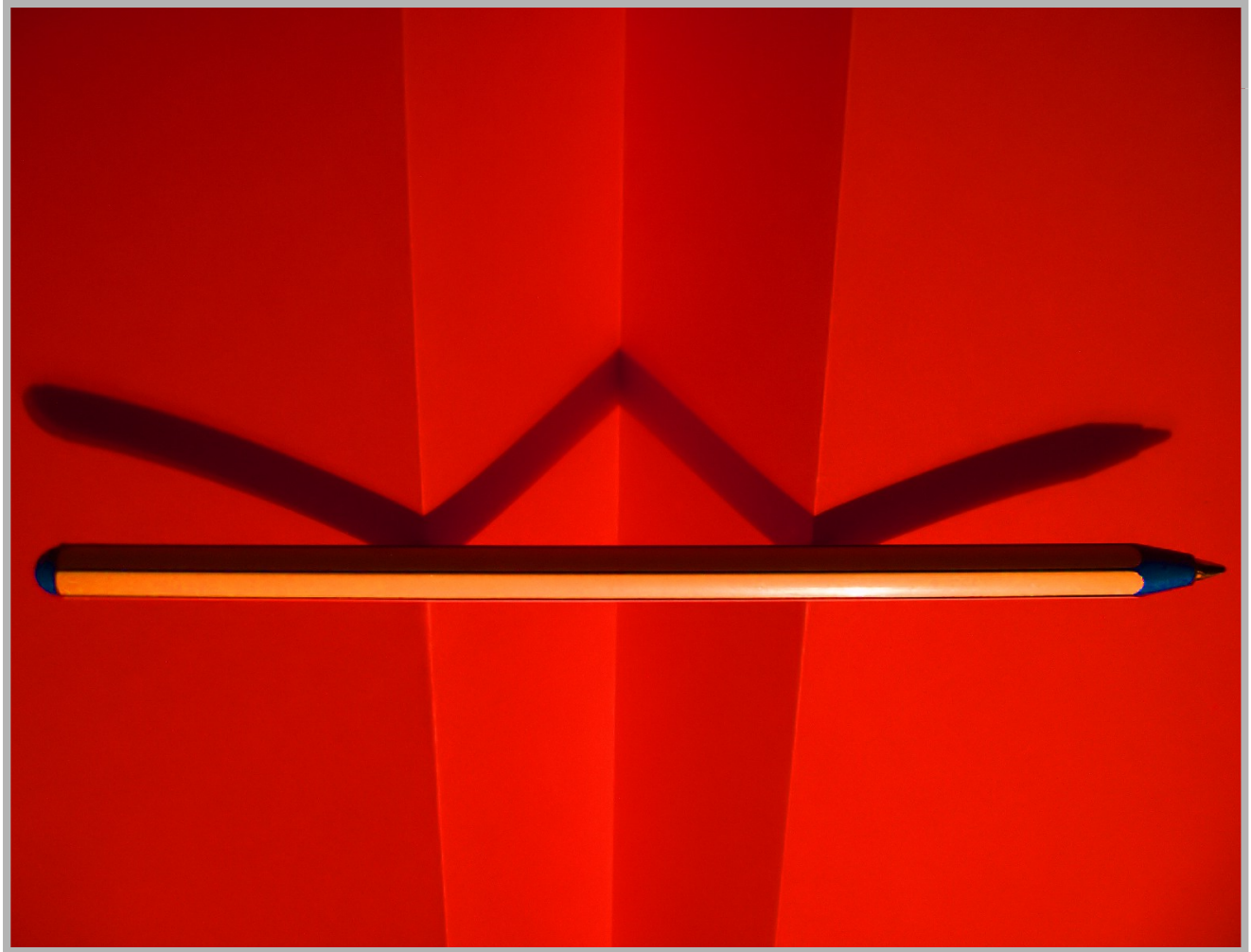
Karlsruhe Institute of Technology

Module Handbook
Business Engineering (B.Sc.)

Summer term 2009
Long version
13.03.2009

Faculty of Economics and Business Engineering



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1 Structure of the Bachelor Programme in Business Engineering (B.Sc.)

The bachelor programme in Business Engineering (B.Sc.) has 6 terms and consists of 180 credits (CP) including internship and bachelor thesis. The terms 1 to 3 of the programme are methodologically oriented and provide the student with the foundations of business, economic and engineering science. Terms 4 to 6 aim at the specialization and application of this knowledge.
Figure 1 shows the structure of the subjects and the credits (CP) allocated to the subjects. According to the European Credit Transfer System, one credit corresponds to a workload of 30 hours.

<table>
<tr><th colspan="8">Wirtschaftsingenieurwesen (B.Sc.)</th></tr>
<tr><th>Semester</th><th colspan="7">Kernprogramm</th></tr>
<tr><th>Fach</th><th>BWL</th><th>VWL</th><th>INFO</th><th>OR</th><th>ING</th><th>MATHE</th><th>STAT</th></tr>
<tr><td rowspan="2">1</td><td>REWE
4LP</td><td rowspan="2">VWL 1
5 LP</td><td rowspan="2">Progr
5 LP</td><td rowspan="2"></td><td>Werkstoff-
kunde
2,5 LP</td><td rowspan="2">Mathe 1
7 LP</td><td rowspan="2"></td></tr>
<tr><td>BWL A
3 LP</td><td>StoBi
2,5 LP</td></tr>
<tr><td>2</td><td>BWL B
4 LP</td><td>VWL 2
5 LP</td><td>Info 1
5 LP</td><td>OR 1
4,5 LP</td><td></td><td>Mathe 2
7 LP</td><td>Stat 1
4,5 LP</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">BWL C
4 LP</td><td rowspan="2"></td><td rowspan="2">Info 2
5 LP</td><td rowspan="2">OR 2
4,5 LP</td><td>Techn.
Mechanik.
2,5 LP</td><td rowspan="2">Mathe 3
7 LP</td><td rowspan="2">Stat 2
4,5 LP</td></tr>
<tr><td>E-Technik
2,5 LP</td></tr>
<tr><td colspan="7">Berufspraktikum
8 LP</td></tr>
<tr><td rowspan="4"></td><td colspan="7">Vertiefungsprogramm</td></tr>
<tr><td colspan="5">Pflichtprogramm</td><td colspan="2">Wahlpflichtprogramm</td></tr>
<tr><td rowspan="2">4
5
6</td><td>BWL</td><td>VWL</td><td>INFO</td><td>OR</td><td>ING</td><td>Seminar
+ SQ</td><td>BWL/ING</td><td>Wahlpflicht</td></tr>
<tr><td>9 LP</td><td>9 LP</td><td>9 LP</td><td>9 LP</td><td>9 LP</td><td>6 + 3 LP</td><td>9 LP</td><td>9 LP</td></tr>
<tr><td colspan="7">Bachelorarbeit 12 LP</td></tr>
<tr><td colspan="8">181 LP
(Kernprogramm + Vertiefungsprogramm + Bachelorarbeit)</td></tr>
</table>

Abbildung 1: Structure of the Bachelor Programme(Recommendation)

In the specialization studies of the third year of the bachelor programme the student has to choose one elective module of the following disciplines: Informatics, operations research, business science, economics, engineering science, statistics, law and sociology. Furthermore, the student has to attend two seminars with a minimum of six CP within the seminar module. In addition to the key skills gained in the seminars (3 CP), the student has to acquire additional key skills totalling at least 3 credits.
It is left to the student's individual curriculum (taking into account the examination and module regulations), in which terms the chosen modules will be started and completed. However, it is highly recommended to follow the proposed structure and schedule of the first 3 terms and to complete all courses and seminars before beginning the bachelor thesis.

2 Key Skills

The bachelor programme Business Engineering (B.Sc.) at the Faculty of Economics and Business Engineering distinguishes itself by an exceptionally high level of interdisciplinarity. With the combination of business science, economics, informatics, operations research, mathematics as well as engineering and natural science, the integration of knowledge of different disciplines is an inherent element of the programme. As a result, interdisciplinary and connected thinking is encouraged in a natural way. Furthermore, tutor programs with more than 20 semester periods per week contribute significantly to the development of key skills in the bachelor programme. The integrative taught key skills, which are acquired throughout the entire programme, can be classified into the following fields:

Soft skills

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

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

Figure 2 shows the classification of key skills within the bachelor programme at a glance.
Besides the integrated key skills, the additive acquisition of key skills, which are totalling at least three credits within the seminar module, is scheduled. A list of recommended courses and seminars will be published online for the additive acquisition. This list is coordinated with the House of Competence.

Art der Schlüsselqualifikation	**Bachelorstudium**						
	Grundprogramm			**Vertiefungsprogramm**			
	REWE BWL A	BWLB,C VWL I,II	Tutoren-programm	BWL, VWL, INFO	Seminar	Bachelor-arbeit	Betriebs-praktikum
Basiskompetenzen (soft skills)							
Teamarbeit, soziale Kommunikation und Kreativitätstechniken		x	x				
Präsentationserstellung und -techniken			x		x		
Logisches und systematisches Argumentieren und Schreiben					x	x	
Strukturierte Problemlösung und Kommunikation					x	x	
Praxisorientierung (enabling skills)							
Handlungskompetenz im beruflichen Kontext							x
Kompetenzen im Projektmanagement							x
Betriebswirtschaftliche Grundkenntnisse	x						
Englisch als Fachsprache				x			(x)*
Orientierungswissen							
Interdisziplinäres Wissen		x		x	x	(x)*	(x)*
Institutionelles Wissen über Wirtschafts- und Rechtssysteme		x		x			
Wissen über internationale Organisationen		x		x			
Medien, Technik und Innovation		x		x			

(x)*.....ist nicht zwingend SQ-vermittelnd; hängt von der Art der Aktivität ab (z.B. Auslandspraktikum, thematische Ausrichtung der Bachelorarbeit)

Abbildung 2: Key Skills

3 Helpful information

Module Handbook

The programme exists of several **subjects** (e.g. business administration, economics, operations research). Every subject is split into **modules** and every module itself exists of one or more interrelated **courses**. The extent of every module is indicated by credit points (CP), which will be credited after the successful completion of the module. Some of the modules are **obligatory**. According to the interdisciplinary character of the programme, 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 programme according to personal needs, interest and job perspective. The **module handbook** describes the modules belonging to the programme, their structure and extent (in CP), their dependencies, their learning outcomes, their learning control and examinations. Therefore it serves as a necessary orientation and as a helpful guide throughout the studies. The module handbook does not replace the **course catalogue**, which provides important information concerning each semester and variable course details (e.g. time and location of the course).

Begin and completion of a module

Every module and every course is allowed to be credited only once. The decision whether the course is assigned to one module or the other is made by the student at the time of signing in for the corresponding exam. The module is **succeeded**, if the general exam of the module and/or if all of its relevant partial exams have been passed (grade min 4.0).

General exams and partial exams

The module exam can be taken in a general exam or several partial exams. If the module exam is offered as a **general exam**, the entire content of the module will be reviewed in a single exam. If the module exam exists of **partial exams**, the content of each course will be reviewed in corresponding partial exams. The registration for the examinations in the bachelor programme takes place online via the self-service function for students. The following functions can be accessed on https://zvwgate.zvw.uni-karlsruhe.de/sb/ by means of the access information of the student card (FriCard):

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

For further and more detailed information also see https://zvwgate.zvw.uni-karlsruhe.de/download/leitfaden_studierende.pdf
For students of the master programme the registration currently takes place at the **advisory service** of the faculty or at the respective institutes. Further information available on http://www.wiwi.uni-karlsruhe.de/studium/pruefung/anabmelden/.

Repeating exams

Principally, a failed exam 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. Requests for a second repetition of an exam require the approval of the examination committee. A request for a second repetition has to be made without delay after loosing the examination claim. A counseling interview is mandatory. For further information see http://www.wiwi.uni-karlsruhe.de/studium/hinweise/.

Bonus accomplishments and additional accomplishments

Bonus accomplishments can be achieved on the basis of entire modules or within modules, if there are alternatives at choice. Bonus accomplishments can improve the module grade and overall grade by taking into account only the best possible combination of all courses when calculating the grades. The student has to declare a Bonus accomplishment as such at the time of registration for the exams. Exams, which have been registered as Bonus accomplishments, are subject to examination regulations. Therefore, a failed exam has to be repeated. Failing the repeat examination implies the loss of the examination claim.
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. Up to 2 modules with a minimum of 9 CP may appear additionally in the certificate. After the approval of the examination committee, it is also possible to include modules in the certificate, which are not defined in the module handbook. Single additional courses will be recorded in the transcript of records. Courses and modules, which have been declared as bonus accomplishments, can be changed to additional accomplishments.

Further information

More detailed information about the legal and general conditions of the programme can be found in the examination regulation of the programme.

Used abbreviations

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

4 Actual Changes

Important changes are pointed out in this section in order to provide a better orientation. Although this process was done with great care, other/minor changes may exist.

4.1 Changes regarding modules

eBusiness and Servicemanagement [WI3BWLISM1] (S. 28)

remarks

The key of the module has be renamed and ended formerly in BWLIW2.

Supply Chain Management [WI3BWLISM2] (S. 29)

remarks

[...]
This module is offered for the first time in the summer term 2009.

eFinance [WI3BWLISM3] (S. 30)

remarks

[...]
This module is offered for the first time in the summer term 2009.

CRM and Service Management [WI3BWLISM4] (S. 31)

remarks

[...]
The key of the module has be renamed and ended formerly in BWLIW1.

Specialization in Customer Relationship Management [WI3BWLISM5] (S. 32)

remarks

This module is offered for the first time in the summer term 2009.

Risk and Insurance Management [WI3BWLFBV3] (S. 37)

remarks

[...]
The lecture *Principles of Insurance Management* [25055] will be held additionally in the summer term 2009.

Insurance Management [WI3BWLFBV4] (S. 38)

remarks

[...]
The lecture *Principles of Insurance Management* [25055] will be held additionally in the summer term 2009.

