2 – Advanced Methods [T-WIWI-106341]

Responsibility: Johann Marius Zöllner
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511503		Übung (Ü)	1	Johann Marius Zöllner
SS 2017	2511502	Machine Learning 2 - Advanced methods	Vorlesung (V)	2	Johann Marius Zöllner

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 summer term 2017.

V Event excerpt: Machine Learning 2 - Advanced methods (SS 2017)

Aim

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

Content
The subject area of machine intelligence and, in particular, machine learning, taking into account real challenges of complex application domains, is a rapidly expanding field of knowledge and the subject of numerous research and development projects.
The lecture "Machine Learning 2" deals with advanced methods of machine learning such as semi-supervised and active learning, deep neural networks (deep learning), pulsed networks, hierarchical approaches, e.g. As well as dynamic, probabilistic relational methods. Another focus is the embedding and application of machine learning methods in real systems.
The lecture introduces the latest basic principles as well as extended basic structures and elucidates previously developed algorithms. The structure and the mode of operation of the methods and methods are presented and explained by means of some application scenarios, especially in the field of technical (sub) autonomous systems (robotics, neurorobotics, image processing, etc.).

Workload
Vorlesung mit 2 SWS, plus Nachbereitung durch die Studierenden.

Literature
Die Foliensätze sind als PDF verfügbar.
Weiterführende Literatur

- Stuart J. Russell, Peter Norvig: *'Künstliche Intelligenz: Ein moderner Ansatz'*, Pearson Studium, 2004
- Weitere (spezifische) Literatur zu einzelnen Themen wird in der Vorlesung angegeben.

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	Recurrence	Version
9	deutsch	Jedes Wintersemester	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
The assessment is carried out as an oral exam. The examination is offered every semester. Reexaminations are offered at every ordinary examination date.

Conditions
none

V Event excerpt: Machine Tools and Industrial Handling (WS 16/17)

Aim
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	Recurrence	Version
4,5	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2579901		Übung (Ü)	2	Michael Pelz, Marcus Wouters
SS 2017	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

V Event excerpt: Management Accounting 1 (SS 2017)

Aim
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	Recurrence	Version
4,5	englisch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2579903		Übung (Ü)	2	Ana Mickovic, Marcus Wouters
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.

V Event excerpt: Management Accounting 2 (WS 16/17)

Aim
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	Recurrence	Version
3,5	Jedes Sommersemester	1

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

T Course: Management of Business Networks [T-WIWI-102598]

Responsibility: Christof Weinhardt
Contained in: [M-WIWI-101421] Supply Chain Management
[M-WIWI-101434] eBusiness and Service Management

ECTS	Language	Recurrence	Version
4,5	englisch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2590453		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

V Event excerpt: Management of Business Networks (WS 16/17)

Aim
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	Recurrence	Version
3	englisch	Jedes Wintersemester	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.

V Event excerpt: Management of Business Networks (Introduction) (WS 16/17)

Aim
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	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511215		Übung (Ü)	1	Roland Schätzle
SS 2017	2511214	Management of IT-Projects	Vorlesung (V)	2	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

V Event excerpt: Management of IT-Projects (SS 2017)

Aim
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-101425] Strategy and Organization
[M-WIWI-101513] Human Resources and Organizations

ECTS	Language	Recurrence	Version
3,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2577902	Managing Organizations	Vorlesung (V)	2	Alexander Klopfer, 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

V Event excerpt: Managing Organizations (WS 16/17)

Aim
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	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2571153		Übung (Ü)	1	Martin Moosbrugger
SS 2017	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).

V Event excerpt: Managing the Marketing Mix (SS 2017)

Aim
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: Volker Schulze, Frederik Zanger
Contained in: [M-MACH-101276] Manufacturing Technology

ECTS	Language	Recurrence	Version
9	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149657	Manufacturing Technology	Vorlesung / Übung (VÜ)	6	Volker Schulze, Frederik Zanger

Learning Control / Examinations
The assessment is carried out as a written exam. The examination is offered every semester. Reexaminations are offered at every ordinary examination date.

Conditions
none

V Event excerpt: Manufacturing Technology (WS 16/17)

Aim
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-101400] Stochastic Methods and Simulation

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550679	Markov Decision Models I	Vorlesung (V)	2	André Lust, Ellen Platt, Karl-Heinz Waldmann
WS 16/17	2550681		Übung (Ü)	2	André Lust, Ellen Platt, Karl-Heinz Waldmann
WS 16/17	2550680		Übung (Ü)	2	André Lust, Ellen Platt, Karl-Heinz Waldmann

Learning Control / Examinations
The examination T-WIWI-102710 Markov Decision Models I will be offered latest until summer term 2017 (for beginners). 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

V Event excerpt: Markov Decision Models I (WS 16/17)

Aim
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	Recurrence	Version
4,5	Jedes Sommersemester	1

Learning Control / Examinations

The examination T-WIWI-102711 Markov Decision Models II will be offered latest until winter term 2016/2017 (for beginners).

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.

T Course: Material Flow in Logistic Systems [T-MACH-102151]

Responsibility: Kai Furmans
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117051	Material flow in logistic systems	Vorlesung (V)	3	Kai Furmans

Learning Control / Examinations
25% written exam at end of semester: solving a case study/ planning problem
75% assignments during the semester consisting of solving and presenting case studies, solving exercises and holding small pieces of lectures, partially in group work

Conditions
none

V Event excerpt: Material flow in logistic systems (WS 16/17)

Aim
Students are able to:

- describe material flow processes qualitativ and quantitativ,
- assign possibilities 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

Literature
Arnold, Dieter; Furmans, Kai : Materialfluss in Logistiksystemen; Springer-Verlag Berlin Heidelberg, 2009

T Course: Material Science II for Business Engineers [T-MACH-102079]

Responsibility: Michael Hoffmann
Contained in: [M-WIWI-101839] Additional Fundamentals of Engineering
[M-MACH-101262] Emphasis Materials Science
[M-MACH-101261] Emphasis in Fundamentals of Engineering

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2126782	Materials Science II for Business Engineers	Vorlesung (V)	2	Michael Hoffmann

Learning Control / Examinations
The assessment consists of a written examination (150 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination takes place every semester. Re-examinations are offered at every ordinary examination date. The examination at the end of the winter term is carried out by a written or oral exam.

Conditions
The module *Material Science* has to be completed beforehand.

Modeled Conditions
The following conditions must be met:

- The module [M-MACH-101260] *Materials Science* must have been passed.

V Event excerpt: Materials Science II for Business Engineers (SS 2017)

Aim
Students know how to read binary phase diagrams and are able to explain the microstructural evolution of metallic and ceramic materials under equillibrium and non-equillibrium conditions. They know the most important alloys of iron-, aluminium-, and copper-based materials. Students are aware of the principle structures of polymers, non metallic inorganic glasses and ceramics and are able to derive differences in materials properties

Content
The course gives an overview of different heat treatments for steels to obtain defined microstructures such as martensite or pearlite and discusses their impact on the mechanical properties. Different thermally activated processes, such as diffusion, creep, recovery and recrystallization are introduced and analyzed and terms of their relevance for materials engineering. Heat treatments and thermally activated processes are also related to aluminium and copper alloys. The second part of the course covers structure, processing and applications of polymers, nonmetallic inorganic glasses and ceramics. Finally an overview is given of the most important materials testing methods.

Workload
regular attendance: 32 hours
self-study: 118 hours

Literature
Elective literature:

- Werkstoffwissenschaften - Eigenschaften, Vorgänge, Technologien, B. Ilscher, Springer – Verlag, Berlin Heidelberg New York, ISBN 3-540-10725-5
- Werkstoffwissenschaften, Schatt, Werner / Worch, Hartmut (Hrsg.) Wiley-VCH, Weinheim, ISBN-10: 3-527-30535-1
- Metallkunde für das Maschinenwesen I/II, K.G. Schmitt-Thomas, Springer-Verlag, ISBN 3-540-51913-0
- Materials Science and Engineering – An Introduction, William D. Callister (Jr.), John Wiley & Son, ISBN-10: 978-0-471-73696-7

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	Recurrence	Version
4	deutsch	Jedes Wintersemester	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

Learning Control / Examinations
The assessment is carried out as an oral exam. The examination is offered every semester. Reexaminations are offered at every ordinary examination date.

Conditions
none

V Event excerpt: Materials and Processes for Body Lightweight Construction in the Automotive Industry (WS 16/17)

Aim
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: Materials Science I [T-MACH-102078]

Responsibility: Michael Hoffmann
Contained in: [M-MACH-101260] Materials Science

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2125760	Materials Science I	Vorlesung (V)	2	Michael Hoffmann

Learning Control / Examinations
The assessment consists of a written examination (150 min) taking place in the recess period (according to Section 4(2), 1 of the examination regulation). The examination takes place every semester. Re-examinations are offered at every ordinary examination date. The examination at the end of the summer term is carried out by a written or oral exam.

Conditions
None

V Event excerpt: Materials Science I (WS 16/17)

Aim
The student

- knows and understands the correlation between atomic structure, microstructure and related macroscopic properties (e.g. mechanical or electrical behaviour)
- has basic knowledge on materials development and characterization

Content

- Atomic structure and interatomic bonding
- Structure of crystalline solids
- Imperfections in solids
- Mechanical behaviour
- Physical properties
- Solidification
- Thermodynamics of heterogeneous systems
- Phase diagrams
- Ferrous alloys

Workload
The total workload for this course is approximately 75.0 hours. For further information see German version.

Literature
Elective literature:
Werkstoffwissenschaften - Eigenschaften, Vorgänge, Technologien, B. Ilscher, Springer – Verlag, Berlin Heidelberg New York, ISBN 3-540-10725-5
Werkstoffwissenschaften, Schatt, Werner / Worch, Hartmut (Hrsg.) Wiley-VCH, Weinheim, ISBN-10: 3-527-30535-1
Metallkunde für das Maschinenwesen I/II, K.G. Schmitt-Thomas, Springer-Verlag, ISBN 3-540-51913-0
Materials Science and Engineering – An Introduction, William D. Callister (Jr.), John Wiley & Son, ISBN-10: 978-0-471-73696-7.

T Course: Mathematics I - Final Exam [T-MATH-102261]

Responsibility: Martin Folkers, Daniel Hug, Günter Last, Steffen Winter
Contained in: [M-MATH-101676] Mathematics 1

ECTS	Version
3,5	1

Course: Mathematics I - Midterm Exam [T-MATH-102260]

Responsibility: Martin Folkers, Daniel Hug, Günter Last, Steffen Winter
Contained in: [M-MATH-101676] Mathematics 1

ECTS	Version
3,5	1

T Course: Mathematics II - Final Exam [T-MATH-102263]

Responsibility: Martin Folkers, Daniel Hug, Günter Last, Steffen Winter
Contained in: [M-MATH-101677] Mathematics 2

ECTS	Version
3,5	1

T Course: Mathematics II - Midterm Exam [T-MATH-102262]

Responsibility: Martin Folkers, Daniel Hug, Günter Last, Steffen Winter
Contained in: [M-MATH-101677] Mathematics 2

ECTS	Version
3,5	1

T Course: Mathematics III - Final Exam [T-MATH-102264]

Responsibility: Martin Folkers, Daniel Hug, Günter Last, Steffen Winter
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	Recurrence	Version
3	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2150681	Metal Forming	Vorlesung (V)	2	Thomas Herlan

Learning Control / Examinations
Oral examination

Conditions
none

V Event excerpt: Metal Forming (SS 2017)

Aim
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	Recurrence	Version
0	Jedes Sommersemester	1

T Course: Microactuators [T-MACH-101910]

Responsibility: Manfred Kohl
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2142881	Microactuators	Vorlesung (V)	2	Manfred Kohl

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: Microactuators (SS 2017)

Aim
- 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: Mobile Machines [T-MACH-105168]

Responsibility: Marcus Geimer
Contained in: [M-MACH-101267] Mobile Machines

ECTS	Language	Recurrence	Version
9	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114073	Mobile Machines	Vorlesung (V)	4	Chris Geiger, Marcus Geimer, Jan Siebert

Learning Control / Examinations
The assessment consists of an oral exam taking place in the recess period. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Conditions
none

V Event excerpt: Mobile Machines (SS 2017)

Aim
After completion of the course the students have knowledge of:

- a wide range of mobile machines
- operation modes and working cycles of important mobile machines
- selected subsystems and components

Content

- Introduction of the required components and machines
- Basics of the structure of the whole system
- Practical insight in the development techniques

Workload

- regular attendance: 42 hours
- self-study: 184 hours

T Course: Mobility and Infrastructure [T-BGU-101791]

Responsibility: Ralf Roos, Peter Vortisch
Contained in: [M-BGU-101067] Mobility and Infrastructure