Strategy and Organization [WI3BWLUO1] (S. 39)

remarks

This module was formerly named *Strategic Management and Organization.*

Topics in Finance I [WI3BWLFBV5] (S. 40)

remarks

The lectures *Financial Accounting and Accounting for Tax Purposes* [25217] and *Taxes and Investment* [25216] won't be offered any longer. Students who already take part in this component examination within the module examination, may complet this modul within this lectures.

Topics in Finance II [WI3BWLFBV6] (S. 41)

remarks

The lectures *Financial Accounting and Accounting for Tax Purposes* [25217] and *Taxes and Investment* [25216] won't be offered any longer. Students who already take part in this component examination within the module examination, may complet this modul within this lectures.

Energy Economics [WI3BWLIIP2] (S. 43)

remarks

This module is offered for the first time in summersemester 2009.

Applied Game Theory [WI3VWL1] (S. 44)

dependencies

[...]
One of the lectures *Game Theory I* [25525] or *Game Theory II* [25369] has to be completed. Overall there has to be absolved examinations at at least 9 Credits.

Statistical Applications of Financial Risk Management [WI3STAT] (S. 58)

remarks

This module is offered for the first time in summer 2009.

Unscheduled Engineering Module [WI3INGAPL] (S. 83)

remarks

The module is newly-offered in summer 2009.

4.2 Changes regarding courses

Principles of Insurance Management [25055] (S. 202)

remarks

This lecture will be held additionally in the summer term 2009.

5 Modules (Foundation)

5.1 All Subjects

Module: Business Administration — Module key: [WI1BWL]

Subject: Business Administration
Module coordination: Marliese Uhrig-Homburg, Thomas Burdelski
Credit points (CP): 15

Learning Control / Examinations

Prerequisites
None.

Conditions
It is strongly recommended to attend the courses in the following sequence:
1st term: *Financial Accounting and Cost Accounting* [25002/25003] and *Business Administration and Management Science A* [25023]
2nd term: *Business Administration and Management Science B* [25024/25025]
3rd term: *Business Administration and Management Science C* [25026/25027]

Learning Outcomes

Content

Courses in module *Business Administration* [WI1BWL]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25002/25003	Financial Accounting and Cost Accounting (S. 89)	2/2	W	4	Burdelski
25023	Business Administration and Management Science A (S. 90)	2	W	3	Burdelski
25024/25025	Business Administration and Management Science B (S. 91)	2/0/2	S	4	Gaul, Lützkendorf, Geyer-Schulz, Weinhardt, Burdelski
25026/25027	Business Administration and Management Science C (S. 92)	2/0/2	W	4	Lindstädt, Ruckes, Uhrig-Homburg, Burdelski

Module: Economics — Module key: [WI1VWL]

Subject: Economics
Module coordination: Siegfried Berninghaus
Credit points (CP): 10

Learning Control / Examinations
The assessment mix of each course of this module is defined for each course separately. The final mark for the module is the average of the marks for each course weighted by the credits of the course.
Notice: The lecture *Economics I*: *Microeconomics* [25012] 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.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The student
- knows and understands 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 looks at the dynamics of economic processes.

Content

Courses in module *Economics* [WI1VWL]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25512	Economics I: Microeconomics (S. 93)	3/0/2	W	5	Puppe
25014	Economics II: Macroeconomics (S. 94)	3/0/2	S	5	Rothengatter, Schaffer

Module: Introduction to Informatics — Module key: [WI1INFO]

Subject: Informatics
Module coordination: Hartmut Schmeck, Rudi Studer, Detlef Seese
Credit points (CP): 15

Learning Control / Examinations

Prerequisites
None.

Conditions
It is strongly recommended to attend the courses in the following sequence: *Introduction to Programming with Java* [25030], *Foundations of Informatics I* [25074] *Foundations of Informatics II* [25076]

Learning Outcomes

Content

Courses in module *Introduction to Informatics* [WI1INFO]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25030	Introduction to Programming with Java (S. 95)	3/1/2	W	5	Seese
25074	Foundations of Informatics I (S. 96)	2/2	S	5	Studer, Agarwal, Cimiano
25076	Foundations of Informatics II (S. 97)	3/1	W	5	Schmeck

Module: Introduction to Operations Research — Module key: [WI1OR]

Subject: Operations Research
Module coordination: Oliver Stein, Karl-Heinz Waldmann, Stefan Nickel
Credit points (CP): 9

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

Prerequisites
Mathematics I und II. Programming knowledge for computing exercises.

Conditions
It is strongly recommended to attend the course *Introduction to Operations Research I* [25040] before attending the course *Introduction to Operations Research II* [25043].

Learning Outcomes
In this module students learn all the methods and models which are required for quantitative analysis. It forms the basis of a series of advanced lectures with a focus on both theoretical and practical aspects.

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

Courses in module *Introduction to Operations Research* [WI1OR]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25040	Introduction to Operations Research I (S. 98)	2/2/2	S	4.5	Stein, Waldmann, Nickel
25043	Introduction to Operations Research II (S. 99)	2/2/2	W	4.5	Stein, Waldmann, Nickel

Module: Electrical Engineering

Module key: [WI1ING4]

Subject: Engineering Science
Module coordination: Wolfgang Menesklou
Credit points (CP): 2,5

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Electrical Engineering* [WI1ING4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
23223	Electrical Engineering I (S. 108)	2/2	W	2.5	Menesklou

Module: Material Science

Module key: [WI1ING2]

Subject: Engineering Science
Module coordination: M. J. Hoffmann
Credit points (CP): 2,5

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Material Science* [WI1ING2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21760	Material Science I (S. 106)	2/1	W	2.5	Hoffmann

Module: Engineering Mechanics

Module key: [WI1ING3]

Subject: Engineering Science
Module coordination: Carsten Proppe
Credit points (CP): 2,5

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Engineering Mechanics* [WI1ING3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21208	Engineering Mechanics I (S. 107)	2/1	W	2.5	Proppe

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

Subject: Engineering Science
Module coordination: Christian Zwiener, Kruse
Credit points (CP): 2,5

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Mass and Energy Balances for Reacting Systems* [WI1ING1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
22130	Mass and Energy Balances for Reacting Systems (S. **??**)	2/0	W	2.5	Zwiener, Kruse

Module: Mathematics

Module key: [WI1MATH]

Subject: Mathematics
Module coordination: Günter Last
Credit points (CP): 21

Learning Control / Examinations

Prerequisites
None.

Conditions
It is strongly recommended to attend the courses in the following sequence: *Mathematics I* [01350], *Mathematics II* [01830] *Mathematics III* [01352]

Learning Outcomes

Content

Courses in module *Mathematics* [WI1MATH]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
01350	Mathematics I (S. 100)	4/2/2	W	7	Last, Folkers, Klar
01830	Mathematics II (S. 101)	4/2/2	S	7	Last, Folkers, Klar
01352	Mathematics III (S. 102)	4/2/2	W	7	Last, Folkers, Klar

Module: Statistics — Module key: [WI1STAT]

Subject: Statistics
Module coordination: Svetlozar Rachev
Credit points (CP): 9

Learning Control / Examinations
The assessment of this module consists of two written examinations according to §4(2), 1 of the examination regulation (one for each of the courses Statistics I and II).
The grade of the module is the average of the grades of these two written examinations.
Notice: The lecture *Statistics I* [25008/25009] 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.

Prerequisites
None.

Conditions
The course *Statistics I* [25008/25009] has to be attended before the course *Statistics II* [25020/25021].
To some extend knowledge of the content of the module Mathematics [WW1MATH/WI1MATH] is assumed. Therefore it is recommended to attend the course *Mathematics I* [01350] before attending the module *Statistics* [WI1STAT/WW1STAT].

Learning Outcomes

Content

Courses in module *Statistics* [WI1STAT]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25008/25009	Statistics I (S. 103)	4/0/2	S	4.5	Höchstötter
25020/25021	Statistics II (S. 104)	4/0/2	W	4.5	Höchstötter

6 Modules (Specialization)

6.1 Business Administration

Module: Sustainable Construction — Module key: [WI3BWLOOW1]

Subject: Business Administration
Module coordination: Thomas Lützkendorf
Credit points (CP): 9

Learning Control / Examinations
The assessment is carried out as partial assessments (according to §4(2), 1 o. 2 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.
The final mark for the module is the average of the marks for each course weighted by the credits and truncated after the first decimal.
It is possible to include the mark of a seminar paper, dealing with a topic from the area of sustainable construction, into the final mark of the module (according to §4(2), 3 SPO). The seminar has a weight of 20%.
The assessment procedures are described for each course of the module seperately.

Prerequisites
The module *Business Administration* [WI1BWL] has to be completed successfully.

Conditions
The combination with the module *Real Estate Management* [WI3BWLOOW2] 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.

Learning Outcomes
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.

Courses in module *Sustainable Construction* [WI3BWLOOW1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26404w	Design, Construction and Assessment of Green Buildings I (S. 280)	2/1	W	4,5	Lützkendorf
26404	Sustainability Assessment of Construction Works (S. 279)	2/1	S	4,5	Lützkendorf

Module: eBusiness and Servicemanagement — Module key: [WI3BWLISM1]

Subject: Business Administration
Module coordination: Christof Weinhardt
Credit points (CP): 9

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

Prerequisites
Successful completion of the module *Business Administration* [WI1BWL].

Conditions
Keine.

Learning Outcomes
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 Prof Kersten from Concordia University, Montreal, Canada. If it is possible to organize, depending on the start of term in Canada, the case study will be worked on by the students via internet in collaboration with Canadian students. The results will jointly be presented in a telephone conference.
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.

Courses in module *eBusiness and Servicemanagement* [WI3BWLISM1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26466	eServices (S. 284)	2/1	S	5	Weinhardt, Satzger
26454	eFinance: Information Engineering and Management for Securities Trading (S. 283)	2/1	W	4,5	Weinhardt, Riordan
26452	Management of Business Networks (S. 282)	2/1	W	4,5	Weinhardt, Kraemer

Remarks
The key of the module has be renamed and ended formerly in BWLIW2.

Module: Supply Chain Management — Module key: [WI3BWLISM2]

Subject: Business Administration
Module coordination: Christof Weinhardt
Credit points (CP): 9

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

Prerequisites
None.

Conditions
The lecture *Management of Business Networks* has to be attended.

Learning Outcomes
The module “Supply Chain Management” imparts knowledge for strategic and operative designing and control of supply chains spanning several enterprises. The students shall be able to analyze the coordination problems within supply chains, to judge them and to support them providing appropriate information systems. In order to be able to do this it is necessary to understand the coordination and planning mechanisms from the field of Operations Research and, on the other hand, to be familiar with methods from information management. Thus, the module gives an overview of methods and instruments of Supply Chain Management for the organizational, technical and mental-social design of integrated supply chains.

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. If it is possible to organize, depending on the start of term in Canada, the case study will be worked on by the students via internet in collaboration with Canadian students. The results will jointly be presented in a telephone conference. The module is completed by an elective course addressing appropriate optimization methods for the Supply Chain Management and for modern logistic approaches.

Courses in module *Supply Chain Management* [WI3BWLISM2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26452	Management of Business Networks (S. 282)	2/1	W	4,5	Weinhardt, Kraemer
21078	Logistics (S. 132)	3/1	S	6	Furmans
25598	Operations Management (S. 235)	3	W	5	Schön

Remarks
The current seminar courses for this semester, which are complementary to this module, are listed on following webpage: the http://www.im.uni-karlsruhe.de/lehre
This module is offered for the first time in the summer term 2009.

Module: eFinance — Module key: [WI3BWLISM3]

Subject: Business Administration
Module coordination: Christof Weinhardt
Credit points (CP): 9

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

Prerequisites
None.

Conditions
The course *eFinance: Information Engineering and Management for Securities Trading* [26454] has to be attended.

Learning Outcomes
In the module “eFinance: Information engineering and management in finance” the students get an overview of modern approaches of information management in the finance sector. They learn to analyze specific financial problems from the point of view of information management and also to solve these problems by using the tools provided by information management. By doing so, they get to know finance products as information products and learn the state of the art of modern information processing in the finance sector.

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.
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.

Courses in module *eFinance* [WI3BWLISM3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26454	eFinance: Information Engineering and Management for Securities Trading (S. 283)	2/1	W	4,5	Weinhardt, Riordan
25762	Intelligent Systems in Finance (S. 247)	2/1	S	5	Seese
26575	Investments (S. 294)	2/1	S	4.5	Uhrig-Homburg

Remarks
The current seminar courses for this semester, which are complementary to this module, are listed on following webpage: the http://www.im.uni-karlsruhe.de/lehre
This module is offered for the first time in the summer term 2009.

Module: CRM and Service Management — Module key: [WI3BWLISM4]

Subject: Business Administration
Module coordination: Andreas Geyer-Schulz
Credit points (CP): 9

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
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* [WI3BWLISM4] we teach the principles of modern customer-oriented management and its support by system architectures and CRM software packages. Choosing customer relationship management as a company´s strategy requires service management and a strict implmentation of service management in all parts of the company.
For operative CRM we present the design of customer-oriented, IT-supported business processes based on business process modelling and we explain these processes in concrete application scenarios (e.g. marketing campaign management, call center management, sales force management, field services, . . .).
Analytic CRM is dedicated to improve the use of knowledge about customers in the broadest sense for decision-making (e.g. product-mix decisions, bonus programs based on customer loyality, . . .) and for the improvement of services. A requirement for this is the tight integration of operative systems with a data warehouse, the development of customer-oriented and flexible reporting systems, and – last but not least – the application of statistical methods (clustering, regression, stochastic models, . . .).