ECTS	Recurrence	Version
9	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	6200406		Vorlesung (V)	2	Peter Vortisch
SS 2017	6200408		Vorlesung (V)	2	Ralf Roos, Matthias Zimmermann
SS 2017	6200404		Vorlesung (V)	2	Sebastian Wilske

Conditions
none

Recommendations
None

Remarks
None

T Course: Model Based Application Methods [T-MACH-102199]

Responsibility: Frank Kirschbaum
Contained in: [M-MACH-101303] Combustion Engines II

ECTS	Recurrence	Version
4	Jedes Sommersemester	1

Learning Control / Examinations
take-home exam, short presentation with oral examination

Conditions
none

T Course: Modeling and OR-Software: Introduction [T-WIWI-106199]

Responsibility: Stefan Nickel
Contained in: [M-WIWI-101413] Applications of Operations Research

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550490		Praktikum (P)	3	Tanya Gonser, Stefan Nickel, Melanie Reuter-Oppermann

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

V Event excerpt: (WS 16/17)

Aim
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: Modelling and Identification [T-ETIT-100699]

Responsibility: Sören Hohmann
Contained in: [M-ETIT-101156] Control Engineering

ECTS	Recurrence	Version
4	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	23168		Übung (Ü)	1	Simon Rothfuß
WS 16/17	23166		Vorlesung (V)	2	Sören Hohmann

Conditions
none

T Course: Monetary and Financial Policy [T-WIWI-102836]

Responsibility: Joachim Nagel, Berthold Wigger
Contained in: [M-WIWI-101403] Public Finance

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	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
There are no further examination dates for this course from winter term 2017/2018.
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

V Event excerpt: Monetary and Financial Policy (WS 16/17)

Aim
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: Nanotechnology with Clusterbeams [T-MACH-102080]

Responsibility: Jürgen Gspann
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2143876	Nanotechnology with Clusterbeams	Vorlesung (V)	2	Jürgen Gspann

Learning Control / Examinations
written examination
presence in more that 70% of the lectures
Duration: 1 h

aids: none

Conditions
none

V Event excerpt: Nanotechnology with Clusterbeams (WS 16/17)

Aim
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	Recurrence	Version
5	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511106		Vorlesung (V)	2	Pradyumn Kumar Shukla

Learning Control / Examinations
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

V Event excerpt: (SS 2017)

Aim
To learn:

1. Different nature-inspired methods: local search, simulated annealing, tabu search, evolutionary algorithms, ant colony optimization, particle swarm optimization
2. Different aspects and limitation of the methods
3. Applications of such methods
4. Multi-objective optimization methods
5. Constraint handling methods
6. Different aspects in parallelization and computing platforms

Content
Many optimization problems are too complex to be solved to optimality. A promising alternative is to use stochastic heuristics, based on some fundamental principles observed in nature. Examples include evolutionary algorithms, ant algorithms, or simulated annealing. These methods are widely applicable and have proven very powerful in practice. During the course, such optimization methods based on natural principles are presented, analyzed and compared. Since the algorithms are usually quite computational intensive, possibilities for parallelization are also investigated.

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-103278] Optimization under Uncertainty
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Recurrence	Version
4,5	Jedes Semester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550111		Vorlesung (V)	2	Oliver Stein
WS 16/17	2550142		Übung (Ü)		Robert Mohr, Oliver Stein
WS 16/17	2550112		Übung (Ü)		Robert Mohr, Oliver Stein

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 module component exam T-WIWI-103637 "Nonlinear Optimization I and II" may not be selected.

Modeled Conditions
The following conditions must be met:

- The course [T-WIWI-103637] *Nonlinear Optimization I und II* must not have been started.

Remarks
Part I and II of the lecture are held consecutively in the *same*semester.

V Event excerpt: (WS 16/17)

Aim
The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality condtions for unconstrained problems
- Optimality conditions for unconstrained convex problems

- Numerical methods for unconstrained problems (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

Constrained problems are the contents of part II of the lecture.
The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T Course: Nonlinear Optimization I und II [T-WIWI-103637]

Responsibility: Oliver Stein
Contained in: [M-WIWI-101414] Methodical Foundations of OR

ECTS	Recurrence	Version
9	Jedes Semester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550111		Vorlesung (V)	2	Oliver Stein
WS 16/17	2550113		Vorlesung (V)	2	Oliver Stein
WS 16/17	2550142		Übung (Ü)		Robert Mohr, Oliver Stein
WS 16/17	2550112		Übung (Ü)		Robert Mohr, Oliver Stein

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

None.

Modeled Conditions

The following conditions must be met:

1. The course [T-WIWI-102724] *Nonlinear Optimization I* must not have been started.
2. The course [T-WIWI-102725] *Nonlinear Optimization II* must not have been started.

Remarks

Part I and II of the lecture are held consecutively in the **same** semester.

V Event excerpt: (WS 16/17)

Aim

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Content

The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality condtions for unconstrained problems
- Optimality conditions for unconstrained convex problems
- Numerical methods for unconstrained problems (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

Constrained problems are the contents of part II of the lecture.
The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

V Event excerpt: (WS 16/17)

Aim
The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. Part I of the lecture treats unconstrained optimization problems. Part II of the lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions for constrained problems
- Optimality conditions for constrained convex problems
- Numerical methods for constrained problems (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T Course: Nonlinear Optimization II [T-WIWI-102725]

Responsibility: Oliver Stein
Contained in: [M-WIWI-101414] Methodical Foundations of OR

ECTS	Recurrence	Version
4,5	Jedes Wintersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550113		Vorlesung (V)	2	Oliver Stein

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 OptimizationI* [2550111]. In this case, the duration of the written exam takes 120 minutes.

Conditions
None.

Modeled Conditions
The following conditions must be met:

- The course [T-WIWI-103637] *Nonlinear Optimization I und II* must not have been started.

Remarks
Part I and II of the lecture are held consecutively in the same semester.

V Event excerpt: (WS 16/17)

Aim
The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Content
The lecture treats the minimization of smooth nonlinear functions under nonlinear constraints. For such problems, which occur very often in economics, engineering, and natural sciences, we derive optimality conditions that form the basis for numerical solution methods. Part I of the lecture treats unconstrained optimization problems. Part II of the lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions for constrained problems
- Optimality conditions for constrained convex problems
- Numerical methods for constrained problems (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by computer exercises in which you can learn the programming language MATLAB and implement and test some of the methods for practically relevant examples.

Literature
Elective literature:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T Course: Novel Actuators and Sensors [T-MACH-102152]

Responsibility: Manfred Kohl, Martin Sommer
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2141865	Novel actuators and sensors	Vorlesung (V)	2	Manfred Kohl, Martin Sommer

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: Novel actuators and sensors (WS 16/17)

Aim
- 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-101422] Specialization in Customer Relationship Management
[M-WIWI-101460] CRM and Service Management

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2540522	Operative CRM	Vorlesung (V)	2	Andreas Geyer-Schulz, Andreas Sonnenbichler
WS 16/17	2540523		Übung (Ü)	1	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 regulation and by submitting written papers as part of the exercise following §4 (2), 3 of the examination regulation (versions prior 2015) or following §4 (3) of the examination regulation (version 2015), respectively.
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 and Analytical CRM is advised.

V Event excerpt: Operative CRM (WS 16/17)

Aim

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.

Content

The Student should be able to understand and implement methods and applications within the operative CRM. This includes, but is not limited to the analysis of business processes, as a basis for improvements in CRM, and applications like call centers.

Workload

The total workload for this course is approximately 135 hours (4.5 credits):
Time of attendance

- Attending the lecture: 15 x 90min = 22h 30m
- Attending the exercise classes: 7 x 90min = 10h 30m
- Examination: 1h 00m

Self-study

- Preparation and wrap-up of the lecture: 15 x 180min = 45h 00m
- Preparing the exercises: 25h 00m
- Preparation of the examination: 31h 00m

Sum: 135h 00m

Literature

Jill Dyché. The CRM Handbook: A Business Guide to Customer Relationship Management. Addison-Wesley, Boston, 2 edition, 2002.
Ronald S. Swift. Accelerating Customer Relationships: Using CRM and RelationshipTechnologies. Prentice Hall, Upper Saddle River, 2001.

Elective literature:

Alex Berson, Kurt Thearling, and Stephen J. Smith. Building Data Mining Applications for CRM. Mc Graw-Hill, New York, 2000.
Stanley A. Brown. Customer Relationship Management: A Strategic Imperative in theWorld of E-Business. John Wiley, Toronto, 2000.
Dimitris N. Chorafas. Integrating ERP, CRM, Supply Chain Management, and SmartMaterials. Auerbach Publications, Boca Raton, Florida, 2001.
Keith Dawson. Call Center Handbook: The Complete Guide to Starting, Running, and Improving Your Call Center. CMP Books, Gilroy, CA, 4 edition, 2001.
Andreas Eggert and Georg Fassot. eCRM – Electronic Customer Relationship Management: Anbieter von CRM-Software im Vergleich. Schäffer-Poeschel, Stuttgart, 2001.
Seth Godin. Permission Marketing. Kunden wollen wählen können. FinanzBuch Verlag, München, 1999.
Paul Greenberg. CRM at the Speed of Light: Capturing and Keeping Customers in Internet Real Time. Osborne/McGraw-Hill, 3rd ed. edition, Aug 2004.
Philip Kotler. Marketing Management: Millennium Edition. Prentice Hall, Upper Saddle River, 10 edition, 2000.
Don Peppers and Martha Rogers. The One To One Future. Currency Doubleday, New York, 1997.
Duane E. Sharp. Customer Relationship Management Systems Handbook. Auerbach, 2002.
Len Silverston. The Data Model Resource Book: A Library of Universal Data Models for All Entreprises, volume 1. John Wiley & Sons, 2001.
Toby J. Teorey. Database Modeling and Design. Morgan Kaufmann, San Francisco, 3 edition, 1999.
Chris Todman. Designing a Data Warehouse : Supporting Customer Relationship Management. Prentice Hall, Upper Saddle River, 1 edition, 2001.

T Course: Optimization under uncertainty [T-WIWI-106545]

Responsibility: Steffen Rebennack

Contained in: [M-WIWI-101413] Applications of Operations Research
[M-WIWI-103278] Optimization under Uncertainty

ECTS	Recurrence	Version
5	Unregelmäßig	1

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 every the semester.

Conditions

None.

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: Personnel Policies and Labor Market Institutions [T-WIWI-102908]

Responsibility: Petra Nieken
Contained in: [M-WIWI-101513] Human Resources and Organizations
[M-WIWI-101668] Economic Policy I

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2573001	Personnel Policies and Labor Market Institutions	Vorlesung (V)	2	Petra Nieken
SS 2017	2573002		Übung (Ü)	1	Mitarbeiter, 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. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.
In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Conditions
None

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

V Event excerpt: Personnel Policies and Labor Market Institutions (SS 2017)

Aim
The student

- understands the process and role of agents in collective wage bargaining.
- analyzes strategic decisions in the context of corporate governance.
- understands the concept of co-determination in Germany.
- challenges statements that evaluate certain personnel politics.

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: PH APL-ING-TL01 [T-WIWI-106291]

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

ECTS	Recurrence	Version
3	Einmalig	1

T Course: PH APL-ING-TL02 [T-WIWI-106292]

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

ECTS	Recurrence	Version
3	Einmalig	1

T Course: PH APL-ING-TL03 [T-WIWI-106293]

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

ECTS	Recurrence	Version
3	Einmalig	1

T Course: PH APL-ING-TL04 ub [T-WIWI-106294]

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

ECTS	Recurrence	Version
0	Einmalig	1

T Course: PH APL-ING-TL05 ub [T-WIWI-106295]

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

ECTS	Recurrence	Version
0	Einmalig	1

T Course: PH APL-ING-TL06 ub [T-WIWI-106296]

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

ECTS	Recurrence	Version
0	Einmalig	1

T Course: Physical Basics of Laser Technology [T-MACH-102102]

Responsibility: Johannes Schneider
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Recurrence	Version
5	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2181612	Physical basics of laser technology	Vorlesung / Übung (VÜ)	3	Johannes Schneider

Learning Control / Examinations
oral examination (30 min)

no tools or reference materials

Conditions
Basic knowledge of physics, chemistry and material science is assumed.
It is not possible, to combine this lecture with the lecture *Laser Application in Automotive Engineering* [2182642]

V Event excerpt: Physical basics of laser technology (WS 16/17)

Aim
The student

-
- can explain the principles of light generation, the conditions for light amplification as well as the basic structure and function of different laser sources.
- can describe the influence of laser, material and process parameters for the most important methods of laser-based materials processing and choose laser sources suitable for specific applications.
- can illustrate the possible applications of laser sources in measurement and medicine technology
- can explain the requirements for safe handling of laser radiation and for the design of safe laser systems.