Courses in module *CRM and Service Management* [WI3BWLISM4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26508	Customer Relationship Management (S. 286)	2/1	W	4,5	Geyer-Schulz
26522	Analytical CRM (S. 289)	2/1	S	4,5	Geyer-Schulz
26520	Operative CRM (S. 287)	2/1	W	4,5	Geyer-Schulz

Remarks
The lecture *Customer Relationship Management* [26508] is given in English.
The key of the module has be renamed and ended formerly in BWLIW1.

Module: Specialization in Customer Relationship ManagementModule key: [WI3BWLISM5]

Subject: Business Administration
Module coordination: Andreas Geyer-Schulz
Credit points (CP): 9

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

Prerequisites
None.

Conditions
This module has to be taken together with the module *Customer Relationship Management and Servicemanagement* [WW3BWLCRM1].
Or the course *Analytic CRM* [26522] or the course *Operative CRM* [26520] has to be taken.

Learning Outcomes
The student

- knows the scientific methods (from business administration, statistics, informatics) which are most relevant for analytic CRM and he autonomously applies these methods to standard cases,
- gains an overview of the market for CRM software,
- designs, implements, and analyzes operative CRM processes in concrete application domains (e.g. campaign management, call center management, . . .),
- is aware of the problems of protecting the privacy of customers and the implications of privacy law.

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

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

Courses in module *Specialization in Customer Relationship Management* [WI3BWLISM5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26522	Analytical CRM (S. 289)	2/1	S	4,5	Geyer-Schulz
26520	Operative CRM (S. 287)	2/1	W	4,5	Geyer-Schulz
25158	Corporate Planning and Operations Research (S. 212)	2/1	W	5	Gaul
26240	Competition in Networks (S. 265)	2/1	S	5	Mitusch
26466	eServices (S. 284)	2/1	S	5	Weinhardt, Satzger

Remarks
This module is offered for the first time in the summer term 2009.

Module: Essentials of Finance

Module key: [WI3BWLFBV1]

Subject: Business Administration
Module coordination: Marliese Uhrig-Homburg
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Essentials of Finance* [WI3BWLFBV1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26575	Investments (S. 294)	2/1	S	4.5	Uhrig-Homburg
25216	Financial Management (S. 216)	2/1	S	4.5	Ruckes

Module: Foundations of Marketing — Module key: [WI3BWLMAR]

Subject: Business Administration
Module coordination: Wolfgang Gaul
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
The course *Marketing and Consumer Behavior* [25150] has to be attended.

Learning Outcomes

Content

Courses in module *Foundations of Marketing* [WI3BWLMAR]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25150	Marketing and Consumer Behavior (S. 209)	2/1	W	5	Gaul
25154	Modern Market Research (S. 210)	2/1	S	5	Gaul
25156	Marketing and Operations Research (S. 211)	2/1	S	5	Gaul
25177	Brand Management (S. 213)	2	W	4	Neibecker
25191	Bachelor Seminar in Foundations of Marketing (S. 214)	2	W/S	2	Gaul

Module: Insurance: Calculation and Control — Module key: [WI3BWLFBV2]

Subject: Business Administration
Module coordination: Christian Hipp
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Insurance: Calculation and Control* [WI3BWLFBV2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26300	Insurance Models (S. 272)	2/2	S	5	Hipp
26372	Insurance Game (S. 276)	2	S	4	Hipp

Module: Real Estate Management — Module key: [WI3BWLOOW2]

Subject: Business Administration
Module coordination: Thomas Lützkendorf
Credit points (CP): 9

Learning Control / Examinations
The assessment is carried out as partial assessments (according to §4(2), 1 o. 2 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.
The final mark for the module is the average of the marks for each course weighted by the credits and truncated after the first decimal.
It is possible to include the mark of a seminar paper, dealing with a topic from the area of sustainable construction, into the final mark of the module (according to §4(2), 3 SPO). The seminar has a weight of 20%.
The assessment procedures are described for each course of the module seperately.

Prerequisites
Successful completion of the module *Business Administration* [WI1BWL].

Conditions
The combination with the module *Design Constructions and Assessment of Green Buildings* [WI3BWLOOW1] 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.

Learning Outcomes
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.

Courses in module *Real Estate Management* [WI3BWLOOW2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26400w	Real Estate Management I (S. 278)	2/2	W	4,5	Lützkendorf
26400	Real Estate Management II (S. 277)	2/2	S	4,5	Lützkendorf

Module: Risk and Insurance Management — Module key: [WI3BWLFBV3]

Subject: Business Administration
Module coordination: Ute Werner
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
It is only possible to choose this module in combination with the module *Insurance Management* [WI3BWLFBV4].

Learning Outcomes

Content

Courses in module *Risk and Insurance Management* [WI3BWLFBV3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25055	Principles of Insurance Management (S. 202)	3/0	W	4,5	Werner
26326	Enterprise Risk Management (S. 274)	3/0	W/S	4,5	Werner

Remarks
The course *Enterprise Risk Management* [26326] is offered irregularly. For further information, see: http://insurance.fbv.uni-karlsruhe.de
The lecture *Principles of Insurance Management* [25055] will be held additionally in the summer term 2009.

Module: Insurance Management — Module key: [WI3BWLFBV4]

Subject: Business Administration
Module coordination: Ute Werner
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
The course *Principles of Insurance Management* [25055] has to be attended.
It is only possible to choose this module in combination with the module *Risk and Insurance Management* [WI3BWLFBV3].

Learning Outcomes

Content

Courses in module *Insurance Management* [WI3BWLFBV4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26323	Insurance Marketing (S. 273)	3	W/S	4.5	Werner
25050	Private and Social Insurance (S. 201)	2	W	2,5	Werner, Heilmann, Besserer
25055	Principles of Insurance Management (S. 202)	3/0	W	4,5	Werner
26360	Insurance Contract Law (S. 275)	3	S	4.5	Werner, Schwebler

Remarks
The course *Insurance Marketing* [26323] is offered irregularly. For further information, see: http://insurance.fbv.uni-karlsruhe.de
The lecture *Principles of Insurance Management* [25055] will be held additionally in the summer term 2009.

Module: Strategy and Organization — Module key: [WI3BWLUO1]

Subject: Business Administration
Module coordination: Hagen Lindstädt
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Strategy and Organization* [WI3BWLUO1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25900	Management and Strategy (S. 253)	2/0	S	4	Lindstädt
25902	Managing Organizations (S. 254)	2/0	W	4	Lindstädt
25907	Special Topics in Management: Management and IT (S. 255)	1/0	W/S	2	Lindstädt

Remarks
This module was formerly named *Strategic Management and Organization.*

Module: Topics in Finance I — Module key: [WI3BWLFBV5]

Subject: Business Administration
Module coordination: Marliese Uhrig-Homburg
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Successful completion of the module *Business Administration* [WI1BWL].

Conditions
It is only possible to choose this module in combination with the module *Essentials in Finance* [WI3BWLFBV1].
In addition to that it is possible to choose the module *Topics in Finance II* [WI3BWLFBV6]

Learning Outcomes

Content

Courses in module *Topics in Finance I* [WI3BWLFBV5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25210	Management Accounting (S. 215)	2/1	S	4.5	Lüdecke
25232	Financial Intermediation (S. 217)	3	W	4.5	Ruckes
26550	Derivatives (S. 292)	2/1	S	4,5	Uhrig-Homburg
25296	Exchanges (S. 219)	1	S	1.5	Franke
25299	Business Strategies of Banks (S. 220)	2	W	3	Müller
26570	International Finance (S. 293)	2	S	3	Uhrig-Homburg, Walter

Remarks
The lectures *Financial Accounting and Accounting for Tax Purposes* [25217] and *Taxes and Investment* [25216] won't be offered any longer. Students who already take part in this component examination within the module examination, may complet this modul within this lectures.

Module: Topics in Finance II — Module key: [WI3BWLFBV6]

Subject: Business Administration
Module coordination: Marliese Uhrig-Homburg
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Successful completion o the module *Business Administration* [WI1BWL].

Conditions
It is only possible to choose this module in combination with the module *Essentials in Finance* [WI3BWLFBV1].
In addition to that it is possible to choose the module *Topics in Finance I* [WI3BWLFBV5]. In this case only those lectures are electable, that are not already completed in the module *Topic in Finance I* [WI3BWLFBV5].

Learning Outcomes

Content

Courses in module *Topics in Finance II* [WI3BWLFBV6]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25210	Management Accounting (S. 215)	2/1	S	4.5	Lüdecke
25232	Financial Intermediation (S. 217)	3	W	4.5	Ruckes
26550	Derivatives (S. 292)	2/1	S	4,5	Uhrig-Homburg
25296	Exchanges (S. 219)	1	S	1.5	Franke
25299	Business Strategies of Banks (S. 220)	2	W	3	Müller
26570	International Finance (S. 293)	2	S	3	Uhrig-Homburg, Walter

Remarks
The lectures *Financial Accounting and Accounting for Tax Purposes* [25217] and *Taxes and Investment* [25216] won't be offered any longer. Students who already take part in this component examination within the module examination, may complet this modul within this lectures.

Module: Industrial Production I

Module key: [WI3BWLIIP]

Subject: Business Administration
Module coordination: Frank Schultmann
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
The course *Fundamentals of Production Management* [25950] is obligatory. In addition to that one more course has to be chosen. The courses are designed separately so each course can be chosen independently.
With consecutive master programme in mind, it is recommended to enroll on the module *Industrial Production II* [WW4BWLIIP2] and / or *Industrial Production III* [WW4BWLIIP6] as well.

Learning Outcomes

Content

Courses in module *Industrial Production I* [WI3BWLIIP]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25950	Fundamentals of Production Management (S. 257)	2/2	S	5.5	Schultmann
25960	Material and Energy Flows in the Economy (S. 259)	2/0	W	3.5	Hiete, Hiete
25959	Energy Policy (S. 258)	2/0	S	3.5	Wietschel

Module: Energy Economics

Module key: [WI3BWLIIP2]

Subject: Business Administration
Module coordination: Wolf Fichtner
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Energy Economics* [WI3BWLIIP2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26010	Introduction in to Energy Economics (S. 260)	2/2	S	5.5	Fichtner
26012	Renewable Energy Sources - Technologies and Potentials (S. 261)	2/0	W	3.5	Fichtner
25959	Energy Policy (S. 258)	2/0	S	3.5	Wietschel

Remarks
This module is offered for the first time in summersemester 2009.

6.2 Economics

Module: Applied Game Theory — Module key: [WI3VWL1]

Subject: Economics
Module coordination: Siegfried Berninghaus
Credit points (CP): 9

Learning Control / Examinations
The assessment mix of each course of this module is defined for each course separately. The final mark for the module is the average of the marks for each course weighted by the credits of the course.
In Experimental Economics [25373] there may be the possibility - depending on the lecturer - to improve the final mark of the passed exam by writing a course homework and presenting it in class.

Prerequisites
None.

Conditions
Good knowledge of mathematics and statistics is recommended.
One of the lectures *Game Theory I* [25525] or *Game Theory II* [25369] has to be completed. Overall there has to be absolved examinations at at least 9 Credits.

Learning Outcomes
The student
- analyzes economic interdependencies under use of experimental mehtods and evaluates theoretial concepts,
- applies theoretical algorithms to economic and managerial problems,
- is able to analyze complex strategic decision problems by means of game theoretical concepts,
- knows basic solutions concepts of simple strategic decisions and is able to apply them to concrete economic problems,
- understands economic and managerial decision problems and is able to solve them by applying suitable solution concepts,
- knows experimental methods in economics from experiment design to evaluation of data.

Content
Lectures discuss individual as well as group decisions under (un-)certainty. Tutorials apply theoretical concepts to case studies. Theoretical models are compared to empirical findings.

Courses in module *Applied Game Theory* [WI3VWL1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25525	Game Theory I (S. 230)	2/2	S	4,5	Berninghaus
25369	Game Theory II (S. 224)	2/2	W	4,5	Berninghaus
25371	Industrial Organization (S. 225)	2/1	S	4,5	Berninghaus
25373	Experimental Economics (S. 226)	2/1	S	4,5	Berninghaus, Bleich

Remarks
The lecture Experimental Economics is offered for the last time in summer 2009.
This module had the name *Decision and Game Theory* in previous versions of the module handbook. The lecture *Economies of Uncertainty* is offered in the module *Strategic games*.

Module: Strategic Games — Module key: [WI3VWL4]

Subject: Economics
Module coordination: Siegfried Berninghaus
Credit points (CP): 9

Learning Control / Examinations
The assessment mix of each course of this module is defined for each course separately. The final mark for the module is the average of the marks for each course weighted by the credits of the course.
Written exams have a duration of 80mins.

Prerequisites
None.

Conditions
It is recommended to attend the courses in the following sequence:

1. *Game Theory I* [25525]
2. *Game Theory II* [25369]

Learning Outcomes
The student
- structurizes complex strategic decision problems and applies efficient solution algorithms,
- has a broad overview over game and decision theory,
- applies tought methods to problems of political and managerial consulting,
- knows basic solution concepts of simple strategic decision situations and is able to apply them to concrete economic problems,
- knows and analyzes strategic decisions, knows advanced solution concepts and applies them,
- knows basic elements of decision theory under (un-)certainty as well as more advanced models and is able to analyze and solve these problems, understands decision behavior by cofronting it with experimental economics.

Content
The module consists of lectures in strategic decision making against other players ore “nature”. Building on normal and extensive form games different strategic and non-strategic decision situations are laid out. Then more complex situations (e.g., repeated bargaining, reputation building) are discussed.

Courses in module *Strategic Games* [WI3VWL4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25525	Game Theory I (S. 230)	2/2	S	4,5	Berninghaus
25369	Game Theory II (S. 224)	2/2	W	4,5	Berninghaus
25365	Economics of Uncertainty (S. 223)	2/2	S	4,5	Barbie, Berninghaus

Remarks
The lecture Economics of Uncertainty [25365] is now also part of this module.

Module: Industrial Organization — Module key: [WI3VWL2]

Subject: Economics
Module coordination: Hariolf Grupp, N.N.
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The module *Economics* [WI1VWL] has to be completed successfully.

Conditions
It is possible to attend the course *Applying Industrial Organization* [26287] before the course *Industrial Organization* [25371].

Learning Outcomes

Content

Courses in module *Industrial Organization* [WI3VWL2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25371	Industrial Organization (S. 225)	2/1	S	4,5	Berninghaus
26274	Innovation (S. 270)	2/1	S	5	Grupp
26287	Applying Industrial Organization (S. 271)	2/2	W	6	Grupp, Fornahl

Module: International Economics

Module key: [WI3VWL3]

Subject: Economics
Module coordination: Jan Kowalski
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *International Economics* [WI3VWL3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26254	International Economic Policy (S. 267)	2	S	4	Kowalski
26259	Managenment and Organisation of Projects in Developing Countries (S. 268)	2/1	W	5	Sieber

Module: Economic Policy

Module key: [WI3VWL5]

Subject: Economics
Module coordination: Werner Rothengatter
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
Knowledge in the area of macroeconomics is recommended.

Learning Outcomes

Content

Courses in module *Economic Policy* [WI3VWL5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26252	International Economics (S. 266)	2/1	W	5	Kowalski
26274	Innovation (S. 270)	2/1	S	5	Grupp

Module: Financial Sciences

Module key: [WI3VWL9]

Subject: Economics
Module coordination: Berthold Wigger
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Financial Sciences* [WI3VWL9]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26120	Public Revenues (S. 262)	2/1	S	4,5	Wigger
26121	Fiscal Policy (S. 263)	2/1	W	4,5	Wigger

Module: Microeconomic Theory

Module key: [WI3VWL6]

Subject: Economics
Module coordination: Clemens Puppe
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The module *Economics* [WW1VWL] has to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Microeconomic Theory* [WI3VWL6]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25527	Advanced Microeconomic Theory (S. 231)	2/1	S	4.5	Puppe
25517	Welfare Economics (S. 229)	2/1	S	4.5	Puppe
25525	Game Theory I (S. 230)	2/2	S	4,5	Berninghaus

Module: Macroeconomic Theory — Module key: [WI3VWL8]

Subject: Economics
Module coordination: Clemens Puppe
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The module *Economics* [WWL1VWL] has to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Macroeconomic Theory* [WI3VWL8]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25549	Macroeconomic Theory I (S. 233)	2/1	W	4,5	Barbie, Hillebrand
25551	Macroeconomic Theory II (S. 234)	2/1	S	4.5	Barbie
25543	Theory of Economic Growth (S. 232)	2/1	S	4.5	Hillebrand

6.3 Informatics

Module: Emphasis Informatics — Module key: [WI3INFO1]

Subject: Informatics
Module coordination: Hartmut Schmeck, Andreas Oberweis, Detlef Seese, Wolffried Stucky, Rudi Studer, Stefan Tai
Credit points (CP): 9

Learning Control / Examinations
see German version

Prerequisites
None.

Conditions
Either the course *Advanced Programming - Java Network Programming* [25889] or the course *Advanced Programming - Application of Business Software* [25886] has to be attended.

Learning Outcomes
see German version

Content

Courses in module *Emphasis Informatics* [WI3INFO1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25780	Advanced Programming - Java Network Programming (S. 251)	2/1/2	S	5	Seese, Ratz
25886	Advanced Programming - Application of Business Software (S. 252)	2/1/2	W	5	Oberweis, Klink
25070	Applied Informatics I - Modelling (S. 203)	2/1	W	5	Oberweis, Studer
25033	Applied Informatics II - IT Systems for e-Commerce (S. 200)	2/1	S	5	Tai
25702	Algorithms for Internet Applications (S. 240)	2/1	W	5	Schmeck
25740	Knowledge Management (S. 243)	2/1	W	5	Studer
25760	Complexity Management (S. 245)	2/1	S	5	Seese
25728	Software Engineering (S. 242)	2/1	W	5	Oberweis, Seese
25772	Service-oriented Computing 2 (S. 250)	2/1	S	5	Tai, Studer
25700	Efficient Algorithms (S. 239)	2/1	S	5	Schmeck

Module: Electives in Informatic — Module key: [WI3INFO2]

Subject: Informatics
Module coordination: Hartmut Schmeck, Andreas Oberweis, Detlef Seese, Wolffried Stucky, Stefan Tai, Rudi Studer
Credit points (CP): 9

Learning Control / Examinations
see German version

Prerequisites
None.

Conditions
None.

Learning Outcomes
see German version

Content

Courses in module *Electives in Informatic* [WI3INFO2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25070	Applied Informatics I - Modelling (S. 203)	2/1	W	5	Oberweis, Studer
25033	Applied Informatics II - IT Systems for e-Commerce (S. 200)	2/1	S	5	Tai
25702	Algorithms for Internet Applications (S. 240)	2/1	W	5	Schmeck
25700	Efficient Algorithms (S. 239)	2/1	S	5	Schmeck
25720	Datenbanksysteme (S. 241)	2/1	S	5	Oberweis, Dr. D. Sommer
25760	Complexity Management (S. 245)	2/1	S	5	Seese
25762	Intelligent Systems in Finance (S. 247)	2/1	S	5	Seese
25728	Software Engineering (S. 242)	2/1	W	5	Oberweis, Seese
25740	Knowledge Management (S. 243)	2/1	W	5	Studer
25748	Semantic Web Technologies I (S. 244)	2/1	W	5	Studer, Hitzler, Rudolph, Rudolph
25770	Service-oriented Computing 1 (S. 249)	2/1	W	5	Tai

6.4 Operations Research

Module: Methods for Discrete Optimization — Module key: [WI3OR1]

Subject: Operations Research
Module coordination: Oliver Stein
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Methods for Discrete Optimization* [WI3OR1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25432	Optimization on Graphs and Networks (S. 228)	4/2/2	S	9	Nickel, N.N.
25138	Mixed-integer Optimization (S. 208)	4/2	S	9	Stein

Remarks
The lecture Mixed-integer Optimizationwill be offered in SS 2009 and SS 2011.

Module: Methods for Combinatorial Optimization — Module key: [WI3OR2]

Subject: Operations Research
Module coordination:
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The module *Operations Research* [WI1OR] has to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Methods for Combinatorial Optimization* [WI3OR2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25128	Combinatorial Optimization (S. 205)	4/2	S	9	N.n.
VLPP	Production Scheduling (S. 318)	4/2	W	9	N.N.

Remarks
The module is not yet offered.

Module: Methods for Continuous Optimization — Module key: [WI3OR3]

Subject: Operations Research
Module coordination: Oliver Stein
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Methods for Continuous Optimization* [WI3OR3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25111	Non-linear Optimization (S. 204)	4/2/2	S	9	Stein
25134	Global Optimization (S. 207)	4/2/2	W	9	Stein

Remarks
The module will be offered every second year.
The lectures will be offered that way:

- SS 2010 und SS 2012: Non-linear Optimization
- WS 2010/11 und WS 2012/2013: Global Optimization.

Module: Stochastic Methods and Simulation — Module key: [WI3OR4]

Subject: Operations Research
Module coordination: Karl-Heinz Waldmann
Credit points (CP): 9

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
The student knows and understands stochastic relationships and has a competent knowledge in modelling, analyzing and optimizing stochastic systems in economics and engineering.

Content
Topics overview:
Markov Chains, Poisson Processes, Markov Chains in Continuous Time, Queuing Systems.
Discrete event simulation, generation of random numbers, generating discrete and continous random variables, statistical analysis of simulated data
Variance reduction techniques, simulation of stochastic processes, case studies.

Courses in module *Stochastic Methods and Simulation* [WI3OR4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25679	OR Methods and Models in Information Engineering and Management (S. 238)	2/1/2	W	5	Waldmann
25662	Simulation I (S. 236)	2/1/2	W/S	5	Waldmann
25665	Simulation II (S. 237)	2/1/2	W/S	5	Waldmann

Remarks
The lectures of the module are offered irregularly. The curriculum of the next two years is available online.

6.5 Statistics

Module: Statistical Applications of Financial Risk Management Module key: [WI3STAT]

Subject: Statistics
Module coordination: Svetlozar Rachev
Credit points (CP): 9

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

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Statistical Applications of Financial Risk Management* [WI3STAT]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25325	Statistics and Econometrics in Business and Economics (S. 221)	2/2	W	4.5	Heller
25016	Economics III: Introduction in Econometrics (S. 199)	2/2	S	5	Höchstötter
25355	Bankmanagement und Finanzmärkte, Ökonometrische Anwendungen (S. 222)	2/2	S	5	Vollmer
25375	Data Mining (S. 227)	2	W	5	Nakhaeizadeh

Remarks
This module is offered for the first time in summer 2009.

6.6 Engineering Sciences

Module: Introduction to Technical Logistics — Module key: [WI3INGMB13]

Subject: Engineering Science
Module coordination: Kai Furmans
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
The courses *Materialflow* [21051] and *Fundamentals of Technical Logistics* [21081] are obligatory.

Learning Outcomes

Content

Courses in module *Introduction to Technical Logistics* [WI3INGMB13]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21051	Materialflow (S. 128)	3/1	W	6	Furmans
21081	Fundamentals of Technical Logistics (S. 133)	3/1	S	6	Mittwoollen
21086	Warehouse and Distribution Systems (S. 135)	2	S	3	Lippolt
21056	Airport Logistics (S. 129)	2	W	3	Brendlin
21085	Autotmative Logistics (S. 134)	2	S	3	Furmans
21089	Industrial Application of Material Handling Systems in Sorting and Distribution Systems (S. 136)	2	S	3	Foller
21692	International Production and Logistics (S. 167)	2	S	3	Lanza

Module: Handling Characteristics of Motor Vehicles — Module key: [WI3INGMB6]

Subject: Engineering Science
Module coordination: Frank Gauterin
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Successful completion of the engineering modules of the core programm.
Knowledge of the content of the courses *Engineering Mechanics I* [21208], *Engineering Mechanics II* [22642] and *Basics of Automotive Engineering I* [21805], *Basics of Automotive Engineering II* [21835] is helpful.

Conditions
None.

Learning Outcomes

Content

Courses in module *Handling Characteristics of Motor Vehicles* [WI3INGMB6]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21806	Vehicle Comfort and Acoustics I (S. 170)	2	W	3	Gauterin
21838	Handling Characteristics of Motor Vehicles II (S. 177)	2	S	3	Unrau
21845	Project Workshop-Automative Engineering (S. 181)	3	W/S	4.5	Gauterin
21807	Handling Characteristics of Motor Vehicles I (S. 171)	2	W	3	Unrau
21838	Handling Characteristics of Motor Vehicles II (S. 177)	2	S	3	Unrau
21816	Vehicle Mechatronics I (S. 175)	2	W	3	Ammon

Module: Automative Engineering — Module key: [WI3INGMB14]

Module coordination: Frank Gauterin
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Successful completion of the engineering modules of the core programm.
Knowledge of the content of the courses *Engineering Mechanics I* [21208], *Engineering Mechanics II* [22642] and *Basics of Automotive Engineering I* [21805], *Basics of Automotive Engineering II* [21835] is helpful.

Conditions
None.

Learning Outcomes

Content

Courses in module *Automative Engineering* [WI3INGMB14]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21845	Project Workshop-Automative Engineering (S. 181)	3	W/S	4.5	Gauterin
21816	Vehicle Mechatronics I (S. 175)	2	W	3	Ammon
21812	Fundamentals in the Development of Commercial Vehicles I (S. 173)	1	W	1.5	Zürn
21198	Fundamentals in the Development of Commercial Vehicles II (S. 148)	1	S	1.5	Zürn
21810	Fundamentals in the Development of Passenger Vehicles I (S. 172)	1	W	1.5	Frech
21842	Fundamentals in the Development of Passenger Vehicles II (S. 179)	1	S	1.5	Frech
21843	Basics and Methods for Integration of Tires and Vehicles (S. 180)	2	S	3	Leister
21095	Simulation of coupled systems (S. 139)	2	S	3	Geimer

Module: Automotive Engineering

Module key: [WI3INGMB5]

Subject: Engineering Science
Module coordination: Frank Gauterin
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Successful completion of the engineering modules of the core programm.
Knowledge of the content of the courses *Engineering Mechanics I* [21208], *Engineering Mechanics II* [22642] and *Basics of Automotive Engineering I* [21805], *Basics of Automotive Engineering II* [21835] is helpful.

Conditions
None.

Learning Outcomes

Content

Courses in module *Automotive Engineering* [WI3INGMB5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21805	Basics of Automotive Engineering I (S. 169)	4	W	6	Gauterin, Unrau
21835	Basics of Automotive Engineering II (S. 176)	2	S	3	Gauterin, Unrau
21845	Project Workshop-Automative Engineering (S. 181)	3	W/S	4.5	Gauterin
21814	Fundamentals for Design of Motor-Vehicle Bodies I (S. 174)	1	W	1.5	Harloff
21840	Fundamentals for Design of Motor-Vehicle Bodies II (S. 178)	1	S	1.5	Harloff
21093	Fluid Power Systems (S. 138)	2	S	3	Geimer
21092	CAN-Bus Release Control (S. 137)	2	S	3	Geimer

Module: Mechanical Modelling for Technical Applications Module key: [WI3INGMB12]

Subject: Engineering Science
Module coordination: Carsten Proppe
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.
The courses *Engineering Mechanics I* [21208] *Engineering Mechanics II* [21226] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Mechanical Modelling for Technical Applications* [WI3INGMB12]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21252p	Lab Course Experimental Solid Mechanics (S. 153)	3	S	4.5	Böhlke
21252	Advanced Course on strength of materials (S. 152)	2	W	3	Böhlke
21264	Simulation Methods in Product Development Process (S. 154)	2/1	W	4.5	Ovtcharova, Albers, Böhlke
21224	Dynamics of Machines (S. 150)	2	W	3	N.N.
21212	Theory of Mechanical Vibrations (S. 149)	2	W	3	Seemann, Boyaci

Module: Mobile Machines

Module key: [WI3INGMB15]

Subject: Engineering Science
Module coordination: Marcus Geimer
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.
Knowledge of Fluid Power Systems are helpful, otherwise it is recommended to take the course *Fluid Power Systems* [21093].