Content
Based on the description of the physical basics about the formation and the properties of laser light the lecture goes through the different types of laser beam sources used in industry these days. The lecture focuses on the usage of lasers especially in materials engineering. Other areas like measurement technology or medical applications are also mentioned. An excursion to the laser laboratory of the Institute for Applied Materials (IAM) will be offered.

-
- physical basics of laser technology
- laser beam sources (solid state, diode, gas, liquid and other lasers)
- beam properties, guiding and shaping
- lasers in materials processing
- lasers in measurement technology

- lasers for medical applications
- savety aspects

The lecture is complemented by a tutorial.

Workload
regular attendance: 33,5 hours
self-study: 146,5 hours

Literature
W. T. Silfvast: Laser Fundamentals, 2008, Cambridge University Press
W. M. Steen: Laser Material Processing, 2010, Springer

T Course: Physics for Engineers [T-MACH-100530]

Responsibility: Peter Gumbsch, Alexander Nesterov-Müller
Contained in: [M-MACH-101287] Microsystem Technology

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2142890	Physics for Engineers	Vorlesung (V)	2	Tobias Christoph Förtsch, Peter Gumbsch, Alexander Nesterov-Müller, Daniel Weygand

Learning Control / Examinations
written exam

Conditions
none

V Event excerpt: Physics for Engineers (SS 2017)

Aim
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	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2122376	PLM for product development in mechatronics	Vorlesung (V)		Martin Eigner

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: PLM for product development in mechatronics (SS 2017)

Aim
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	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2121357	PLM-CAD Workshop	Praktikum (P)	4	Mitarbeiter, Jivka Ovtcharova
SS 2017	2121357	PLM-CAD Workshop	Praktikum (P)	4	Mitarbeiter, Jivka Ovtcharova

Learning Control / Examinations
See module specification

Conditions
none

V Event excerpt: PLM-CAD Workshop (SS 2017)

Aim
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: Polymer Engineering I [T-MACH-102137]

Responsibility: Peter Elsner
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2173590	Polymer Engineering I	Vorlesung (V)	2	Peter Elsner, Kay Weidenmann

Learning Control / Examinations
Oral examination

Conditions
none

V Event excerpt: Polymer Engineering I (WS 16/17)

Aim
The field of Polymer Engineering includes synthesis, material science, processing, construction, design, tool engineering, production technology, surface engineering and recycling. The aim is, to equip the students with knowledge and technical skills, and to use the material "polymer" meeting its requirements in an economical and ecological way.
The students

- are able to describe and classify polymers
  based on the fundamental synthesis processing techniques
- can find practical applications for state-of-the-art polymers and manufacturing technologies
- are able to apply the processing techniques, the application of polymers and polymer composites regarding to the basic principles of material science
- can describe the special mechanical, chemical and elctrical prooperties of polymers and correlate these properties to the chemical bindings.
- can define application areas and the limitation in the use of polymers

Content
1. Economical aspects of polymers
2. Introductiom of mechanical,
chemical end electrical properties
3. Processing of polymers
(introduction)
4. Material science of polymers
5. Synthesis

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Recommended literature and selected official lecture notes are provided in the lecture

T Course: Polymerengineering II [T-MACH-102138]

Responsibility: Peter Elsner
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2174596	Polymer Engineering II	Vorlesung (V)	2	Peter Elsner, Kay Weidenmann

Learning Control / Examinations
Oral examination

Duration: 20-30 Minutes

Conditions
none

Recommendations
Knowledge in Polymerengineering I

V Event excerpt: Polymer Engineering II (SS 2017)

Aim
The field of Polymer Engineering includes synthesis, material science, processing, construction, design, tool engineering, production technology, surface engineering and recycling. The aim is, that the students gather knowledge and technical skills to use the material "polymer" meeting its requirements in an economical and ecological way.
The students

- can describe and classify different processing techniques
  and can exemplify mould design principles based on technical parts.
- know about practical applications and processing of polymer parts
- are able to design polymer parts according to given restrictions
- can choose appropriate polymers based on the technical requirements
- can decide how to use polymers regarding the production, economical and ecological requirements

Content
1. Processing of polymers
2. Properties of polymer components
Based on practical examples and components
2.1 Selection of material
2.2 Component design
2.3 Tool engineering
2.4 Production technology
2.5 Surface engineering
2.6 Sustainability, recycling

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
Recommended literature and selected official lecture notes are provided in the lecture

T Course: Power Generation [T-ETIT-101924]

Responsibility: Bernd Hoferer
Contained in: [M-ETIT-101165] Energy Generation and Network Components

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	23356		Vorlesung (V)	2	Bernd Hoferer

Conditions
none

T Course: Practical Seminar Digital Services [T-WIWI-105711]

Responsibility: Wolf Fichtner, Alexander Mädche, Stefan Nickel, Gerhard Satzger, York Sure-Vetter, Christof Weinhardt

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

ECTS	Recurrence	Version
4,5	Jedes Sommersemester	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	Recurrence	Version
3	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2143875	Introduction to Microsystem Technology - Practical Course	Praktikum (P)	2	Arndt Last
SS 2017	2143875	Introduction to Microsystem Technology - Practical Course	Praktikum (P)	2	Arndt Last

Learning Control / Examinations
The assessment consists of a written exam

Conditions
none

V Event excerpt: Introduction to Microsystem Technology - Practical Course (SS 2017)

Aim

- 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: Principles of Insurance Management [T-WIWI-102603]

Responsibility: Ute Werner
Contained in: [M-WIWI-101436] Risk and Insurance Management

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	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).
The examination will be offered latest until summer term 2017 (beginners only).

Conditions
None

Recommendations
None

V Event excerpt: Principles of Insurance Management (SS 2017)

Aim
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.

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	Recurrence	Version
4,5	Jedes Sommersemester	1

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-101425] Strategy and Organization
[M-WIWI-101513] Human Resources and Organizations

ECTS	Recurrence	Version
2	Jedes Sommersemester	1

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

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:

- The course [T-BGU-101638] *Procedures of Remote Sensing, Prerequisite* must have been passed.

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	Language	Recurrence	Version
1	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	6020244		Übung (Ü)	1	Uwe Weidner

Conditions
None

Recommendations
None

Remarks
None

T Course: Process fundamentals by the example of food production [T-CIWVT-106058]

Responsibility: Volker Gaukel
Contained in: [M-WIWI-101839] Additional Fundamentals of Engineering

ECTS	Version
3	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	22213		Vorlesung (V)	2	Volker Gaukel

Conditions
none

T Course: Product Lifecycle Management [T-MACH-105147]

Responsibility: Jivka Ovtcharova
Contained in: [M-MACH-101270] Product Lifecycle Management

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2121350	Product Lifecycle Management	Vorlesung (V)	3	Jivka Ovtcharova

Learning Control / Examinations
written examination

Conditions
none

V Event excerpt: Product Lifecycle Management (WS 16/17)

Aim
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	Recurrence	Version
3	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2500005		Vorlesung (V)	2	Roland Lerch

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: Jérémy Rimbon
Contained in: [M-WIWI-101437] Industrial Production I

ECTS	Language	Recurrence	Version
3,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2581960	Production Economics and Sustainability	Vorlesung (V)	2	Jérémy Rimbon

V Event excerpt: Production Economics and Sustainability (WS 16/17)

Aim
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	Recurrence	Version
4	deutsch	Jedes Semester	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

Learning Control / Examinations
written exam

Conditions
none

V Event excerpt: Production Technology and Management in Automotive (WS 16/17)

Aim
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	Language	Version
1	deutsch	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	6020245		Übung (Ü)	2	Assistenten, Stefan Hinz

Modeled Conditions
The following conditions must be met:

- The course [T-BGU-101638] *Procedures of Remote Sensing, Prerequisite* must have been passed.

T Course: Project Management [T-BGU-101675]

Responsibility: Shervin Haghsheno
Contained in: [M-BGU-101004] Fundamentals of construction

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	6200106		Vorlesung / Übung (VÜ)	2	Shervin Haghsheno, Harald Schneider

Learning Control / Examinations
written exam with 60 minutes

Conditions
None

Recommendations
None

Remarks
None

T Course: Project Workshop: Automotive Engineering [T-MACH-102156]

Responsibility: Michael Frey, Frank Gauterin, Martin Gießler
Contained in: [M-MACH-101266] Automotive Engineering
[M-MACH-101265] Vehicle Development
[M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2115817	Project Workshop: Automotive Engineering	Vorlesung (V)	3	Michael Frey, Frank Gauterin, Martin Gießler
SS 2017	2115817	Project Workshop: Automotive Engineering	Vorlesung (V)	3	Michael Frey, Frank Gauterin, Martin Gießler

Learning Control / Examinations
Oral examination

Conditions
none

V Event excerpt: Project Workshop: Automotive Engineering (SS 2017)

Aim
The students are familiar with typical industrial development processes and working style. They are able to apply knowledge gained at the university to a practical task. They are able to analyze and to judge complex relations. They are ready to work self-dependently, to apply different development methods and to work on approaches to solve a problem, to develop practice-oriented products or processes.

Content
During the Project Workshop Automotive Engineering a team of six persons will work on a task given by an German industrial partner using the instruments of project management. The task is relevant for the actual business and the results are intended to be industrialized after the completion of the project workshop.

The team will generate approaches in its own responsibility and will develop solutions for practical application. Coaching will be supplied by both, company and institute.

At the beginning in a start-up meeting goals and structure of the project will be specified. During the project workshop there will be weekly team meetings. Also a milestone meeting will be held together with persons from the industrial company. In a final presentation the project results will be presented to the company management and to institute representatives.

Workload
regular attendance: 49 hours
self-study:131 hours

Literature
Steinle, Claus; Bruch, Heike; Lawa, Dieter (Hrsg.), Projektmanagement, Instrument moderner Innovation, FAZ Verlag, Frankfurt a. M., 2001, ISBN 978-3929368277

The scripts will be supplied in the start-up meeting.

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: Nikolaus Marsch
Contained in: [M-INFO-101187] Elective Module Law

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	24016		Vorlesung (V)	2	Nikolaus Marsch

V Event excerpt: (WS 16/17)

Aim
Die Studierenden sollen nach der Vorlesung staatsorganisationsrechtliche Grundbegriffe sowie die Kommunikations- und Wirtschaftsfreiheiten des Grundgesetzes in ihren internationalen Bezügen kennen. Sie sollen einfache Fälle im Staatsrecht lösen können.

Content
Die Vorlesung umfasst Kernbestandteile des Verfassungsrechts. Aus dem Staatsorganisationsrecht werden die Grundprinzipien des Bundesstaaats, des Rechtsstaaats und der Demokratie im Überblick behandelt. Zudem werden die allgemeinen Grundrechtslehren vermittelt und anhand der Kommunikations- und Wirtschaftsfreiheiten des Grundgesetzes vertieft. Dabei werden auch die Bezüge zum überstaatlichen Recht (insbesondere EU-Grundrechtecharta und Europäische Menschenrechtskonvention) aufgezeigt. Die Studierenden werden zudem an die Falllösungstechnik im Öffentlichen Recht herangeführt.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt ca. 90 Stunden (3.0 Credits).

- Präsenzzeit: Besuch der Vorlesung 15 x 90 min = 22 h 30 min
- Vor-/Nachbereitung der Vorlesung 15 x 120 min = 30 h 00 min
- Skript 2 x wiederholen & 2 x 10 h = 20 h 00 min
- Prüfung vorbereiten = 17 h 30 min
- Summe 90 h 00 min

T Course: Public Law II [T-INFO-102042]

Responsibility: Nikolaus Marsch
Contained in: [M-INFO-101187] Elective Module Law

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	24520		Vorlesung (V)	2	Nikolaus Marsch

V Event excerpt: (SS 2017)

Aim
Das öffentliche Wirtschaftsrecht ist für die Steuerung der deutschen Wirtschaft von erheblicher Bedeutung. Wer die Funktionsweise hoheitlicher Eingriffe in die Marktmechanismen in einer durchnormierten Rechtsordnung verstehen will, braucht entsprechende Kenntnisse. Diese sollen in der Vorlesung vermittelt werden. Dabei soll vertieft das materielle Recht behandelt werden. Besondere formale Voraussetzungen, insb. Zuständigkeiten von Behörden, Aufsichtsmaßnahmen und die Rechtsschutzmöglichkeiten werden nur im Überblick behandelt (ergänzend zu der Veranstaltung *Öffentliches Recht I*). Die Vorlesung verfolgt primär das Ziel, den Umgang mit den einschlägigen spezialgesetzlichen Rechtsnormen einzuüben. Sie baut auf der Vorlesung *Öffentliches Recht I* auf.