Conditions
None.

Learning Outcomes

Content

Courses in module *Mobile Machines* [WI3INGMB15]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21093	Fluid Power Systems (S. 138)	2	S	3	Geimer
21095	Simulation of coupled systems (S. 139)	2	S	3	Geimer
21092	CAN-Bus Release Control (S. 137)	2	S	3	Geimer
21073	Mobile Machines (S. 131)	4	W	6	Geimer
21812	Fundamentals in the Development of Commercial Vehicles I (S. 173)	1	W	1.5	Zürn
21198	Fundamentals in the Development of Commercial Vehicles II (S. 148)	1	S	1.5	Zürn

Module: Engine Development — Module key: [WI3INGMB17]

Subject: Engineering Science
Module coordination: Heiko Kubach
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
Successful completion of the engineering modules of the core programme.
Knowledge in the area of thermodynamics is helpful.

Conditions
The courses *Combustion Engines A [21101]* and *Combustion Engines B [21135]* are obligatory and have to be attended.

Learning Outcomes

Content

Courses in module *Engine Development* [WI3INGMB17]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21101	Combustion Engines A (S. 140)	4/2	W	6	Spicher
21135	Combustion Engines B (S. 145)	2/1	S	3	Spicher
21112	Supercharging of Internal Combustion Engines (S. 142)	2	S	3	Golloch
21114	Simulation of Spray and Mixture Formation in Internal Combustion Engines (S. 143)	2	W	3	Baumgarten
21134	Methods in Analyzing Internal Combustion (S. 144)	2	S	3	Wagner
21109	Motor Fuels for Combustion Engines and their Verifications (S. 141)	2	W	3	Volz
21138	Internal Combustion Engines and Exhaust Gas Aftertreatment Technology (S. 147)	2	S	3	Lox
21137	Engine Measurement Technologies (S. 146)	2	S	3	Bernhardt

Module: Combustion Engines

Module key: [WI3INGMB16]

Subject: Engineering Science
Module coordination: Heiko Kubach
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Successful completion of the engineering modules of the core programme.
Knowledge in the area of thermodynamics is helpful.

Conditions
The course *Combustion Engines A [21101]* is obligatory.

Learning Outcomes

Content

Courses in module *Combustion Engines* [WI3INGMB16]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21101	Combustion Engines A (S. 140)	4/2	W	6	Spicher
21135	Combustion Engines B (S. 145)	2/1	S	3	Spicher
21137	Engine Measurement Technologies (S. 146)	2	S	3	Bernhardt
21112	Supercharging of Internal Combustion Engines (S. 142)	2	S	3	Golloch
21114	Simulation of Spray and Mixture Formation in Internal Combustion Engines (S. 143)	2	W	3	Baumgarten
21134	Methods in Analyzing Internal Combustion (S. 144)	2	S	3	Wagner
21109	Motor Fuels for Combustion Engines and their Verifications (S. 141)	2	W	3	Volz

Module: Production Technology I — Module key: [WI3INGMB10]

Subject: Engineering Science
Module coordination: Volker Schulze
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Production Technology I* [WI3INGMB10]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21657	Manufacturing Technology (S. 165)	4/2	W	9	Schulze
21660	Integrated Production Planning (S. 166)	4/2	S	9	Lanza
21652	Machine Tools (S. 164)	4/2	W	9	Munzinger

Module: Production Technology II

Module key: [WI3INGMB4]

Subject: Engineering Science
Module coordination: Volker Schulze
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Production Technology II* [WI3INGMB4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21657	Manufacturing Technology (S. 165)	4/2	W	9	Schulze
21660	Integrated Production Planning (S. 166)	4/2	S	9	Lanza
21652	Machine Tools (S. 164)	4/2	W	9	Munzinger

Module: Production Technology III — Module key: [WI3INGMB7]

Subject: Engineering Science
Module coordination: Volker Schulze
Credit points (CP): 27

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Production Technology III* [WI3INGMB7]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21657	Manufacturing Technology (S. 165)	4/2	W	9	Schulze
21660	Integrated Production Planning (S. 166)	4/2	S	9	Lanza
21652	Machine Tools (S. 164)	4/2	W	9	Munzinger

Module: Specialization in Engineering Science — Module key: [WI3INGMB8]

Subject: Engineering Science
Module coordination: M. J. Hoffmann
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The corresponding course of the fundamental studies to each course in this module has to be completed succesfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Specialization in Engineering Science* [WI3INGMB8]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21782	Material Science II for Business Engineers (S. 168)	2/1	S	4.5	Hoffmann
21226	Engineering Mechanics II (S. 151)	2/1	S	4.5	Proppe
23224	Electrical Engineering II (S. 189)	2/1	S	4.5	Menesklou

Module: Emphasis Material Science — Module key: [WI3INGMB9]

Subject: Engineering Science
Module coordination: M. J. Hoffmann
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The course *Material Science I* [21760] has to be completed successfully.
It is recommended to have natural science basic knowledge and to be familiar with the content of the course *Material Science II* [21782].

Conditions
None.

Learning Outcomes

Content

Courses in module *Emphasis Material Science* [WI3INGMB9]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21553	Material Science III (S. 158)	4	W	6	Wanner
21603	Material Science III (S. 161)	4	W	6	Zum Gahr
21755	Introduction in Ceramics (S. 105)	2	W	3	Hoffmann
21574	Materials of Leightweight Construction (S. 159)	2	S	3	Weidenmann
21576	Selection and Usage of Material (S. 160)	2	S	3	Wanner
21626	Material Aspects of Tribology (S. 162)	2	S	3	Zum Gahr
21643	Constitution and Properties of Wear-resistant materials (S. 163)	2	W	3	Ullrich

Module: Product Lifecycle Management — Module key: [WI3INGMB21]

Subject: Engineering Science
Module coordination: Jivka Ovtcharova
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Successful completion of the engineering modules of the core programm.

Conditions
None.

Learning Outcomes

Content

Courses in module *Product Lifecycle Management* [WI3INGMB21]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21350	Product Lifecycle Management (S. 155)	3/1	W	6	Ovtcharova
21366	Product Lifecycle Management in the Manufacturing Industry (S. 156)	2/0	W	3	Meier
21387	Computer Integrated Planning of New Products (S. 157)	2/0	S	3	Kläger

Module: Electrical Power Engineering — Module key: [WI3INGETIT1]

Subject: Engineering Science
Module coordination: Bernd Hoferer, Thomas Leibfried
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
The courses *Energy Generation* [909081] and *Electric Power System Engineering I* [23371] are obligatory.
In addition to that more courses totalling 9 credit points have to be attended.

Learning Outcomes

Content

Courses in module *Electrical Power Engineering* [WI3INGETIT1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
909081	Systems for Electrical Energy (S. 295)	2/2	S	6	Leibfried
23371	Electric Power System Engineering I (S. 192)	2/2	W	6	Leibfried
23356	Energy Generation (S. 190)	2	W	3	Hoferer
23365	Diagnostics of Electrical Equipment (S. 191)	2/0	W	3	Leibfried
23390	Power Transformations (S. 194)	2	S	3	Schäfer
23382	Power Distribution Systems (S. 193)	2	S	3	Kühner
23396	Power Grid Supervisory and Control (S. 195)	2	S	3	Eichler

Module: Control Engineering — Module key: [WI3INGETIT2]

Subject: Engineering Science
Module coordination: Mathias Kluwe
Credit points (CP): 9

Learning Control / Examinations

Prerequisites

The engineering science modules of the fundamental studies have to be completed successfully.
Knowledge of integral transformations are assumed. There it is recommended to attend the courses *Complex Analysis* and *Integral Transformations* beforehand.

Conditions

The courses are to be attended in the following sequence:

1. *System Dynamics and Control Engineering* [23155]
2. *Modelling and Identification* [VLMI]

Learning Outcomes

Content

Courses in module *Control Engineering* [WI3INGETIT2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
23155	System Dynamics and Control Engineering (S. 188)	3/1	W	6	Kluwe
VLMI	Modelling and Identification (S. 317)	2/1	S	4.5	N.N.

Module: Fundamentals of Spatial and Infrastructural Development [WI3INGBGU1] Module key:

Subject: Engineering Science
Module coordination: Ralf Roos
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Fundamentals of Spatial and Infrastructural Development* [WI3INGBGU1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
19027	Basics in Transport Planning and Traffic Engineering (S. 115)	1/1	S	3	Zumkeller, Chlond
19026	Design Basics in Highway Engineering (S. 114)	1/1	S	3	Roos
19028	Spatial Planning and Planning Law (S. 116)	1/1	S	3	Engelke, Heberling

Module: Foundations of Guided Systems — Module key: [WI3INGBGU2]

Subject: Engineering Science
Module coordination: Friedrich Schedel
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Foundations of Guided Systems* [WI3INGBGU2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
19066	basic of ground born guided systems (S. 117)	3/1	S	6	Schedel, Hohnecker
19306	Railway Logistics, Management and Operating - Part I (S. 120)	1	W	3	Hohnecker

Module: Principles of Life Science Engineering — Module key: [WI3INGCV1]

Subject: Engineering Science
Module coordination: Volker Gaukel
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
The course *Principles of Process Engineering referring to Food I* [22213] is obligatory.

Learning Outcomes

Content

Courses in module *Principles of Life Science Engineering* [WI3INGCV1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
22213	Principles of Process Engineering referring to Food I (S. 184)	2	W	4	Gaukel
22601	Chemical Technology of Water (S. 187)	2	W	4	Frimmel
22319	Cycles and Global Development (S. 186)	2	W	4	Schaub
22220	Life Science Engineering II (S. 185)	2/0	W	2	Schuchmann, et. al.

Module: Reaction Engineering I — Module key: [WI3INGCV2]

Subject: Engineering Science
Module coordination: Bettina Kraushaar-Czarnetzki
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Reaction Engineering I* [WI3INGCV2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
22114	Reaction Engineering I (S. 183)	3/2	S	9	Müller

Module: Understanding and Prediction of Disasters I — Module key: [WI3INGINTER1]

Subject: Engineering Science
Module coordination: Ute Werner
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Understanding and Prediction of Disasters I* [WI3INGINTER1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
03071	Climatology for Students of other Faculties (S. 110)	3/2	S	5	Jones
04006	Introduction to General Geophysics (S. 111)	2/1	W	4	Wenzel
04014	Tectonic Stress in Petroleum Rock Mechanics (S. 112)	1/1	W	3	Müller
20242	Remote Sensing I (S. 124)	1	S	1.5	Bähr
20262	Remote Sensing II (S. 125)	2/1	S	4	Bähr
20150	GeoInformatics I (S. 122)	2/1	W	4	Zippelt
20160	GeoInformatics II (S. 123)	1/1	S	3	Rösch
19206	Measurment Techniques in Hydrology and Water Ressources Management (S. 118)	1/1	S	3	Buck, Ihringer
03013	Meteorological Natural Hazards (S. 109)	2	W	3.5	Kottmeier, Hauck, Jones
19216b	Soil Erosion and Soil Conservation (S. 119)	1	S	1.5	Prinz

Module: Understanding and Prediction of Disasters II Module key: [WI3INGINTER2]

Subject: Engineering Science
Module coordination: Ute Werner
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Understanding and Prediction of Disasters II* [WI3INGINTER2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
03071	Climatology for Students of other Faculties (S. 110)	3/2	S	5	Jones
04006	Introduction to General Geophysics (S. 111)	2/1	W	4	Wenzel
04014	Tectonic Stress in Petroleum Rock Mechanics (S. 112)	1/1	W	3	Müller
20242	Remote Sensing I (S. 124)	1	S	1.5	Bähr
20262	Remote Sensing II (S. 125)	2/1	S	4	Bähr
20150	GeoInformatics I (S. 122)	2/1	W	4	Zippelt
20160	GeoInformatics II (S. 123)	1/1	S	3	Rösch
03013	Meteorological Natural Hazards (S. 109)	2	W	3.5	Kottmeier, Hauck, Jones
19206	Measurment Techniques in Hydrology and Water Ressources Management (S. 118)	1/1	S	3	Buck, Ihringer
19216b	Soil Erosion and Soil Conservation (S. 119)	1	S	1.5	Prinz

Module: Safety Science I

Module key: [WI3INGINTER3]

Subject: Engineering Science
Module coordination: Ute Werner
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Safety Science I* [WI3INGINTER3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
19315	Safety Management in Highway Engineering (S. 121)	1	W	2	Zimmermann
21061	Safety Engineering (S. 130)	2	W	4	Kany
21930	Radiation Protection and Nuclear Emergency Protection (S. 182)	2	S	4	Bayer
21037	Industrial Safety and Environmental Management (S. 127)	2	S	4	Zülch, Kiparski
21030	Occupational Health and Safety Management and Systems (S. 126)	1	W	2	Zülch

Module: Safety Science II

Module key: [WI3INGINTER4]

Subject: Engineering Science
Module coordination: Ute Werner
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
The engineering science modules of the fundamental studies have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Courses in module *Safety Science II* [WI3INGINTER4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
19315	Safety Management in Highway Engineering (S. 121)	1	W	2	Zimmermann
21061	Safety Engineering (S. 130)	2	W	4	Kany
21930	Radiation Protection and Nuclear Emergency Protection (S. 182)	2	S	4	Bayer
21037	Industrial Safety and Environmental Management (S. 127)	2	S	4	Zülch, Kiparski
21030	Occupational Health and Safety Management and Systems (S. 126)	1	W	2	Zülch

Module: Unscheduled Engineering Module — Module key: [WI3INGAPL]

Subject: Engineering Science
Module coordination: Prüfer einer Ingenieurwissenschaftlichen Fakultät
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Remarks
The module is newly-offered in summer 2009.