Content
In einem ersten Schritt werden die wirtschaftsverfassungsrechtlichen Grundlagen (wie die Finanzverfassung und die Eigentums- und Berufsfreiheit) dargestellt. In diesem Rahmen wird auch das Zusammenspiel zwischen dem Grundgesetz und den Vorgaben des europäischen Gemeinschaftsrechts näher erläutert. Sodann werden die verwaltungsrechtlichen Steuerungsinstrumente analysiert. Als besondere Materien werden u.a. die Gewerbeordnung, das sonstige Gewerberecht (Handwerksordnung; Gaststättenrecht), die Grundzüge des Telekommunikationsgesetzes, die Förderregulierung und das Vergaberecht behandelt. Ein letzter Teil widmet sich der institutionellen Ausgestaltung der hoheitlichen Wirtschaftsregulierung.

Workload
Der Gesamtarbeitsaufwand für diese Lerneinheit beträgt ca. 90 Stunden (3.0 Credits).
\begin{tabular}{|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
\end{tabular}
\caption{Arbeitsaufwand für die Lerneinheit "Öffentliches Recht II - Öffentliches Wirtschaftsrecht"}

Literature
Wird in der Vorlesung bekannt gegeben.
Weiterführende Literatur
Wird in der Vorlesung bekannt gegeben.

T Course: Public Revenues [T-WIWI-102739]

Responsibility: Berthold Wigger
Contained in: [M-WIWI-101499] Applied Microeconomics
[M-WIWI-101403] Public Finance
[M-WIWI-101668] Economic Policy I

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	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.

V Event excerpt: Public Revenues (SS 2017)

Aim
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-MACH-101284] Specialization in Production Engineering

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2149667	Quality Management	Vorlesung (V)	2	Gisela Lanza

Learning Control / Examinations
written exam

Conditions
none

V Event excerpt: Quality Management (WS 16/17)

Aim
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: Rail System Technology [T-MACH-102143]

Responsibility: Peter Gratzfeld
Contained in: [M-MACH-101274] Rail System Technology

ECTS	Language	Recurrence	Version
9	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2115919	Rail System Technology	Vorlesung (V)	2	Peter Gratzfeld
WS 16/17	2115996	Rail Vehicle Technology	Vorlesung (V)	2	Peter Gratzfeld
WS 16/17	2115995	Project Management in Rail Industry	Vorlesung (V)	2	Peter Gratzfeld
SS 2017	2115996	Rail Vehicle Technology	Vorlesung (V)	2	Peter Gratzfeld
SS 2017	2115995		Vorlesung (V)	2	Peter Gratzfeld
SS 2017	2115919	Rail System Technology	Vorlesung (V)	2	Peter Gratzfeld

Learning Control / Examinations
Oral examination
Duration: 20 minutes
No tools or reference materials may be used during the exam.

V Event excerpt: Rail Vehicle Technology (SS 2017)

Aim
The students learn about advantages and disadvantages of different types of traction drives and judge which one fits best for each application.
They understand brakes from a vehicular and an operational point of view. They assess the fitness of different brake systems.
They know about the basics of running dynamics and bogies.
They define suitable vehicle concepts based on requirements for modern rail vehicles.

Content
Vehicle system technology: structure and main systems of rail vehicles
Drives: Electric and non-electric traction drives
Brakes: Tasks, basics, principles, brake control
Bogies: forces, running gears, axle configuration
Vehicle concepts: trams, metros, regional trains, double deck coaches, locomotives
Examples of existing rail vehicles were discussed.

Workload
Regular attendance: 21 hours
Self-study: 21 hours
Exam and preparation: 78 hours

Literature
A bibliography is available for download (Ilias-platform).

V Event excerpt: Rail System Technology (SS 2017)

Aim
The students understand relations and interdependencies between rail vehicles, infrastructure and operation in a rail system.
They can assess the suitability of existing elements in the overall system.
They deduct the fundamental requirements for rail vehicles out of it.

Content
Introduction: railyway as system, history, networks, traffic development, economic impact
Vehicle dynamics: driving resistance, tractive effort diagram, load cycles
Wheel-rail-contact: carrying of vehicle mass, adhesion, wheel guidance
Train protection: succession of trains, guideway
Traction power supply: power networks, power distribution, substations
Vehicles: definitions, compositions
Enviromental aspekt: energy consumption, traffic area, noise

Workload
Regular attendance: 21 hours
Self-study: 21 hours
Exam and preparation: 78 hours

Literature
A bibliography is available for download (Ilias-platform).

V Event excerpt: Project Management in Rail Industry (WS 16/17)

Aim
The students learn the basic of project management.
They learn about the roles of project manager and project core team.
They understand the project phases and know about processes and tools.
They understand the governance process behind.

Content
Rail vehicles are capital-intensive goods which are manufactured in small series (like aircraft). The work to done at industry and customers is organized in "projects". This is completely different to the way of working in large-scale production (like car industry). Everybody working in this type of business is part of a project and should be aware of the typical processes.
The lecturer provides a comprehensive overview about modern project management for small series of capital-intensive goods.
The content is not only valid for rail vehicles but also other areas.
The following topics will be discussed:
Introduction: definition of project and project management
Project management system: project phases, main processes and supporting processes, governance
Organization: organizational structure within a company, project organization, roles in a project organization
Main processes: project start, project plan, work brake down structure, detailed project schedule, risk and opportunity management, change management, project closure
Governance

Workload
Regular attendance: 21 hours
Self-study: 21 hours
Exam and preparation: 78 hours

Literature
A bibliography is available for download (Ilias-platform).

T Course: Real Estate Management I [T-WIWI-102744]

Responsibility: Thomas Lützkendorf
Contained in: [M-WIWI-101466] Real Estate Management

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2586401		Übung (Ü)	2	Peter Michl
WS 16/17	2586400	Real Estate Management I	Vorlesung (V)	2	Thomas Lützkendorf, 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 (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.

V Event excerpt: Real Estate Management I (WS 16/17)

Aim
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	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2585400	Real Estate Management II	Vorlesung (V)	2	Thomas Lützkendorf, Peter Michl
SS 2017	2585401		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.

V Event excerpt: Real Estate Management II (SS 2017)

Aim
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	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	6020243		Vorlesung (V)	2	Uwe Weidner
SS 2017	6020241		Vorlesung (V)	1	Stefan Hinz
SS 2017	6020244		Übung (Ü)	1	Uwe Weidner
SS 2017	6020242		Übung (Ü)	1	Uwe Weidner

Modeled Conditions
The following conditions must be met:

1. The course [T-BGU-101637] *Systems of Remote Sensing, Prerequisite* must have been passed.
2. The course [T-BGU-101638] *Procedures of Remote Sensing, Prerequisite* must have been passed.

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	Recurrence	Version
3,5	englisch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2581012	Renewable Energy – Resources, Technologies and Economics	Vorlesung (V)	2	Russell McKenna

V Event excerpt: Renewable Energy – Resources, Technologies and Economics (WS 16/17)

Aim
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, Ill.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	Recurrence	Version
4	deutsch	Jedes Wintersemester	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

V Event excerpt: Requirements Analysis and Requirements Management (WS 16/17)

Aim
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: Safe mechatronic systems [T-MACH-105277]

Responsibility: Markus Golder
Contained in: [M-MACH-101284] Specialization in Production Engineering
[M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
4	deutsch/englisch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2118077	Safe mechatronic systems	Vorlesung / Übung (VÜ)	3	Markus Golder
SS 2017	2118077	Safe mechatronic systems	Vorlesung / Übung (VÜ)	3	Markus Golder

Learning Control / Examinations
The assessment is carried out as oral exam (30min.) or written exam (60min.) (according to Section 4(2), 1 of the examination regulation). The examinations are offered every semester. Re-examinations are offered at every ordinary examination date.

Remarks
The lecture will be held in the winter term in German language and in the summer term in English language.

V Event excerpt: Safe mechatronic systems (SS 2017)

Aim
The students are capable to

- describe the general meaning of safety and safety technology
- name and apply the technical rules and standards in the area of machine safety
- define the term “risk” in a safety-related context
- describe and apply the approach of risk assessment
- distinguish and apply relevant approaches to quantify safety
- demonstrate well-established safety concepts
- describe safety functions and to validate them
- name examples of different safety-related aspects

Content
This course provides in-depth knowledge on safety technology, safety-related terminology and their definitions will be discussed and distinguished from each other. Besides an introduction on relevant technical rules and standards, the emphasis will be on their application to be capable to identify and assess risks. Thus, the quantification of safety with the help of mathematical models will be studied in details. In this respect, this course will discuss and highlight the importance of the parameters Performance Level (PL) vs. Safety Integrity Level (SIL). Especially the application of PL and SIL on real-life cases will be emphasized. Furthermore, safety concepts and their possible implementation in design will be discussed as well as safety functions of mechatronic systems. In particular, safe bus systems, safe sensors, safe actuators and safe controls will be highlighted and in this respect, a differentiation between safety systems and assistance systems will be conducted. Further examples of safe mechatronic systems from the area of material handling, drive technology, control technology or even signal transmission and processing will demonstrate the safety aspects as described above and show possible implementation approaches of integrated safety in an industrial environment.

Workload
presence 31.5h
self-study approx. 100h

Literature
Recommendations during the lecture.

T Course: Safe structures for machines in material handling [T-MACH-105200]

Responsibility: Markus Golder
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Recurrence	Version
4	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2117065	Safe structures for machines in material handling	Vorlesung / Übung (VÜ)	3	Markus Golder

Learning Control / Examinations
The assessment of this course is an oral examination (20-30 min) according to §4(2) of the examination regulation. Exam dates on appointment.

Conditions
none

Recommendations
Knowledge of the course „Basics of Technical Logistics“ are beneficial but not a requirement

V Event excerpt: Safe structures for machines in material handling (WS 16/17)

Aim
Students are capable to

- explain and apply relevant terms and their definitions like load, stress and strain
- name technical rules and standards applicable in machines for material handling
- explain and discuss the importance of safety factors and dynamic factors
- name and describe the required verification measures in design of material handling equipment
- describe the objective, approach and aspects when transferring the dynamic behaviour of a structure into an elasto-kinetic model

Content
This course discusses the safe dimensioning of structures for machines in material handling.
Using the example of industrial bridge cranes relevant terms, their definitions and relationships, as well as content from important technical rules, standards and guidelines will be discussed and demonstrated. Special attention will be put on safety factors and dynamic factors, verification measures and applicable methods with regards to the dimensioning of supporting structures.
Using selected examples (bridge cranes, tower cranes, stacker cranes), operating conditions and environmental/influencing factors on material handling system are concretized and their impacts on stress, strain, stability and fatigue strength of material handling machines are highlighted. The resulting dynamic behaviour of supporting structures will be transferred into models which illustrate the approach of determining the dynamic factors. Based on these models, the importance of simulations and its possibilities to evaluate the quality of different parameter values are highlighted.

Workload
Attendance: 32 hours
Self-study: approx. 88 hours

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	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2118087	Selected Applications of Technical Logistics	Vorlesung (V)	3	Vladimir Madzharov, Martin Mittwollen

Learning Control / Examinations
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Conditions
none

Recommendations
Knowledge out of **Basics of Technical Logistics** / **Elements and Systems of Technical Logistics** preconditioned.

V Event excerpt: Selected Applications of Technical Logistics (SS 2017)

Aim
Students are able to:

- Model the dynamic behaviour of material handling systems
- based on this calculate the dynamical behavior
- Transfer this approach autonomous to further, different material handling installations
- Discuss the knowledge with subject related persons

Content

- design and dimension of machines from intralogistics
- static and dynamic behaviour
- operation properties and specifics
- Inside practical lectures: sample applications and calculations in addition to the lectures

Workload
presence: 36h
rework: 84h

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	Recurrence	Version
6	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2118088	Selected Applications of Technical Logistics and Project	Seminar (S)	4	Vladimir Madzharov, Martin Mittwollen

Learning Control / Examinations
The assessment consists of an oral exam (20 min.) taking place in the recess period according to § 4 paragraph 2 Nr. 2 of the examination regulation.

Recommendations
Knowledge out of **Basics of Technical Logistics** / **Elements and Systems of Technical Logistics** preconditioned

V Event excerpt: Selected Applications of Technical Logistics and Project (SS 2017)

Aim
Students are able to:

- Model the dynamic behaviour of material handling systems and based on this calculate the dynamical behaviour
- Transfer this approach autonomous to further, different material handling installations,
- Discuss the knowledge with subject related persons
- 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
- Inside practical lectures: sample applications and calculations in addition to the lectures

Workload
presence: 48h
rework: 132h

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	Recurrence	Version
3	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2143892	Selected Topics on Optics and Microoptics for Mechanical Engineers	Block-Vorlesung (BV)	2	Timo Mappes

Learning Control / Examinations
Oral examination

Conditions
none

V Event excerpt: Selected Topics on Optics and Microoptics for Mechanical Engineers (SS 2017)

Aim
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: Andreas Harth, York Sure-Vetter
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511311	Exercises to Semantic Web Technologies	Übung (Ü)	1	Maribel Acosta Deibe, Andreas Harth, York Sure-Vetter
SS 2017	2511310	Semantic Web Technologies	Vorlesung (V)	2	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.

V Event excerpt: Semantic Web Technologies (SS 2017)

Aim
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: Wolf Fichtner, Hansjörg Fromm, Andreas Geyer-Schulz, Ju-Young Kim, Martin Klarmann, Peter Knauth, Hagen Lindstädt, David Lorenz, Torsten Luedecke, Thomas Lützkendorf, Alexander Mädche, Bruno Neibecker, Stefan Nickel, Petra Nieken, Martin Ruckes, Gerhard Satzger, Frank Schultmann, Thomas Setzer, Orestis Terzidis, Marliese Uhrig-Homburg, Maxim Ulrich, Christof Weinhardt, Marion Weissenberger-Eibl, Ute Werner, Marcus Wouters

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

ECTS	Language	Recurrence	Version
3	deutsch/englisch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2581976		Seminar (S)	2	Sophia Radloff, Frank Schultmann
WS 16/17	2581980		Seminar (S)	2	Dogan Keles
WS 16/17	2581981		Seminar (S)	2	Armin Ardone
WS 16/17	2530326		Vorlesung (V)	3	Ute Werner
WS 16/17	2573011		Seminar (S)	2	Mitarbeiter, Petra Nieken
WS 16/17	2500012		Seminar (S)	3	
WS 16/17	2573010		Seminar (S)	2	Mitarbeiter, Petra Nieken
WS 16/17	2581030		Seminar (S)	2	Russell McKenna, Marcus Wiens
WS 16/17	2545028		Seminar (S)	2	Alexander Tittel
WS 16/17	2581990		Seminar (S)	2	Frank Schultmann, Rebekka Volk
WS 16/17	2579905	Special Topics in Management Accounting	Seminar (S)	2	Michael Pelz, Marcus Wouters
WS 16/17	2530580		Seminar (S)	2	Mitarbeiter , Marliese Uhrig-Homburg
WS 16/17	2530395		Vorlesung (V)	3	Ute Werner
WS 16/17	2581977		Seminar (S)	2	Jérémy Rimbon, Frank Schultmann
WS 16/17	2581978		Seminar (S)	2	Frank Schultmann, Marcus Wiens
WS 16/17	2572197	Seminar in strategic and behavioral marketing	Seminar (S)		Bruno Neibecker
WS 16/17	2400013	Seminar: Energy Informatics	Seminar (S)	2	Guido Brückner, Veit Hagenmeyer, Christian Hirsch, Patrick Jochem, Hartmut Schmeck, Dorothea Wagner, Franziska Wegner
WS 16/17	2545014		Seminar (S)	3	
WS 16/17	2545020		Seminar (S)	2	Julius Parrisius
SS 2017	2581977		Seminar (S)	2	Jérémy Rimbon, Frank Schultmann
SS 2017	252579908	Seminar Management Accounting and Costing Practices	Seminar (S)	2	Michael Pelz, Marcus Wouters
SS 2017	2579904	Seminar Management Accounting	Seminar (S)	2	Michael Pelz, Marcus Wouters

SS 2017	2540524		Seminar (S)	2	Fabian Ball, Andreas Geyer-Schulz, Victoria-Anne Schweigert, Andreas Sonnenbichler
SS 2017	2530580	Seminar in Finance	Seminar (S)	2	Stefan Fiesel, Martin Hain, Michael Hofmann, Marcel Müller, Michael Reichenbacher, Jelena Ristic, Philipp Schuster, Marliese Uhrig-Homburg
SS 2017	2571180		Seminar (S)	2	Martin Klarmann
SS 2017	2545020	Entrepreneurship Basics (Track 4)	Seminar (S)	3	Markus Böhrer, Markus Lau
SS 2017	252579909	Seminar Management Accounting and Innovation	Seminar (S)	2	Michael Pelz, Marcus Wouters
SS 2017	2579905	Special Topics in Management Accounting	Seminar (S)	2	Ana Mickovic
SS 2017	2573011	Seminar Human Resource Management	Seminar (S)	2	Mitarbeiter, Petra Nieken

Learning Control / Examinations
The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015) consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

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.

V Event excerpt: Seminar Management Accounting and Costing Practices (SS 2017)

Aim
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.

V Event excerpt: Seminar Management Accounting (SS 2017)

Aim
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.

V Event excerpt: Seminar in Finance (SS 2017)

Aim
The student gets in touch with scientific work. Through profound working on a specific scientific topic the student is meant to learn the foundations of scientific research and reasoning in particular in finance.
Through the presentations in this seminar the student becomes familiar with the fundamental techniques for presentations and foundations of scientific reasoning. In addition, the student earns rhetorical skills.

Content
Within this seminar different topics of current concern are treated. These topics have their foundations in the contents of certain lectures.
The topics of the seminar are published on the website of the involved finance chairs at the end of the foregoing semester.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Will be announced at the end of the foregoing semester.

V Event excerpt: (WS 16/17)

Aim
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.

V Event excerpt: Special Topics in Management Accounting (SS 2017)

Aim
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.

V Event excerpt: Seminar in strategic and behavioral marketing (WS 16/17)

Aim
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.

V Event excerpt: Seminar: Energy Informatics (WS 16/17)

Aim
Der/die Studierende besitzt einen vertieften Einblick in Themenbereiche der Energieinformatik und hat grundlegende Kenntnisse in den Bereichen der Modellierung, Simulation und Algorithmen in Energienetzen. Ausgehend von einem vorgegebenen Thema kann er/sie mithilfe einer Literaturrecherche relevante Literatur identifizieren, auffinden, bewerten und schließlich auswerten. Er/sie kann das Thema in den Themenkomplex einordnen und in einen Gesamtzusammenhang bringen.
Er/sie ist in der Lage eine Seminararbeit (und später die Bachelor-/Masterarbeit) mit minimalem Einarbeitungsaufwand anzufertigen und dabei Formatvorgaben zu berücksichtigen, wie sie von allen Verlagen bei der Veröffentlichung von Dokumenten vorgegeben werden. Außerdem versteht er/sie das vorgegebene Thema in Form einer wissenschaftlichen Präsentation auszuarbeiten und kennt Techniken um die vorzustellenden Inhalte auditoriumsgerecht aufzuarbeiten und vorzutragen. Somit besitzt er/sie die Kenntnis wissenschaftliche Ergebnisse der Recherche in schriftlicher Form derart zu präsentieren, wie es in wissenschaftlichen Publikationen der Fall ist.

Content
Energieinformatik ist eine junges Forschungsgebiet, welches verschiedene Bereiche ausserhalb der Informatik beinhaltet wie der Wirtschaftswissenschaft, Elektrotechnik und Rechtswissenschaften. Bedingt durch die Energiewende wird vermehrt Strom aus erneuerbaren Erzeugern in das Netz eingespeist. Der Trend hin zu dezentralen und volatilen Stromerzeugung führt jedoch schon heute zu Engpässen in Stromnetzen, da diese für ein bidirektionales Szenario nicht ausgelegt wurden. Mithilfe der Energieinformatik und der dazugehörigen Vernetzung der verschiedenen Kompetenzen soll eine intelligente Steuerung der Netzinfrastruktur—von Stromverbrauchern, -erzeugern, -speichern und Netzkomponenten—zu einer umweltfreundlichen, nachhaltigen, effizienten und verlässlichen Energieversorgung beitragen.
Daher sollen im Rahmen des Seminars „Seminar: Energieinformatik“, unterschiedliche Algorithmen, Simulationen und Modellierungen bzgl. ihrer Vor- und Nachteile in den verschiedenen Bereichen der Netzinfrastruktur untersucht werden.

Workload
4 LP entspricht ca. 120 Stunden
ca. 21 Std. Besuch des Seminars,
ca. 45 Std. Analyse und Bearbeitung des Themas,
ca. 27 Std. Vorbereitung und Erstellung der Präsentation, und
ca. 27 Std. Schreiben der Ausarbeitung.

V Event excerpt: Seminar Management Accounting and Innovation (SS 2017)

Aim
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.

V Event excerpt: Seminar Human Resource Management (SS 2017)

Aim
The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Content
The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Chair.

Workload
The total workload for this course is approximately 90 hours.
Lecture 30h
Preparation of lecture 45h
Exam preparation 15h

Literature
Selected journal articles and books.

T Course: Seminar in Economics (Bachelor) [T-WIWI-103487]

Responsibility: Johannes Brumm, Jan Kowalski, Kay Mitusch, Ingrid Ott, Clemens Puppe, Johannes Philipp Reiß, Nora Szech, Berthold Wigger
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Language	Recurrence	Version
3	englisch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2560140		Seminar (S)	2	Jeroen Jannis Engel, Nora Szech
WS 16/17	2560141		Seminar (S)	2	Leonie Fütterer, Nora Szech
SS 2017	2560241		Seminar (S)		Tom Janoshalmi

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.

V Event excerpt: (WS 16/17)

Aim
The student develops an own idea for an economic experiment in this research direction.

Workload
About 90 hours.

Literature
James Heckman (fostering of young children), Ernst Fehr (egalitarianism and fairness), Uri Gneezy (gender differences), Matthias Sutter (delay of gratification), and Walter Mischel (the famous Marshmallow Experiment).

T Course: Seminar in Engineering Science (Bachelor) [T-WIWI-102755]

Responsibility: Fachvertreter ingenieurwissenschaftlicher Fakultäten
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Recurrence	Version
3	Jedes Semester	1

Learning Control / Examinations
See German version.

Conditions
See module description.

Recommendations
None

T Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]

Responsibility: Andreas Oberweis, Harald Sack, Hartmut Schmeck, York Sure-Vetter, Johann Marius Zöllner
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Language	Recurrence	Version
3	deutsch/englisch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2513305	Developing IT-based Business Models	Seminar (S)	2	Felix Leif Keppmann, Maria Maleshkova, Rudi Studer, York Sure-Vetter
WS 16/17	2512310	Smart Services and the IoT	Seminar / Praktikum (S/P)		Johannes Kunze von Bischhoffshausen, Maria Maleshkova, York Sure-Vetter, Tobias Weller
WS 16/17	2512307	Applications of Semantic MediaWiki	Seminar / Praktikum (S/P)	3	Matthias Frank, Maria Maleshkova, Achim Rettinger, Rudi Studer, York Sure-Vetter, Tobias Weller
WS 16/17	2513200		Seminar (S)	2	Timm Caporale, Jonas Lehner, Andreas Oberweis
WS 16/17	2513104		Seminar (S)	2	Marlon Braun, Christian Hirsch, Fabian Rigoll, Hartmut Schmeck
WS 16/17	2595470	Seminar Service Science, Management & Engineering	Seminar (S)	2	Wolf Fichtner, Hansjörg Fromm, Stefan Nickel, Rudi Studer, Christof Weinhardt
WS 16/17	2400013	Seminar: Energy Informatics	Seminar (S)	2	Guido Brückner, Veit Hagenmeyer, Christian Hirsch, Patrick Jochem, Hartmut Schmeck, Dorothea Wagner, Franziska Wegner
WS 16/17	2512101		Praktikum (P)	3	Andreas Drescher, Andreas Oberweis, Frederic Toussaint
WS 16/17	2512301		Seminar / Praktikum (S/P)	3	Maribel Acosta Deibe, Andreas Harth, Tobias Christof Käfer, Rudi Studer, York Sure-Vetter

SS 2017	2513300	Technology-enhanced Learning	Seminar (S)	2	Jürgen Beyerer, Klemens Böhm, Matthias Frank, Gerd Gidion, Martin Mandausch, Wolfgang Roller, Alexander Streicher, York Sure-Vetter, Daniel Szentes
SS 2017	2513306	Data Science & Real-time Big Data Analytics	Seminar (S)	2	Dominik Riemer, Suad Sejdovic, York Sure-Vetter, Ignacio Traverso Ribón
SS 2017	2512300		Seminar / Praktikum (S/P)	3	Aditya Mogadala, Achim Rettinger, York Sure-Vetter, Steffen Thoma
SS 2017	2513103		Seminar (S)	2	Marlon Braun, Fabian Rigoll, Hartmut Schmeck
SS 2017	2513208		Seminar (S)	2	Sascha Alpers, Andreas Oberweis

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.

V Event excerpt: Developing IT-based Business Models (WS 16/17)

Aim
The Student

- analyzes and develops in small teams a business model from an idea to a complete business plan or
- treats a special topic from the area of Semantic Web in businesses and entrepreneurships.
- learns about basic concepts and problem areas and considers these while building the business plan for a particular business idea.
- understands and considers the viewpoints of different stakeholders in the area of entrepreneurships and their influences on an own business idea.