6.7 Law

Module: Elective Module Law — Module key: [WI3JURA]

Subject: Law
Module coordination: Thomas Dreier
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Elective Module Law* [WI3JURA]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
24012	Civil Law for Beginners (S. 196)	4/0	W	4	Dreier, Sester
24016	Public Law I - Basic Principles (S. 197)	2/0	W	3	Spiecker genannt Döhmann
24520	Public Law II - Public Economic Law (S. 198)	2/0	S	3	Spiecker genannt Döhmann

6.8 Sociology

Module: Sociology/Empirical Social Research — Module key: [WI3SOZ]

Subject: Sociology
Module coordination: Gerd Nollmann
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Sociology/Empirical Social Research* [WI3SOZ]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
11005	Social structures of modern societies (S. 113)	2	W	4	Nollmann
spezSoz	Special Sociology (S. 319)	2	W/S	2	Nollmann, Pfadenhauer, Pfaff, Haupt, Grenz, Eisewicht
SozSem	Projectseminar (S. 316)	2	W/S	4	Bernart, Kunz, Pfaff, Haupt, Grenz, Eisewicht

6.9 General Modules

Module: Seminar Module — Module key: [WI3SEM]

Subject: no category
Module coordination: Marliese Uhrig-Homburg, Andreas Oberweis
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Seminar Module* [WI3SEM]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
SemAIFB1	Seminar in Enterprise Information Systems (S. 301)	2	W/S	3	Studer, Oberweis, Stucky, Wolf, Kneuper
SemAIFB2	Seminar Efficient Algorithms (S. 302)	2	W/S	3	Schmeck
SemAIFB3	Seminar Complexity Management (S. 303)	2	W/S	3	Seese
SemAIFB4	Seminar Knowledge Management (S. 304)	2	W	3	Studer
25131	Seminar in Continous Optimization (S. 206)	2	W/S	3	Stein
25293	Seminar in Finance (S. 218)	2	W/S	3	Uhrig-Homburg, Ruckes
SemFBV1	Seminar in Insurance Management (S. 305)	2	W/S	3	Werner
SemFBV2	Seminar in Operational Risk Management (S. 306)	2	W/S	3	Werner
SemFBV3	Seminar in Risk Theory and Actuarial Science (S. 307)	2	W/S	3	Hipp
SemIIP	Seminar in Ergonomics (S. 308)	2	W/S	3	Knauth, Karl
26524	Bachelor Seminar in Information Engineering and Management (S. 291)	2	W/S	3	Geyer-Schulz
26420	Topics of Sustainable Management of Housing and Real Estate (S. 281)	2	W/S	3	Lützkendorf
SemWIOR4	Seminar in Game and Decision Theory (S. 315)	2	W/S	3	Berninghaus
SemWIOR3	Seminar in Experimental Economics (S. 314)	2	W/S	3	Berninghaus
SemWIOR2	Seminar Economic Theory (S. 313)	2	W/S	3	Puppe
SemIW	Seminar Information Engineering and Management (S. 310)	2	W/S	3	Weinhardt
SemIWW	Seminar in System Dynamics and Innovation (S. 311)	2	W/S	3	Grupp, N.N.
26130	Seminar Financial Sciences (S. 264)	2	W/S	3	Wigger
26263	Seminar on Network Economics (S. 269)	2	W/S	3	Mitusch
SemWIOR1	Seminar Stochastic Models (S. 312)	2	W/S	3	Waldmann
25915	Seminar: Management and Organization (S. 256)	2	S	3	Lindstädt
SemIIP2	Seminar in Industrial Production (S. 309)	2	W/S	3	Schultmann
26470	Seminar Service Science, Management & Engineering (S. 285)	2	W/S	3	Tai
HoC1	Elective „Culture - Policy - Science - Technology” (S. 296)	2-	W/S	3	House of Competence
HoC3	Elective Foreig Languages (S. 298)	2-4	W/S	2-4	House of Competence
HoC4	Elective „Tutor Programmes” (S. 299)	k.A.	W/S	3	House of Competence
HoC2	Elective „Workshops for Competence and Creativity” (S. 297)	2-	W/S	3	House of Competence
HoC5	Elective „Personal Fitness & Emotional Competence” (S. 300)	k.A.	W/S	2-3	House of Competence

Module: Internship

Module key: [WI3EXPRAK]

Subject: no category
Module coordination: Der Vorsitzende des Prüfungsausschusses
Credit points (CP): 8

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Module: Bachelor Thesis

Module key: [WI3THESIS]

Subject: no category
Module coordination: Der Vorsitzende des Prüfungsausschusses
Credit points (CP): 12

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

7 Courses

7.1 Foundation

Course: Financial Accounting and Cost Accounting — Course key: [25002/25003]

Lecturers: Thomas Burdelski
Credit points (CP): 4 **Hours per week:** 2/2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Business Administration [WI1BWL] (S. 17)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
Business transactions are economic events that affect the financial position of a business entity. After this basic course students have to be familiar with the principles of Financial and Management Accounting especially with the four financial statements and the instruments of a cost accounting system.

Content
After an introduction to the objectives of accounting the student will learn the double- Entry- System, the basic method of accounting, and the difference between accounting and bookkeeping. We examine the typical business transactions for Trading Companies and Industrial Enterprises. Financial statements are the primary means of communicating important accounting information about a business to those who have an interest in the business. Four major financial statements are used to communicate accounting information: the income statement, the statement of retained earnings, the balance sheet and the statement of cash flows, here in the context with german laws (HGB). In the second part of the course the cost accounting instruments will be analyzed: cost type accounting, cost center accounting, and unit of output costing. Aspects of modern systems in Management Accounting conclude this basic course.

Media
slides

Basic literature
R. Buchner, Buchführung und Jahresabschluss, Vahlen Verlag
A. Coenenberg, Jahresabschluss und Jahresabschlussanalyse, Verlag Moderne Industrie
A. Coenenberg, Kostenrechnung und Kostenanalyse, Verlag Moderne Industrie
R. Ewert, A. Wagenhofer, Interne Unternehmensrechnung, Springer Verlag
J. Schöttler, R. Spulak, Technik des betrieblichen Rechnungswesen, Oldenbourg Verlag

Course: Business Administration and Management Science A Course key: [25023]

Lecturers: Thomas Burdelski
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Business Administration [WI1BWL] (S. 17)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Business Administration and Management Science B Course key: [25024/25025]

Lecturers: Wolfgang Gaul, Thomas Lützkendorf, Andreas Geyer-Schulz, Christof Weinhardt, Thomas Burdelski
Credit points (CP): 4 **Hours per week:** 2/0/2
Term: Sommersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Business Administration [WI1BWL] (S. 17)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
1. Marketing:
Marketing is an organizational function to handle situations, activities, and processes for creating, communicating, and delivering value to customers in a best way. (Customer) relationship management comprises collecting, aggregating, and analyzing information (e.g., developements in the society, changing conditions of markets, alterations w.r.t. buying behavior) to benefit different target groups.
Main topics will deal with market research and optimized application of marketing mix instruments with emphasis on “marketing and the web”,”innovation management”, and “international marketing”.
2. 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 electrical engineering industry, technological foresights, construction industry and real estate markets will be treated.
3. Information engineering and management
In today’s economy, information is a competetive factor that calls for an interdisciplinary investigation from economics and business administration, informatics and law. In this part of the lecture, selected topics from information engineering and management and their impact in market competition are presented
Topics include: Information in a company, Information processing: From an agent to business networks, social networks, service value networks, market engineering

Course: Business Administration and Management Science C Course key: [25026/25027]

Lecturers: Hagen Lindstädt, Martin E. Ruckes, Marliese Uhrig-Homburg, Thomas Burdelski
Credit points (CP): 4 **Hours per week:** 2/0/2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Business Administration [WI1BWL] (S. 17)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
1. Management and Organization
A) Foundations of Management
B) Foundations of Strategic Management
- Process of Strategic Management
- Strategic Analysis using the SWOT Framework
- Formulating Strategic Options
- Evaluation and Choice

C) Foundations of Organization
- Why do Organizations exist?
- Objectives, Measures and Conditions of Managing Organizations
- Level 1: Division of Labour and Design of Departments
- Level 2: Choosing the Hierarchical Structure
- Level 3: Coordination and Formalization

D) Agency-theoretic Foundations:
- Organization under Asymmetric Organization
- Three Types of Informational Asymmetries
- Type 1: Hidden Intention and Holdup
- Type 2: Hidden Characteristics and Adverse Selection
- Type 3: Hidden Action and Moral Hazard

Basic literature
Extensive bibliographic information will be given in the materials to the lecture.

Course: Economics I: Microeconomics — Course key: [25512]

Lecturers: Clemens Puppe
Credit points (CP): 5 **Hours per week:** 3/0/2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Economics [WI1VWL] (S. 18)

Learning Control / Examinations
Assessment will consist of a written exam (120 min) following §4, Abs. 2, 1 of the SPO.

Prerequisites
None.

Conditions
None.

Learning Outcomes
It is the main aim of this course to provide basic knowledge in economic modelling. Particularly, 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 but 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 possibly 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,
- practicing to solve the home work in due time,
- 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 possibly to present own problem solutions,

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) as well are discussed. In the final part of the course basics of imperfect competition (oligopolistic markets) and of game theory are presented.

Media
downloadable from IT server

Basic 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

Complementary 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 ...

Course: Economics II: Macroeconomics

Course key: [25014]

Lecturers: Werner Rothengatter, Schaffer
Credit points (CP): 5 **Hours per week:** 3/0/2
Term: Sommersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Economics [WI1VWL] (S. 18)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Introduction to Programming with Java — Course key: [25030]

Lecturers: Detlef Seese
Credit points (CP): 5 **Hours per week:** 3/1/2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Introduction to Informatics [WI1INFO] (S. 19)

Learning Control / Examinations
see German part

Prerequisites
None.

Conditions
None.

Learning Outcomes
see German part

Content
see German part

Basic literature
D. Ratz, J. Scheffler, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. Band 1: Der Einstieg in Programmierung und Objektorientierung. 4. überarbeitete Auflage, Hanser 2007.

Complementary literature
D. Ratz, J. Scheffler, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java. Band 2: Einführung in die Programmierung kommerzieller Systeme. 2. Auflage, Hanser 2006.

Remarks
see German part

Course: Foundations of Informatics I — Course key: [25074]

Lecturers: Rudi Studer, Sudhir Agarwal, Cimiano
Credit points (CP): 5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Introduction to Informatics [WI1INFO] (S. 19)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
Central theoretic basics and solution approaches coming from all areas of computer science are presented and illustrated and exercised using examples.

The following topics are covered:

- Object oriented modeling
- Logic (Propositional calculus, Predicate logic, boolean algebra)
- Algorithms and their properties
- Sort-and Search-Algorithms
- Problem Specification
- Dynamic Data Structures

Content

Complementary 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.

Course: Foundations of Informatics II — Course key: [25076]

Lecturers: Hartmut Schmeck
Credit points (CP): 5 **Hours per week:** 3/1
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Introduction to Informatics [WI1INFO] (S. 19)

Learning Control / Examinations
The assessment is done in form of a written exam (90 min.) (following §4(2), 1 SPO).
If the mark obtained in the written exam is in between 1.3 and 4.0, a successful completion of the assignments or of a bonus exam will improve the mark by one level.

Prerequisites
It is recommended to attend the course *Foundations of Informatics I* [25074] beforehand.
Active participation in the practical lessons is strongly recommended.

Conditions
None.

Learning Outcomes

Content

Course: Introduction to Operations Research I — Course key: [25040]

Lecturers: Oliver Stein, Karl-Heinz Waldmann, Stefan Nickel
Credit points (CP): 4.5 **Hours per week:** 2/2/2
Term: Sommersemester **Level:** 2
Teaching language: Deutsch
Part of the modules: Introduction to Operations Research [WI1OR] (S. 20)

Learning Control / Examinations

Prerequisites
See module information.

Conditions
None.

Learning Outcomes
Siehe Modulbeschreibung.

Content
Examples for typical OR problems.
Linear Programming: Basic notions, simplex method, duality, special versions of the simplex method (dual simplex method, three phase method), sensitivity analysis, parametric optimization, game theory.
Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal and minimal cost flows in networks.

Media
Tafel, Folien, Skript, OR-Software

Basic literature
Skript

Complementary literature

- Hillier, Lieberman: Introduction to Operations Research. McGraw-Hill
- Murty: Operations Research. Prentice-Hall
- Neumann, Morlock: Operations Research. Hanser
- Winston: Operations Research - Applications and Algorithms. PWS-Kent
- Büning, Naeve, Trenkler, Waldmann: Mathematik für Ökonomen im Hauptstudium. Oldenbourg 2000

Course: Introduction to Operations Research II — Course key: [25043]

Lecturers: Oliver Stein, Karl-Heinz Waldmann, Stefan Nickel
Credit points (CP): 4.5 **Hours per week:** 2/2/2
Term: Wintersemester **Level:** 2
Teaching language: Deutsch
Part of the modules: Introduction to Operations Research [WI1OR] (S. 20)

Learning Control / Examinations
See description of this module.

Prerequisites
See corresponding module information. Especially the course *Introduction to Operations Research I* [25040] is assumed.

Conditions
None.

Learning Outcomes
Siehe Modulbeschreibung.

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.