Content
Semantic technologies such as RDF, SPARQL, OWL, and RIF are still standardised only in their first versions. Still, the multitude of integrated technologies provides the basis for development of new applications and creates, with the help of

the initial standardisations, a foundation for attracting investors. The potential and future developments in the field are exemplified by the growing popularity and importance of data, being published as Linked Data, as well as by the increase in applications developed outside the scope of research. The seminar "Developing Business Models for the Semantic Web" aims to explore these opportunities for new business models und business ventures.
The seminar takes place on a weekly basis and consists of two main parts. The first part is a series of presentations, held by external experts who share their experience in the area of entrepreneurship. The aim is to engage a wide variety of presenters, including applicants to programs for supporting young business ventures, startup founders, and people in leadership positions in established companies. Further guest lecturers include experts in the field of business and startup development, tax and enterprise law, as well as entrepreneurs, who have sold their startups or had to give up their ideas.
The second part consists of the contributions of seminar participants. They are required to develop a business model, starting with the initial idea and building it up to a complete business plan. This development process is accompanied by feedback sessions, pitches, mid-term presentations and a final presentation. The student presentations alternate with presentations given by external experts. Furthermore, besides on the development of a business plan, student can work on a specific topic such as "Analysing Existing Business Models on the Web" or "Using Open Source in Startups".
The seminar pass can be obtained by submitting a completed seminar thesis (i.e. the business plan or the specific topic) and by regularly attending the seminar presentations.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

V Event excerpt: Smart Services and the IoT (WS 16/17)

Content
Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

V Event excerpt: 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

V Event excerpt: (SS 2017)

Content
Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

Literature
Detailed references are indicated together with the respective subjects. For general background information look up the following textbooks:

- Mitchell, T.; Machine Learning
- McGraw Hill, Cook, D.J. and Holder, L.B. (Editors) Mining Graph Data, ISBN:0-471-73190-0
- Wiley, Manning, C. and Schütze, H.; Foundations of Statistical NLP, MIT Press, 1999.

V Event excerpt: Seminar Service Science, Management & Engineering (WS 16/17)

Aim

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.

V Event excerpt: Seminar: Energy Informatics (WS 16/17)

Aim

Der/die Studierende besitzt einen vertieften Einblick in Themenbereiche der Energieinformatik und hat grundlegende Kenntnisse in den Bereichen der Modellierung, Simulation und Algorithmen in Energienetzen. Ausgehend von einem vorgegebenen Thema kann er/sie mithilfe einer Literaturrecherche relevante Literatur identifizieren, auffinden, bewerten und schließlich auswerten. Er/sie kann das Thema in den Themenkomplex einordnen und in einen Gesamtzusammenhang bringen.
Er/sie ist in der Lage eine Seminararbeit (und später die Bachelor-/Masterarbeit) mit minimalem Einarbeitungsaufwand anzufertigen und dabei Formatvorgaben zu berücksichtigen, wie sie von allen Verlagen bei der Veröffentlichung von Dokumenten vorgegeben werden. Außerdem versteht er/sie das vorgegebene Thema in Form einer wissenschaftlichen Präsentation auszuarbeiten und kennt Techniken um die vorzustellenden Inhalte auditoriumsgerecht aufzuarbeiten und vorzutragen. Somit besitzt er/sie die Kenntnis wissenschaftliche Ergebnisse der Recherche in schriftlicher Form derart zu präsentieren, wie es in wissenschaftlichen Publikationen der Fall ist.

Content

Energieinformatik ist eine junges Forschungsgebiet, welches verschiedene Bereiche ausserhalb der Informatik beinhaltet wie der Wirtschaftswissenschaft, Elektrotechnik und Rechtswissenschaften. Bedingt durch die Energiewende wird vermehrt Strom aus erneuerbaren Erzeugern in das Netz eingespeist. Der Trend hin zu dezentralen und volatilen Stromerzeugung führt jedoch schon heute zu Engpässen in Stromnetzen, da diese für ein bidirektionales Szenario nicht ausgelegt wurden. Mithilfe der Energieinformatik und der dazugehörigen Vernetzung der verschiedenen Kompetenzen soll eine intelligente Steuerung der Netzinfrastruktur—von Stromverbrauchern, -erzeugern, -speichern und Netzkomponenten—zu einer umweltfreundlichen, nachhaltigen, effizienten und verlässlichen Energieversorgung beitragen.
Daher sollen im Rahmen des Seminars „Seminar: Energieinformatik“, unterschiedliche Algorithmen, Simulationen und Modellierungen bzgl. ihrer Vor- und Nachteile in den verschiedenen Bereichen der Netzinfrastruktur untersucht werden.

Workload

4 LP entspricht ca. 120 Stunden
ca. 21 Std. Besuch des Seminars,
ca. 45 Std. Analyse und Bearbeitung des Themas,
ca. 27 Std. Vorbereitung und Erstellung der Präsentation, und

ca. 27 Std. Schreiben der Ausarbeitung.

V Event excerpt: (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: Martin Folkers, Günter Last
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Version
3	1

T Course: Seminar in Operations Research (Bachelor) [T-WIWI-103488]

Responsibility: Stefan Nickel, Oliver Stein, Karl-Heinz Waldmann
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550491	Seminar: Recent Topics in OR	Seminar (S)		Mitarbeiter , Stefan Nickel, Anne Zander
WS 16/17	2550461		Seminar (S)		Steffen Rebennack, Oliver Stein
WS 16/17	2550131		Seminar (S)		Peter Kirst, Robert Mohr, Marcel Sinske, Oliver Stein
SS 2017	2550132		Seminar (S)	2	Peter Kirst, Robert Mohr, Christoph Neumann, Oliver Stein
SS 2017	2500003	Seminar: Recent Topics in OR	Seminar (S)		Mitarbeiter , Stefan Nickel, Anne Zander
SS 2017	2550491	Seminar: Recent Topics in OR	Block (B)		Mitarbeiter , Stefan Nickel
SS 2017	2550472		Seminar (S)		Steffen Rebennack, Bismark Singh
SS 2017	2550131		Seminar (S)		Peter Kirst, Robert Mohr, Christoph Neumann, Oliver Stein

Learning Control / Examinations
The non examassessment (§4(2), 3 SPO 2007) or alternative exam assessment (§ 4(2), 3 SPO 2015)consists of

- a talk about the research topic of the seminar together with discussion,
- a written summary about the major issues of the topic and
- attending the discussions of the seminar

The grade is achieved by the weighted sum of the grades.

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.

V Event excerpt: Seminar: Recent Topics in OR (SS 2017)

Aim
The student

- illustrates and evaluates classic and current research questions in discrete optimization,
- applies optimization models and algorithms in discrete optimization, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management),
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Content
The topics of the seminar will be announced at the beginning of the term in a preliminaty meeting. Dates will be announced on the internet.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Literature and relevant sources will be announced at the beginning of the seminar.

V Event excerpt: Seminar: Recent Topics in OR (SS 2017)

Aim
The student

- illustrates and evaluates classic and current research questions in discrete optimization,
- applies optimization models and algorithms in discrete optimization, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management),
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Content
The topics of the seminar will be announced at the beginning of the term in a preliminaty meeting. Dates will be announced on the internet.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
Literature and relevant sources will be announced at the beginning of the seminar.

V Event excerpt: (WS 16/17)

Aim
The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.
The student is introduced to the style of scientific work. By focussed treatment of a scientific topic the student learns the basics of scientific investigation and reasoning.
For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.
With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientifc reasoning. Also rethoric abilities may be improved.

Content
The current seminar topics are announced under http://kop.ior.kit.edu at the end of the preceding semester.

Workload
The total workload for this course is approximately 90 hours. For further information see German version.

Literature
References and relevant sources are announced at the beginning of the seminar.

T Course: Seminar in Statistics (Bachelor) [T-WIWI-103489]

Responsibility: Oliver Grothe, Melanie Schienle
Contained in: [M-WIWI-101816] Seminar Module

ECTS	Recurrence	Version
3	Jedes Semester	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	Recurrence	Version
3	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2400125		Seminar (S)	2	Franziska Boehm
SS 2017	2400088		Seminar (S)	2	Franziska Boehm, Thomas Hartmann, Fabian Rack
SS 2017	24820	Current Issues in Patent Law	Seminar (S)	2	Klaus-Jürgen Melullis
SS 2017	2400041	Governance, Risk & Compliance	Seminar (S)	2	Andreas Herzig

V Event excerpt: Current Issues in Patent Law (SS 2017)

Aim

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.

V Event excerpt: Governance, Risk & Compliance (SS 2017)

Aim

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.

T Course: Service Oriented Computing [T-WIWI-105801]

Responsibility: York Sure-Vetter
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	deutsch/englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511309	Exercises to Service Oriented Computing	Übung (Ü)	1	Felix Leif Keppmann, Maria Maleshkova, York Sure-Vetter
SS 2017	2511308	Service Oriented Computing	Vorlesung (V)	2	Maria Maleshkova, 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.

Conditions
None

V Event excerpt: Service Oriented Computing (SS 2017)

Aim
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: Ju-Young Kim, Martin Klarmann
Contained in: [M-WIWI-101424] Foundations of Marketing

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2572158	Services Marketing and B2B Marketing	Vorlesung (V)	2	Ju-Young Kim, 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).

V Event excerpt: Services Marketing and B2B Marketing (WS 16/17)

Aim
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-101400] Stochastic Methods and Simulation
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Recurrence	Version
4,5	Jedes Sommersemester	1

Learning Control / Examinations
The examination Simulation I will be offered latest until winter term 2016/2017 (for beginners).
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.

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	Recurrence	Version
4,5	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2550665		Vorlesung (V)	2	André Lust, Ellen Platt, Karl-Heinz Waldmann
WS 16/17	2550666		Übung (Ü)		Karl-Heinz Waldmann
WS 16/17	2550667		Übung (Ü)		Karl-Heinz Waldmann

Learning Control / Examinations
The examination T-WIWI-102703 Simulation II will be offered latest until summer term 2017 (for beginners).
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.

V Event excerpt: (WS 16/17)

Aim
The participants will be enabled to model and analyze discrete event systems that underlie stochastic influences with efficient simulation techniques. The discussion of practice-oriented case studies illustrates the limits of standard simulation techniques for stochastic discrete event systems regarding the simulation effort to obtain statistical significant results. Variance reducing techniques will be introduced in theory as modern and efficient techniques and will be exemplified by examples from quality management, financial engineering and insurance. The main scope of the applications discussed in the course is the efficient simulation of stochastic processes. The facultative computer exercise course under utilization of the programming language Java comprises a practice-oriented case study, in which the participants implement certain variance reducing techniques in order to analyze the reduction in computer effort in comparison to standard techniques.

Content
Variance reducing techniques, simulation of sochastic processes, case studies.

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

T Course: Simulation of Coupled Systems [T-MACH-105172]

Responsibility: Marcus Geimer
Contained in: [M-MACH-101265] Vehicle Development
[M-MACH-101267] Mobile Machines

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114095	Simulation of Coupled Systems	Vorlesung (V)	2	Marcus Geimer, Marco Wydra

Learning Control / Examinations
oral exam

Conditions
none

V Event excerpt: Simulation of Coupled Systems (SS 2017)

Aim
After completion of the course, students are able to:

- building a coupled simulation
- parameterize models
- Perform simulations
- do Troubleshooting
- check results for plausibility

Content

- Knowledge of the basics of multi-body and hydraulic simulation programs
- Possibilities of coupled simulations
- Development of a simulation model by using the example of a wheel loader
- Documentation of the result in a short report

Workload

- regular attendance: 21 hours
- total self-study: 92 hours

Literature
Elective literature:

- miscellaneous guides according the software-tools pdf-shaped
- information to the wheel-type loader

T Course: Social Structures of Modern Societies [T-GEISTSOZ-101959]

Responsibility: Gerd Nollmann
Contained in: [M-GEISTSOZ-101167] Sociology/Empirical Social Research

ECTS	Recurrence	Version
4	Jedes Wintersemester	1

T Course: Software Engineering [T-WIWI-100809]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101399] Emphasis Informatics
[M-WIWI-101426] Electives in Informatics

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	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

Modeled Conditions
1 of 2 conditions must be met:

1. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.
2. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.

V Event excerpt: Software Engineering (SS 2017)

Aim
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 Quality Management [T-WIWI-102895]

Responsibility: Andreas Oberweis
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511208	Software Quality Management	Vorlesung (V)	2	Andreas Oberweis
SS 2017	2511209		Übung (Ü)	1	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".

V Event excerpt: Software Quality Management (SS 2017)

Aim
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	Recurrence	Version
4,5	Jedes Sommersemester	1

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	Recurrence	Version
4,5	Jedes Semester	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: Andreas Oberweis, Hartmut Schmeck, York Sure-Vetter
Contained in: [M-WIWI-101399] Emphasis Informatics
[M-WIWI-101426] Electives in Informatics

ECTS	Recurrence	Version
5	Jedes Semester	2

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

Modeled Conditions
1 of 2 conditions must be met:

1. The module [M-WIWI-101417] *Foundations of Informatics* must have been passed.
2. The module [M-WIWI-101581] *Introduction to Programming* must have been passed.

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	Recurrence	Version
5	Jedes Semester	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	Recurrence	Version
5	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511224		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: York Sure-Vetter
Contained in: [M-WIWI-101630] Electives in Informatics
[M-WIWI-101628] Emphasis in Informatics

ECTS	Recurrence	Version
5	Jedes Semester	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	Recurrence	Version
5	Jedes Semester	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-101423] Topics in Finance II
[M-WIWI-101465] Topics in Finance I
[M-WIWI-101403] Public Finance

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Wintersemester	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.

V Event excerpt: Specific Aspects in Taxation (WS 16/17)

Aim
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-101599] Statistics and Econometrics

ECTS	Recurrence	Version
4,5	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2521350		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]

V Event excerpt: (WS 16/17)

Aim
The student

- shows comprehensive knowledge of regression techniques

Workload
The total workload for this course is approximately 135 hours (4.5 credits).
regular attendance: 30 hours
self-study: 65 hours
exam preparation: 40 hours

T Course: Statistics I [T-WIWI-102737]

Responsibility: Oliver Grothe, Melanie Schienle
Contained in: [M-WIWI-101432] Introduction to Statistics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2600013		Übung (Ü)	2	Melanie Schienle, Carlo Siebenschuh, Veit Wild
SS 2017	2600008	Statistics I	Vorlesung (V)	4	Melanie Schienle

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

V Event excerpt: Statistics I (SS 2017)

Aim
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: Oliver Grothe, Melanie Schienle
Contained in: [M-WIWI-101432] Introduction to Statistics

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2610020	Statistics II	Vorlesung (V)	4	Oliver Grothe
WS 16/17	2610021		Tutorium (Tu)	2	Oliver Grothe, Steffen Seger, Carlo Siebenschuh

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].

V Event excerpt: Statistics II (WS 16/17)

Aim
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	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511602	Strategic Management of Information Technology	Vorlesung (V)	2	Thomas Wolf
SS 2017	2511603		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

V Event excerpt: Strategic Management of Information Technology (SS 2017)

Aim
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: Structural and Phase Analysis [T-MACH-102170]

Responsibility: Susanne Wagner
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2125763	Structural and phase analysis	Vorlesung (V)	2	Susanne Wagner

Learning Control / Examinations
Oral examination

Conditions
none

V Event excerpt: Structural and phase analysis (WS 16/17)

Aim
The students know the fundamentals of crystallography, the generation and detection of x-rays as well as their interaction with the microstructure of crystalline materials. They have detailed knowledge about the different methods of x-ray diffraction measurements and are able to analyse x-ray spectra using modern methods of x-ray analysis both qualitatively and quantitatively.

Content
The course gives an overview to generation and detection of x-rays as well as their interaction with matter. It provides an introduction to crystallography and describes modern measurement and analysis methods of x-ray diffraction.
It is arranged in the following units:

- Generation and properties of X-Ray's
- Crystallography
- Fundamentals and application of different measuring methods
- Qualitative and quantitative phase analysis
- Texture analysis (pole figures)
- Residual stress measurements

Workload
regular attendance: 30 hours
self-study: 90 hours

Literature

1. Moderne Röntgenbeugung - Röntgendiffraktometrie für Materialwissenschaftler, Physiker und Chemiker, Spieß, Lothar / Schwarzer, Robert / Behnken, Herfried / Teichert, Gerd B.G. Teubner Verlag 2005
2. H. Krischner: Einführung in die Röntgenfeinstrukturanalyse. Vieweg 1990.
3. B.D. Cullity and S.R. Stock: Elements of X-ray diffraction. Prentice Hall New Jersey, 2001.

T Course: Structural Ceramics [T-MACH-102179]

Responsibility: Michael Hoffmann
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Semester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2126775	Structural Ceramics	Vorlesung (V)	2	Michael Hoffmann

Learning Control / Examinations
Oral examination

Conditions
none

V Event excerpt: Structural Ceramics (SS 2017)

Aim
The students know the most relevant structural ceramics (silicon carbide, silicon nitride, alumina, boron nitride, zirconia, fibre-reinforced ceramics) and their applications. They are familar with the microstructural features, fabrication methods, and mechanical properties.

Content
The lecture gives an overview on structure and properties of the technical relevant structural ceramics silicon nitride, silicon carbide, alumina, zirconia, boron nitride and fibre-reinforced ceramics. All types of structural ceramics will be discussed in detail in terms of preparation methods of the raw materials, shaping techniques, densification, microstructural development, mechanical properties and application fields.

Workload
regular attendance: 21 hours
self-study: 99 hours

Literature
W.D. Kingery, H.K. Bowen, D.R. Uhlmann, "Introduction to Ceramics", John Wiley & Sons, New York, (1976)

E. Dörre, H. Hübner, "Aluminia", Springer Verlag Berlin, (1984)

M. Barsoum, "Fundamentals of Ceramics", McGraw-Hill Series in Material Science and Enginewering (2003)

T Course: System Dynamics and Control Engineering [T-ETIT-101921]

Responsibility: Sören Hohmann
Contained in: [M-ETIT-101156] Control Engineering

ECTS	Language	Recurrence	Version
6	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2315701		Tutorium (Tu)		Lukas Kölsch

Conditions
none

T Course: Systematic Materials Selection [T-MACH-100531]

Responsibility: Stefan Dietrich
Contained in: [M-MACH-101262] Emphasis Materials Science

ECTS	Language	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2174576	Systematic Materials Selection	Vorlesung (V)	3	Stefan Dietrich
SS 2017	2174577		Übung (Ü)	1	Stefan Dietrich, Mitarbeiter

Learning Control / Examinations
written exam

V Event excerpt: Systematic Materials Selection (SS 2017)

Aim
The students are able to select the best material for a given application. They are proficient in selecting materials on base of performance indices and materials selection charts. They can identify conflicting objectives and find sound compromises. They are aware of the potential and the limits of hybrid material concepts (composites, bimaterials, foams) and can determine whether following such a concept yields a useful benefit.

Content
Important aspects and criteria of materials selection are examined and guidelines for a systematic approach to materials selection are deeloped. The following topics are covered:

- Information and introduction
- Necessary basics of materials
- Selected methods / approaches of the material selection
- Examples for material indices and materials property charts
- Trade-off and shape factors
- Sandwich materials and composite materials
- High temperature alloys
- Regard of process influences
- Material selection for production lines
- Incorrect material selection and the resulting consequences
- Abstract and possibility to ask questions

Workload
regular attendance: 33 hours
self-study: 87 hours

Literature
Lecture notes; Problem sheets; Textbook: M.F. Ashby, A. Wanner (Hrsg.), C. Fleck (Hrsg.);
Materials Selection in Mechanical Design: Das Original mit Übersetzungshilfen
Easy-Reading-Ausgabe, 3. Aufl., Spektrum Akademischer Verlag, 2006
ISBN: 3-8274-1762-7

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	Language	Recurrence	Version
1	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	6020242		Übung (Ü)	1	Uwe Weidner

Conditions
None

Recommendations
None

Remarks
None

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-103278] Optimization under Uncertainty
[M-WIWI-101840] Stochastic Methods and Simulation

ECTS	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	2

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2550487		Übung (Ü)	1	Stefan Nickel, Brita Rohrbeck
SS 2017	2550486		Vorlesung (V)	2	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.

Recommendations
None

Remarks
The lecture is held in every summer term. The planned lectures and courses for the next three years are announced online.

V Event excerpt: (SS 2017)

Aim
The student

- gathers expertise in fundamental techniques from procurement and distribution logistics, methods from inventory management and lot sizing,
- acquires the ability to efficiently utilize quantitative models from transportation planning (long-distance and distribution planning), inventory management and lot sizing in production,
- applies the introduced methods in more detail and in industry-relevant case-studies.

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: Tires and Wheel Development for Passenger Cars [T-MACH-102207]

Responsibility: Günter Leister
Contained in: [M-MACH-101265] Vehicle Development

ECTS	Recurrence	Version
3	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114845	Tires and Wheel Development for Passenger Cars	Vorlesung (V)	2	Günter Leister

Learning Control / Examinations
Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Tires and Wheel Development for Passenger Cars (SS 2017)

Aim
The students are informed about the interactions of tires, wheels and chassis. They have an overview of the processes regarding the tire and wheel development. They have knowledge of the physical relationships.

Content

1. The role of the tires and wheels in a vehicle
2. Geometrie of Wheel and tire, Package, load capacity and endurance, Book of requirement
3. Mobility strategy, Minispare, runflat systems and repair kit.
4. Project management: Costs, weight, planning, documentation
5. Tire testing and tire properties
6. Wheel technology incuding Design and manifacturing methods, Wheeltesting
7. Tire presssure: Indirect and direct measuring systems
8. Tire testing subjective and objective

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature
Manuscript to the lecture

T Course: Vehicle Comfort and Acoustics I [T-MACH-105154]

Responsibility: Frank Gauterin
Contained in: [M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2113806	Vehicle Comfort and Acoustics I	Vorlesung (V)	2	Frank Gauterin

Learning Control / Examinations
Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Conditions
Can not be combined with lecture T-MACH-102206

Modeled Conditions
The following conditions must be met:

- The course [T-MACH-102206] *Vehicle Ride Comfort & Acoustics I* must not have been started.

V Event excerpt: Vehicle Comfort and Acoustics I (WS 16/17)

Aim
The students know what noises and vibrations mean, how they are generated, and how they are perceived by human beings.
They have knowledge about the requirements given by users and the public. They know which components of the vehicle are participating in which way on noise and vibration phenomenon and how they could be improved. They are ready to apply different tools and methods to analyze relations and to judge them. They are able to develop the chasis regarding driving comfort and acoustic under consideration of goal conflicts.

Content
1. Perception of noise and vibrations

3. Fundamentals of acoustics and vibrations

3. Tools and methods for measurement, computing, simulation and analysis of noise and vibrations

4. The relevance of tire and chasis for the acoustic and mechanical driving comfort:
phenomena, influencing parameters, types of construction, optimization of components and systems, conflict of goals, methods of development

An excursion will give insights in the development practice of a car manufacturer or a system supplier.

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature
1. Michael Möser, Technische Akustik, Springer, Berlin, 2005

2. Russel C. Hibbeler, Technische Mechanik 3, Dynamik, Pearson Studium, München, 2006

3. Manfred Mitschke, Dynamik der Kraftfahrzeuge, Band B: Schwingungen, Springer, Berlin, 1997

The script will be supplied in the lectures

T Course: Vehicle Comfort and Acoustics II [T-MACH-105155]

Responsibility: Frank Gauterin
Contained in: [M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114825	Vehicle Comfort and Acoustics II	Vorlesung (V)	2	Frank Gauterin

Learning Control / Examinations
Oral Examination

Duration: 30 up to 40 minutes

Auxiliary means: none

Conditions
Can not be combined with lecture T-MACH-102205

Modeled Conditions
The following conditions must be met:

- The course [T-MACH-102205] *Vehicle Ride Comfort & Acoustics II* must not have been started.

V Event excerpt: Vehicle Comfort and Acoustics II (SS 2017)

Aim
The students have knowledge about the noise and vibration properties of the chassis components and the drive train. They know what kind of noise and vibration phenomena do exist, what are the generation mechanisms behind, which components of the vehicle participate in which way and how could they be improved. They have knowledge in the subject area of noise emission of automobiles: Noise impact, legal requirements, sources and influencing parameters, component and system optimization, target conflicts and development methods. They are ready to analyze, to judge and to optimize the vehicle with its single components regarding acoustic and vibration phenomena. They are also able to contribute competently to the development of a vehicle regarding the noise emission.

Content
1. Summary of the fundamentals of acoustics and vibrations

2. The relevance of road surface, wheel imperfections, springs, dampers, brakes, bearings and bushings, suspensions, engines and drive train for the acoustic and mechanical driving comfort:
- phenomena
- influencing parameters
- types of construction
- optimization of components and systems
- conflicts of goals
- methods of development
3. Noise emission of motor vehicles
- noise stress
- sound sources and influencing parameters

- legal restraints
- optimization of components and systems
- conflict of goals
- methods of development

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature
The script will be supplied in the lectures.

T Course: Vehicle Mechatronics I [T-MACH-105156]

Responsibility: Dieter Ammon
Contained in: [M-MACH-101265] Vehicle Development
[M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Language	Recurrence	Version
3	deutsch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2113816	Vehicle Mechatronics I	Vorlesung (V)	2	Dieter Ammon

Learning Control / Examinations
Written examination

Duration: 90 minutes

Auxiliary means: none

Conditions
none

V Event excerpt: Vehicle Mechatronics I (WS 16/17)

Aim
The students have an overview of the system science field of mechatronics and its application in the area of vehicle conception, especially in the context of vehicle system dynamics. They know the tools and methods for a systematical analysis, conception, and design of mechatronic systems, focussing on mechatronically extended suspension systems. They are ready to analyze, to judge and to optimize mechatronic systems.