Media
Tafel, Folien, Skript, OR-Software

Basic literature
Skript

Complementary literature
- Hillier, Lieberman: Introduction to Operations Research. McGraw-Hill
- Murty: Operations Research. Prentice-Hall
- Neumann, Morlock: Operations Research. Hanser
- Winston: Operations Research - Applications and Algorithms. PWS-Kent
- Büning, Naeve, Trenkler, Waldmann: Mathematik für Ökonomen im Hauptstudium. Oldenbourg 2000

Course: Mathematics I

Course key: [01350]

Lecturers: Günter Last, Folkers, Klar
Credit points (CP): 7 **Hours per week:** 4/2/2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Mathematics [WI1MATH] (S. 25)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Mathematics II

Course key: [01830]

Lecturers: Günter Last, Folkers, Klar
Credit points (CP): 7 **Hours per week:** 4/2/2
Term: Sommersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Mathematics [WI1MATH] (S. 25)

Learning Control / Examinations

Prerequisites
Good knowledge of the content of the course *Mathematics I* [01350].

Conditions
None.

Learning Outcomes

Content

Course: Mathematics III

Course key: [01352]

Lecturers: Günter Last, Folkers, Klar
Credit points (CP): 7 **Hours per week:** 4/2/2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Mathematics [WI1MATH] (S. 25)

Learning Control / Examinations

Prerequisites
Good knowledge of the content of the courses Mathematics I [01350] and Mathematics II [01830].

Conditions
None.

Learning Outcomes

Content

Course: Statistics I — Course key: [25008/25009]

Lecturers: Markus Höchstötter
Credit points (CP): 4.5 **Hours per week:** 4/0/2
Term: Sommersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Statistics [WI1STAT] (S. 26)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The Student should understand and apply

- 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

Media
lecture notes

Basic literature
Skriptum: Kurzfassung Statistik I

Complementary literature

- Bol, G.: Deskriptive Statistik, 5. Aufl., Oldenbourg, München etc., 2001
- Bol, G.: Wahrscheinlichkeitstheorie, 5. Aufl., Oldenbourg, München etc., 2001
- Bosch, K.: Statistik-Taschenbuch, Oldenbourg, München etc., 1992
- Jambu, M.: Explorative Datenanalyse, G. Fischer, Stuttgart, 1992 Polasek,W.: Explorative Statistik, Springer, Berlin etc., 1994
- Rinne, H.: Taschenbuch der Statistik, 2. Aufl., Harri Deutsch, Frankfurt a. M. etc., 1997

Course: Statistics II

Course key: [25020/25021]

Lecturers: Markus Höchstötter
Credit points (CP): 4.5 **Hours per week:** 4/0/2
Term: Wintersemester **Level:** 2
Teaching language: Deutsch
Part of the modules: Statistics [WI1STAT] (S. 26)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
probability theory (continued), Introduction to estimation and testing theory

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)

Media
lecture notes

Basic literature
Skriptum: Kurzfassung Statistik II

Complementary literature

- Bohley, P.: Statistik, 5. Aufl., Oldenbourg, München etc., 1992
- Bol, G.: Wahrscheinlichkeitstheorie, 5. Aufl., Oldenbourg, München etc., 2001
- Bol, G.: Induktive Statistik, 3. Aufl., Oldenbourg, München etc., 2003
- Bosch, K.: Statistik-Taschenbuch, Oldenbourg, München etc., 1992
- Bünning, H. - Trenkler, G.: Nichtparametrische statistische Methoden, de Gruyter, Berlin, 1994
- Rinne, H.: Taschenbuch der Statistik, 2. Aufl., Harri Deutsch, Frankfurt a. M. etc., 1997
- Schaich, E.: Schätz- und Testmethoden für Sozialwissenschaftler, 2. Aufl., Vahlen, München, 1990
- Zwillinger, D. - Kokoska, S.: Standart Probability and Statistics Tables and Formulae, 2. Aufl., CRC, Boca Raton etc., 2000

Course: Introduction in Ceramics — Course key: [21755]

Lecturers: M. J. Hoffmann
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Material Science [WI3INGMB9] (S. 71)

Learning Control / Examinations

Prerequisites
The course *Material Science I* [21760] has to be completed beforehand.
Basic knowledge of natural science and knowledge of the content *Material Science II* [21782] is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Material Science I

Course key: [21760]

Lecturers: M. J. Hoffmann
Credit points (CP): 2.5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Material Science [WI1ING2] (S. 22)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Engineering Mechanics I

Course key: [21208]

Lecturers: Carsten Proppe
Credit points (CP): 2.5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Engineering Mechanics [WI1ING3] (S. 23)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Electrical Engineering I

Course key: [23223]

Lecturers: Wolfgang Menesklou
Credit points (CP): 2.5 **Hours per week:** 2/2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Electrical Engineering [WI1ING4] (S. 21)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

7.2 Specialization

Course: Meteorological Natural Hazards — Course key: [03013]

Lecturers: Kottmeier, Hauck, Jones
Credit points (CP): 3.5 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Climatology for Students of other Faculties — Course key: [03071]

Lecturers: Jones
Credit points (CP): 5 **Hours per week:** 3/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Introduction to General Geophysics — Course key: [04006]

Lecturers: Wenzel
Credit points (CP): 4 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Tectonic Stress in Petroleum Rock Mechanics Course key: [04014]

Lecturers: Müller
Credit points (CP): 3 **Hours per week:** 1/1
Term: Wintersemester **Level:** ???
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Social structures of modern societies — Course key: [11005]

Lecturers: Gerd Nollmann
Credit points (CP): 4 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Sociology/Empirical Social Research [WI3SOZ] (S. 85)

Learning Control / Examinations

Prerequisites
None.

Conditions
The lecture is obligatorily in the module and has to be completed.

Learning Outcomes

Content

Course: Design Basics in Highway Engineering — Course key: [19026]

Lecturers: Ralf Roos
Credit points (CP): 3 **Hours per week:** 1/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Fundamentals of Spatial and Infrastructural Development [WI3INGBGU1] (S. 75)

Learning Control / Examinations

Prerequisites
None.

Conditions
See corresponding module information.

Learning Outcomes

Content

Course: Basics in Transport Planning and Traffic Engineering Course key: [19027]

Lecturers: Dirk Zumkeller, Chlond
Credit points (CP): 3 **Hours per week:** 1/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Fundamentals of Spatial and Infrastructural Development [WI3INGBGU1] (S. 75)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Spatial Planning and Planning Law — Course key: [19028]

Lecturers: Engelke, Heberling
Credit points (CP): 3 **Hours per week:** 1/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Fundamentals of Spatial and Infrastructural Development [WI3INGBGU1] (S. 75)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: basic of ground born guided systems — Course key: [19066]

Lecturers: Friedrich Schedel, Hohnecker
Credit points (CP): 6 **Hours per week:** 3/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Foundations of Guided Systems [WI3INGBGU2] (S. 76)

Learning Control / Examinations
See module description.

Prerequisites
See module description.

Conditions
Siehe Modulbeschreibung.

Learning Outcomes

Content

Course: Measurment Techniques in Hydrology and Water Ressources ManagementCourse key: [19206]

Lecturers: Buck, Ihringer
Credit points (CP): 3 **Hours per week:** 1/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Soil Erosion and Soil Conservation — Course key: [19216b]

Lecturers: Prinz
Credit points (CP): 1.5 **Hours per week:** 1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Railway Logistics, Management and Operating - Part I Course key: [19306]

Lecturers: Hohnecker
Credit points (CP): 3 **Hours per week:** 1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Foundations of Guided Systems [WI3INGBGU2] (S. 76)

Learning Control / Examinations
See module description.

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Safety Management in Highway Engineering — Course key: [19315]

Lecturers: Zimmermann
Credit points (CP): 2 **Hours per week:** 1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Safety Science I [WI3INGINTER3] (S. 81), Safety Science II [WI3INGINTER4] (S. 82)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content

Course: GeoInformatics I

Course key: [20150]

Lecturers: Zippelt
Credit points (CP): 4 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: GeoInformatics II

Course key: [20160]

Lecturers: Rösch
Credit points (CP): 3 **Hours per week:** 1/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Remote Sensing I

Course key: [20242]

Lecturers: Bähr
Credit points (CP): 1.5 **Hours per week:** 1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Remote Sensing II — Course key: [20262]

Lecturers: Bähr
Credit points (CP): 4 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Understanding and Prediction of Disasters I [WI3INGINTER1] (S. 79), Understanding and Prediction of Disasters II [WI3INGINTER2] (S. 80)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Thermodynamics* beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Occupational Health and Safety Management and Systems Course key: [21030]

Lecturers: Zülch
Credit points (CP): 2 **Hours per week:** 1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Safety Science I [WI3INGINTER3] (S. 81), Safety Science II [WI3INGINTER4] (S. 82)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Industrial Safety and Environmental Management Course key: [21037]

Lecturers: Zülch, Kiparski
Credit points (CP): 4 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Safety Science I [WI3INGINTER3] (S. 81), Safety Science II [WI3INGINTER4] (S. 82)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Materialflow

Course key: [21051]

Lecturers: Kai Furmans
Credit points (CP): 6 **Hours per week:** 3/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Introduction to Technical Logistics [WI3INGMB13] (S. 59)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Airport Logistics

Course key: [21056]

Lecturers: Brendlin
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Introduction to Technical Logistics [WI3INGMB13] (S. 59)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Safety Engineering

Course key: [21061]

Lecturers: Kany
Credit points (CP): 4 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Safety Science I [WI3INGINTER3] (S. 81), Safety Science II [WI3INGINTER4] (S. 82)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Mobile Machines

Course key: [21073]

Lecturers: Marcus Geimer
Credit points (CP): 6 **Hours per week:** 4
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Mobile Machines [WI3INGMB15] (S. 64)

Learning Control / Examinations
See modul description.

Prerequisites
It is recommended to attend the course *Fluid Power Systems* [21093] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Logistics — Course key: [21078]

Lecturers: Kai Furmans
Credit points (CP): 6 **Hours per week:** 3/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Supply Chain Management [WI3BWLISM2] (S. 29)

Learning Control / Examinations
Assessment will consist of a written exam following §4, Abs. 2, 1 of the exmanination regulation.

Prerequisites
Requied are lectures on “Linear Algebra” and “Stochastic”.

Conditions
None.

Learning Outcomes
after successfully finishing this course, the student is able to plan simple material handling and logistic systems and is able to assign the right models to a certain task. He is able to evaluate the performance of the most important elements of material handling and logistic systems.

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

Media
Blackboard, Beramer, In Excercises also PCs

Complementary 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

Course: Fundamentals of Technical Logistics — Course key: [21081]

Lecturers: Mittwoollen
Credit points (CP): 6 **Hours per week:** 3/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Introduction to Technical Logistics [WI3INGMB13] (S. 59)

Learning Control / Examinations

Prerequisites
Technical understanding is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Autotmative Logistics

Course key: [21085]

Lecturers: Kai Furmans
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Introduction to Technical Logistics [WI3INGMB13] (S. 59)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Warehouse and Distribution Systems — Course key: [21086]

Lecturers: Lippolt
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Introduction to Technical Logistics [WI3INGMB13] (S. 59)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Industrial Application of Material Handling Systems in Sorting and Distribution Systems
Course key: [21089]

Lecturers: Foller
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Introduction to Technical Logistics [WI3INGMB13] (S. 59)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: CAN-Bus Release Control — Course key: [21092]

Lecturers: Marcus Geimer
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI3INGMB5] (S. 62), Mobile Machines [WI3INGMB15] (S. 64)

Learning Control / Examinations

Prerequisites
Basic knowledge of electrical engineering is recommended. Programming skills are also helpful.

Conditions
None.

Learning Outcomes

Content

Course: Fluid Power Systems — Course key: [21093]

Lecturers: Marcus Geimer
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI3INGMB5] (S. 62), Mobile Machines [WI3INGMB15] (S. 64)

Learning Control / Examinations

Prerequisites
It is recommended to understand the mechanical and fluid mechanical basics.

Conditions
None.

Learning Outcomes

Content

Course: Simulation of coupled systems — Course key: [21095]

Lecturers: Marcus Geimer
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI3INGMB14] (S. 61), Mobile Machines [WI3INGMB15] (S. 64)

Learning Control / Examinations

Prerequisites
It is recommended to have:

- Knowledge of ProE (ideally Wildfire 2.0)
- Basic knowledge of Matlab/Simulink
- Basic knowledge of dynamics of machines
- Basic knowledge of hydraulics

Conditions
None.

Learning Outcomes

Content

Course: Combustion Engines A — Course key: [21101]

Lecturers: Spicher
Credit points (CP): 6 **Hours per week:** 4/2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI3INGMB17] (S. 65), Combustion Engines [WI3INGMB16] (S. 66)

Learning Control / Examinations

Prerequisites
It is recommended to have basic knowledge of thermodynamics.

Conditions
None.