Content
1. Introduction: Mechatronics in vehicle technology
2. Vehicle Control systems
Brake- and traction controls (ABS, ASR, automated power train controls)
Active and semiactive suspension systems, active stabilizor bars
Vehicle dynamics controls, driver assistence systems
3. Modelling technology
Mechanics - multi body dynamics
Electrical and electronical systems, control systems
Hydraulics
Interdisciplinary coupled systems
4. Computer simulation technology
Numerical integration methods
Quality (validation, operating areas, accuracy, performance)
Simulator-coupling (hardware-in-the-loop, software-in-the-loop)
5. Systemdesign (example: brake control)
Demands, requirements (funktion, safety, robustness)
Problem setup (analysis - modelling - model reduction)
Solution approaches
Evaluation (quality, efficiency, validation area, concept ripeness)

Workload
regular attendance: 22,5 hours

self-study: 97,5 hours

Literature

1. Ammon, D., Modellbildung und Systementwicklung in der Fahrzeugdynamik, Teubner, Stuttgart, 1997
2. Mitschke, M., Dynamik der Kraftfahrzeuge, Bände A-C, Springer, Berlin, 1984ff
3. Miu, D.K., Mechatronics - Electromechanics and Contromechanics, Springer, New York, 1992
4. Popp, K. u. Schiehlen, W., Fahrzeugdynamik - Eine Einführung in die Dynamik des Systems Fahrzeug-Fahrweg, Teubner, Stuttgart, 1993
5. Roddeck, W., Einführung in die Mechatronik, Teubner, Stuttgart, 1997
6. Zomotor, A., Fahrwerktechnik: Fahrverhalten, Vogel, Würzburg, 1987

T Course: Vehicle Ride Comfort & Acoustics I [T-MACH-102206]

Responsibility: Frank Gauterin
Contained in: [M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Language	Recurrence	Version
4	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114856	Vehicle Ride Comfort & Acoustics I	Vorlesung (V)	2	Frank Gauterin

Learning Control / Examinations
Oral examination

Conditions
Can not be combined with lecture Fahrzeugkomfort und -akustik I T-MACH-105154

V Event excerpt: Vehicle Ride Comfort & Acoustics I (SS 2017)

Aim
The students know what noises and vibrations mean, how they are generated, and how they are perceived by human beings.
They have knowledge about the requirements given by users and the public. They know which components of the vehicle are participating in which way on noise and vibration phenomenon and how they could be improved. They are ready to apply different tools and methods to analyze relations and to judge them. They are able to develop the chasis regarding driving comfort and acoustic under consideration of goal conflicts.

Content
1. Perception of noise and vibrations

3. Fundamentals of acoustics and vibrations

3. Tools and methods for measurement, computing, simulation and analysis of noise and vibrations

4. The relevance of tire and chasis for the acoustic and mechanical driving comfort:
phenomena, influencing parameters, types of construction, optimization of components and systems, conflict of goals, methods of development

An excursion will give insights in the development practice of a car manufacturer or a system supplier.

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature
1. Michael Möser, Technische Akustik, Springer, Berlin, 2005

2. Russel C. Hibbeler, Technische Mechanik 3, Dynamik, Pearson Studium, München, 2006

3. Manfred Mitschke, Dynamik der Kraftfahrzeuge, Band B: Schwingungen, Springer, Berlin, 1997

The script will be supplied in the lectures

T Course: Vehicle Ride Comfort & Acoustics II [T-MACH-102205]

Responsibility: Frank Gauterin
Contained in: [M-MACH-101264] Handling Characteristics of Motor Vehicles

ECTS	Language	Recurrence	Version
4	englisch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2114857	Vehicle Ride Comfort & Acoustics II	Vorlesung (V)	2	Frank Gauterin

Learning Control / Examinations
Oral examination

Conditions
Can not be combined with lecture Fahrzeugkomfort und -akustik II T-MACH-105155

V Event excerpt: Vehicle Ride Comfort & Acoustics II (SS 2017)

Aim
The students have knowledge about the noise and vibration properties of the chassis components and the drive train. They know what kind of noise and vibration phenomena do exist, what are the generation mechanisms behind, which components of the vehicle participate in which way and how could they be improved. They have knowledge in the subject area of noise emission of automobiles: Noise impact, legal requirements, sources and influencing parameters, component and system optimization, target conflicts and development methods. They are ready to analyze, to judge and to optimize the vehicle with its single components regarding acoustic and vibration phenomena. They are also able to contribute competently to the development of a vehicle regarding the noise emission.

Content
1. Summary of the fundamentals of acoustics and vibrations

2. The relevance of road surface, wheel imperfections, springs, dampers, brakes, bearings and bushings, suspensions, engines and drive train for the acoustic and mechanical driving comfort:
- phenomena
- influencing parameters
- types of construction
- optimization of components and systems
- conflicts of goals
- methods of development

3. Noise emission of motor vehicles
- noise stress
- sound sources and influencing parameters
- legal restraints
- optimization of components and systems
- conflict of goals
- methods of development

Workload
regular attendance: 22,5 hours
self-study: 97,5 hours

Literature
The script will be supplied in the lectures.

T Course: Warehousing and Distribution Systems [T-MACH-105174]

Responsibility: Kai Furmans
Contained in: [M-MACH-101269] Introduction to Technical Logistics

ECTS	Language	Recurrence	Version
4	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2118097	Warehousing and distribution systems	Vorlesung (V)	2	Kai Furmans, Christoph Kunert

Learning Control / Examinations
The assessment consists of a 60 minutes written examination (according to §4(2), 1 of the examination regulation).

Conditions
none

V Event excerpt: Warehousing and distribution systems (SS 2017)

Aim
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	Recurrence	Version
5	englisch	Jedes Wintersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
WS 16/17	2511312	Web Science	Vorlesung (V)	2	York Sure-Vetter
WS 16/17	2511313	Exercises to Web Science	Übung (Ü)	1	York Sure-Vetter, Tobias Weller

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.

V Event excerpt: Web Science (WS 16/17)

Aim
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	Language	Recurrence	Version
4,5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2520518		Übung (Ü)		Clemens Puppe, Jana Rollmann
SS 2017	2520517	Welfare Economics	Vorlesung (V)		Clemens Puppe

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. The course [T-WIWI-102708] *Economics I: Microeconomics* must have been passed.
2. The course [T-WIWI-102709] *Economics II: Macroeconomics* must have been passed.

Recommendations
None

V Event excerpt: Welfare Economics (SS 2017)

Aim
See German version.

Content
The lecture "Welfare economics" deals with the question of efficiency and distributional properties of economic allocations, in particular allocations of market equilibria. The lecture is based on the two welfare theorems: The first welfare theorem (under weak preconditions) says that every competitive equilibrium is efficient.
According to the second welfare theorem (under stronger preconditions), every efficient allocation can be preserved as a competetive equilibrium through adequate choices of initial endowments. Afterwards, the terms and definitions of envy-freeness and the related concept of egalitarian equivalence in the context of the general theory of equilibrium will be discussed.
The second part of the lecture deals with the principle of "social justice" (i.e. distributational justice).The fundamental principles of utilitarism, Rawl's theory of justice as well as John Roemer's theory of equality of opportunity are explained and critically analyzed.

Workload
The total workload for this course is approximately 135 hours. For further information see German version.

Literature
Elective literature:

- J. Rawls: *A Theory of Justice*. Harvard University Press (1971)
- J. Roemer: *Theories of Distributive Justice*. Harvard University Press (1996)

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	Recurrence	Version
5	deutsch	Jedes Sommersemester	1

Events

Term	Event-No.	Events	Type	SWS	Lecturers
SS 2017	2511204	Workflow-Management	Vorlesung (V)	2	Andreas Oberweis
SS 2017	2511205		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

V Event excerpt: Workflow-Management (SS 2017)

Aim
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.

Studien- und Prüfungsordnung des Karlsruher Instituts für Technologie (KIT) für den Bachelorstudiengang Wirtschaftsingenieurwesen

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 Wirtschaftsingenieurwesen beschlossen.

Der Präsident hat seine Zustimmung gemäß § 20 Absatz 2 KITG iVm. § 32 Absatz 3 Satz 1 LHG am 24. September 2015 erteilt.

Inhaltsverzeichnis

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 Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen 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 Veranstaltungen 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 Arbeitnehmerin 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 Wirtschaftsingenieurwesen 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 Zusatzleistungen im Transcript of Records aufgeführt und als Zusatzleistungen gekennzeichnet. Auf Antrag der/des Studierenden werden die Zusatzleistungen in 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 Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen 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 Beweislast 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 nach 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 19 LP,
3. **Informatik**: Modul(e) im Umfang von 24 LP,
4. **Operations Research:** Modul(e) im Umfang von 18 LP,
5. **Ingenieurwissenschaften**: Modul(e) im Umfang von 21 LP,
6. **Mathematik**: Modul(e) im Umfang von 21 LP,
7. **Statistik**: Modul(e) im Umfang von 10 LP,
8. **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 6 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 - 7 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. 8 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 Wirtschaftsingenieurwesen am KIT im ersten Fachsemester aufnehmen, sowie

2. für Studierende, die ihr Studium im Bachelorstudiengang Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen vom 06. März 2007 (Amtliche Bekanntmachung des KIT Nr. 33 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 Wirtschaftsingenieurwesen am KIT zuletzt im Sommersemester 2015 aufgenommen haben, sowie

2. für Studierende, die ihr Studium im Bachelorstudiengang Wirtschaftsingenieurwesen am KIT ab dem Wintersemester 2015/16 in einem höheren Fachsemester aufnehmen, sofern das Fach-

semester 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 Wirtschaftsingenieurwesen vom 06. März 2007 (Amtliche Bekanntmachung des KIT Nr. 33 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)

Neubekanntmachung der Studien- und Prüfungsordnung der Universität Karlsruhe (TH) für den Bachelorstudiengang Wirtschaftsingenieurwesen

in der Fassung vom 15. August 2008

Aufgrund von § 34 Absatz 1 Satz 1 des Landeshochschulgesetzes (LHG) vom 1. Januar 2005 hat der Senat der Universität Karlsruhe (TH) am 26. Februar 2007 die folgende Studien- und Prüfungsordnung für den Bachelorstudiengang Wirtschaftsingenieurwesen beschlossen.

Der Rektor hat seine Zustimmung am 06. März 2007 erteilt.

Aus Gründen der Lesbarkeit ist in dieser Satzung nur die männliche Sprachform gewählt worden. Alle personenbezogenen Aussagen gelten jedoch stets für Frauen und Männer gleichermaßen.

Inhaltsverzeichnis

I. Allgemeine Bestimmungen

§ 1 Geltungsbereich, Ziele

(1) Diese Bachelorprüfungsordnung regelt Studienablauf, Prüfungen und den Abschluss des Studiums im Bachelorstudiengang Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen 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 nächstbessere 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 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 Wirtschaftsingenieurwesen 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. Betriebswirtschaftslehre im Umfang von 15 Leistungspunkten,
2. Volkswirtschaftslehre im Umfang von 10 Leistungspunkten,
3. Informatik im Umfang von 15 Leistungspunkten,
4. Operations Research im Umfang von 9 Leistungspunkten,
5. Ingenieurwissenschaften im Umfang von 10 Leistungspunkten,
6. Mathematik im Umfang von 21 Leistungspunkten,
7. Statistik im Umfang von 10 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 sieben Modulen mit je neun Leistungspunkten abzulegen. Die Module verteilen sich folgendermaßen auf die Fächer:

1. Betriebswirtschaftslehre,
2. Volkswirtschaftslehre,
3. Informatik,
4. Operations Research,
5. Ingenieurwissenschaften,
6. Betriebswirtschaftslehre oder Ingenieurwissenschaften,
7. Wahlpflichtfach: Informatik, Operations Research, Betriebswirtschaftslehre, Volkswirtschaftslehre, Ingenieurwissenschaften, Statistik, Recht oder Soziologie.

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 Wirtschaftsingenieurwesen vom 15. November 2001 (Amtliche Bekanntmachung der Universität Karlsruhe (TH), Nr. 29 vom 24. November 2001), zuletzt geändert durch Satzung vom 4. Juli 2004 (Amtliche Bekanntmachung der Universität Karlsruhe (TH), Nr. 36 vom 14. Juli 2004) 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 Wirtschaftsingenieurwesen vom 15. November 2001 (Amtliche Bekanntmachung der Universität Karlsruhe (TH), Nr. 29 vom 24. November 2001) 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 Wirtschaftsingenieurwesen vom 15. November 2001 (Amtliche Bekanntmachung der Universität Karlsruhe (TH), Nr. 29 vom 24. November 2001) 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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