Learning Outcomes

Content

Course: Motor Fuels for Combustion Engines and their Verifications Course key: [21109]

Lecturers: Volz
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI3INGMB17] (S. 65), Combustion Engines [WI3INGMB16] (S. 66)

Learning Control / Examinations

Prerequisites
Successful completion of the course *Combustion Engines A* [21101].
Basic knowledge of chemistry is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Supercharging of Internal Combustion Engines Course key: [21112]

Lecturers: Golloch
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI3INGMB17] (S. 65), Combustion Engines [WI3INGMB16] (S. 66)

Learning Control / Examinations

Prerequisites
The course *Combustion Engines A* [21101] has to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Simulation of Spray and Mixture Formation in Internal Combustion EnginesCourse key: [21114]

Lecturers: Baumgarten
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI3INGMB17] (S. 65), Combustion Engines [WI3INGMB16] (S. 66)

Learning Control / Examinations

Prerequisites
The course *Combustion Engines A* [21101] has to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Methods in Analyzing Internal Combustion — Course key: [21134]

Lecturers: Wagner
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI3INGMB17] (S. 65), Combustion Engines [WI3INGMB16] (S. 66)

Learning Control / Examinations

Prerequisites
The course *Combustion Engines A* [21101] has to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Combustion Engines B — Course key: [21135]

Lecturers: Spicher
Credit points (CP): 3 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI3INGMB17] (S. 65), Combustion Engines [WI3INGMB16] (S. 66)

Learning Control / Examinations

Prerequisites
The course *Combustion Engines A* [21101] has to be completed beforehand.
Knowledge of thermodynamics is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Engine Measurement Technologies — Course key: [21137]

Lecturers: Bernhardt
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI3INGMB17] (S. 65), Combustion Engines [WI3INGMB16] (S. 66)

Learning Control / Examinations

Prerequisites
The course *Combustion Engines A* [21101] has to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Internal Combustion Engines and Exhaust Gas Aftertreatment TechnologyCourse key: [21138]

Lecturers: Lox
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI3INGMB17] (S. 65)

Learning Control / Examinations

Prerequisites
The course *Combustion Engines A* [21101] has to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Fundamentals in the Development of Commercial Vehicles II Course key: [21198]

Lecturers: Zürn
Credit points (CP): 1.5 **Hours per week:** 1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI3INGMB14] (S. 61), Mobile Machines [WI3INGMB15] (S. 64)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Fundamentals in the Development of Passenger Vehicles I* [21810] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Theory of Mechanical Vibrations — Course key: [21212]

Lecturers: Seemann, Boyaci
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Mechanical Modelling for Technical Applications [WI3INGMB12] (S. 63)

Learning Control / Examinations

Prerequisites
The engineering science modules of the first three semesters have to be completed successfully.
The courses *Technical Mechanics I* [21208] and *Technical Mechanics II* [21226] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Course: Dynamics of Machines — Course key: [21224]

Lecturers: N.N.
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Mechanical Modelling for Technical Applications [WI3INGMB12] (S. 63)

Learning Control / Examinations

Prerequisites
The engineering science modules of the first three semesters have to be completed successfully.
The courses *Technical Mechanics I* [21208] and *Technical Mechanics II* [21226] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Course: Engineering Mechanics II

Course key: [21226]

Lecturers: Carsten Proppe
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Specialization in Engineering Science [WI3INGMB8] (S. 70)

Learning Control / Examinations

Prerequisites
The module *Technical Mechanics I* [WI1ING3] has to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Advanced Course on strength of materials — Course key: [21252]

Lecturers: Böhlke
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Mechanical Modelling for Technical Applications [WI3INGMB12] (S. 63)

Learning Control / Examinations

Prerequisites
The engineering science modules of the first three semesters have to be completed successfully.
The courses *Technical Mechanics I* [21208] and *Technical Mechanics II* [21226] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Course: Lab Course Experimental Solid Mechanics — Course key: [21252p]

Lecturers: Böhlke
Credit points (CP): 4.5 **Hours per week:** 3
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Mechanical Modelling for Technical Applications [WI3INGMB12] (S. 63)

Learning Control / Examinations

Prerequisites
The courses *Technical Mechanics I* [21208] and *Technical Mechanics II* [21226] have to be completed successfully.
It is recommended to attend the course *Advanced Course on strength of materials* [21252].

Conditions
None.

Learning Outcomes

Content

Course: Simulation Methods in Product Development Process Course key: [21264]

Lecturers: Ovtcharova, Albers, Böhlke
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Mechanical Modelling for Technical Applications [WI3INGMB12] (S. 63)

Learning Control / Examinations

Prerequisites
The engineering science modules of the first three semesters have to be completed successfully.
The courses *Technical Mechanics I* [21208] and *Technical Mechanics II* [21226] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Course: Product Lifecycle Management — Course key: [21350]

Lecturers: Jivka Ovtcharova
Credit points (CP): 6 **Hours per week:** 3/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Product Lifecycle Management [WI3INGMB21] (S. 72)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Product Lifecycle Management in the Manufacturing Industry Course key: [21366]

Lecturers: Gunter Meier
Credit points (CP): 3 **Hours per week:** 2/0
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Product Lifecycle Management [WI3INGMB21] (S. 72)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Computer Integrated Planning of New Products — Course key: [21387]

Lecturers: Roland Kläger
Credit points (CP): 3 **Hours per week:** 2/0
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Product Lifecycle Management [WI3INGMB21] (S. 72)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Material Science III

Course key: [21553]

Lecturers: Wanner
Credit points (CP): 6 **Hours per week:** 4
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Material Science [WI3INGMB9] (S. 71)

Learning Control / **Examinations**

Prerequisites
The course *Material Science I* [21760] is a prerequisite.
It is recommeded to have basic knowledge of natural science and knowledge of the content of the course *Material Science II* [21782].

Conditions
None.

Learning Outcomes

Content

Course: Materials of Leightweight Construction — Course key: [21574]

Lecturers: Weidenmann
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Material Science [WI3INGMB9] (S. 71)

Learning Control / Examinations

Prerequisites
Successfull completion of the course *Material Science I* [21760].
Basic knowledge of natural science and knowledge of the content *Material Science II* [21782] is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Selection and Usage of Material — Course key: [21576]

Lecturers: Wanner
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Material Science [WI3INGMB9] (S. 71)

Learning Control / **Examinations**

Prerequisites
The course *Material Science I* [21760] has to be completed beforehand.
Basic knowledge of natural science and knowledge of the content *Material Science II* [21782] is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Material Science III — Course key: [21603]

Lecturers: Zum Gahr
Credit points (CP): 6 **Hours per week:** 4
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Material Science [WI3INGMB9] (S. 71)

Learning Control / Examinations

Prerequisites
The course *Material Science I* [21760] has to be completed beforehand.
Basic knowledge of natural science and knowledge of the content *Material Science II* [21782] is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Material Aspects of Tribology — Course key: [21626]

Lecturers: Zum Gahr
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Material Science [WI3INGMB9] (S. 71)

Learning Control / **Examinations**

Prerequisites
The course *Material Science I* [21760] has to be completed beforehand.
Basic knowledge of natural science and knowledge of the content *Material Science II* [21782] is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Constitution and Properties of Wear-resistant materials Course key: [21643]

Lecturers: Ullrich
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Material Science [WI3INGMB9] (S. 71)

Learning Control / Examinations

Prerequisites
The course *Material Science I* [21760] has to be completed beforehand.
Basic knowledge of natural science and knowledge of the content *Material Science II* [21782] is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Machine Tools

Course key: [21652]

Lecturers: Munzinger
Credit points (CP): 9 **Hours per week:** 4/2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Production Technology I [WI3INGMB10] (S. 67), Production Technology II [WI3INGMB4] (S. 68), Production Technology III [WI3INGMB7] (S. 69)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Manufacturing Technology — Course key: [21657]

Lecturers: Volker Schulze
Credit points (CP): 9 **Hours per week:** 4/2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Production Technology I [WI3INGMB10] (S. 67), Production Technology II [WI3INGMB4] (S. 68), Production Technology III [WI3INGMB7] (S. 69)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Integrated Production Planning — Course key: [21660]

Lecturers: Lanza
Credit points (CP): 9 **Hours per week:** 4/2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Production Technology I [WI3INGMB10] (S. 67), Production Technology II [WI3INGMB4] (S. 68), Production Technology III [WI3INGMB7] (S. 69)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Manufacturing Technology* [21657] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: International Production and Logistics — Course key: [21692]

Lecturers: Lanza
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Introduction to Technical Logistics [WI3INGMB13] (S. 59)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Material Science II for Business Engineers — Course key: [21782]

Lecturers: Hoffmann
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Specialization in Engineering Science [WI3INGMB8] (S. 70)

Learning Control / Examinations

Prerequisites
The module *Material Science* [WI1ING2] has to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Basics of Automotive Engineering I — Course key: [21805]

Lecturers: Frank Gauterin, Unrau
Credit points (CP): 6 **Hours per week:** 4
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI3INGMB5] (S. 62)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Vehicle Comfort and Acoustics I — Course key: [21806]

Lecturers: Frank Gauterin
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Handling Characteristics of Motor Vehicles [WI3INGMB6] (S. 60)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Handling Characteristics of Motor Vehicles I — Course key: [21807]

Lecturers: Unrau
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Handling Characteristics of Motor Vehicles [WI3INGMB6] (S. 60)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Fundamentals in the Development of Passenger Vehicles I Course key: [21810]

Lecturers: Frech
Credit points (CP): 1.5 **Hours per week:** 1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI3INGMB14] (S. 61)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Fundamentals in the Development of Commercial Vehicles I Course key: [21812]

Lecturers: Zürn
Credit points (CP): 1.5 **Hours per week:** 1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI3INGMB14] (S. 61), Mobile Machines [WI3INGMB15] (S. 64)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Fundamentals for Design of Motor-Vehicle Bodies I Course key: [21814]

Lecturers: Harloff
Credit points (CP): 1.5 **Hours per week:** 1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI3INGMB5] (S. 62)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Vehicle Mechatronics I — Course key: [21816]

Lecturers: Ammon
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Handling Characteristics of Motor Vehicles [WI3INGMB6] (S. 60), Automative Engineering [WI3INGMB14] (S. 61)

Learning Control / Examinations

Prerequisites
It is recommeded to have knowledge of control engineering, technical mechanics and automobile technology.

Conditions
None.

Learning Outcomes

Content

Course: Basics of Automotive Engineering II — Course key: [21835]

Lecturers: Frank Gauterin, Unrau
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI3INGMB5] (S. 62)

Learning Control / Examinations

Prerequisites
It is recommeded to attend the course *Fundamentals for Design of Motor-Vehicle Bodies I* [21814].

Conditions
None.

Learning Outcomes

Content

Course: Handling Characteristics of Motor Vehicles II — Course key: [21838]

Lecturers: Unrau
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Handling Characteristics of Motor Vehicles [WI3INGMB6] (S. 60)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Handling Characteristics of Motor Vehicles I* [21807] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Fundamentals for Design of Motor-Vehicle Bodies II Course key: [21840]

Lecturers: Harloff
Credit points (CP): 1.5 **Hours per week:** 1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI3INGMB5] (S. 62)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Fundamentals for Design of Motor-Vehicle Bodies I* [21814] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Fundamentals in the Development of Passenger Vehicles II Course key: [21842]

Lecturers: Frech
Credit points (CP): 1.5 **Hours per week:** 1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI3INGMB14] (S. 61)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Fundamentals in the Development of Passenger Vehicles I* [21810] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Basics and Methods for Integration of Tires and Vehicles Course key: [21843]

Lecturers: Leister
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI3INGMB14] (S. 61)

Learning Control / Examinations

Prerequisites
Knowledge of automobile technology is recommeded.

Conditions
None.

Learning Outcomes

Content

Course: Project Workshop-Automative Engineering Course key: [21845]

Lecturers: Frank Gauterin
Credit points (CP): 4.5 **Hours per week:** 3
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Handling Characteristics of Motor Vehicles [WI3INGMB6] (S. 60), Automative Engineering [WI3INGMB14] (S. 61), Automotive Engineering [WI3INGMB5] (S. 62)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Radiation Protection and Nuclear Emergency Protection Course key: [21930]

Lecturers: Bayer
Credit points (CP): 4 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Safety Science I [WI3INGINTER3] (S. 81), Safety Science II [WI3INGINTER4] (S. 82)

Learning Control / Examinations

Prerequisites
Basic knowledge of physics/nuclear physics of the secondary school is assumed (atomic structure, electrons, etc.)

Conditions
None.

Learning Outcomes

Content

Course: Reaction Engineering I

Course key: [22114]

Lecturers: Müller
Credit points (CP): 9 **Hours per week:** 3/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Reaction Engineering I [WI3INGCV2] (S. 78)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Principles of Process Engineering referring to Food I — Course key: [22213]

Lecturers: Volker Gaukel
Credit points (CP): 4 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Principles of Life Science Engineering [WI3INGCV1] (S. 77)

Learning Control / Examinations

Prerequisites
None.

Conditions
The course is an obligatory course within the module and has to be attended.

Learning Outcomes

Content

Course: Life Science Engineering II

Course key: [22220]

Lecturers: Schuchmann, et. al.
Credit points (CP): 2 **Hours per week:** 2/0
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Principles of Life Science Engineering [WI3INGCV1] (S. 77)

Learning Control / Examinations

Prerequisites
The engineering science modules of the first three semesters have to be completed successfully.

Conditions
None.

Learning Outcomes

Content

Course: Cycles and Global Development — Course key: [22319]

Lecturers: Georg Schaub
Credit points (CP): 4 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Principles of Life Science Engineering [WI3INGCV1] (S. 77)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Chemical Technology of Water — Course key: [22601]

Lecturers: F.H. Frimmel
Credit points (CP): 4 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Principles of Life Science Engineering [WI3INGCV1] (S. 77)

Learning Control / Examinations

Prerequisites
None.

Conditions
See corresponding module information.

Learning Outcomes

Content

Course: System Dynamics and Control Engineering Course key: [23155]

Lecturers: Kluwe
Credit points (CP): 6 **Hours per week:** 3/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Control Engineering [WI3INGETIT2] (S. 74)

Learning Control / Examinations

Prerequisites
Knowledge of integral transformations is assumed.
Therefore it is recommeded to attend the course *Complex Analysis and Integral Transformations* beforehand or to acquire a good knowledge through private study (see literature), but a proof of performance is not necessary.

Conditions
None.

Learning Outcomes

Content

Course: Electrical Engineering II

Course key: [23224]

Lecturers: Wolfgang Menesklou
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Specialization in Engineering Science [WI3INGMB8] (S. 70)

Learning Control / Examinations

Prerequisites
Successful completion of the module *Electrical Engineering* [WI1ING4].

Conditions
None.

Learning Outcomes

Content

Course: Energy Generation

Course key: [23356]

Lecturers: Bernd Hoferer
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [WI3INGETIT1] (S. 73)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Diagnostics of Electrical Equipment — Course key: [23365]

Lecturers: Thomas Leibfried
Credit points (CP): 3 **Hours per week:** 2/0
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [WI3INGETIT1] (S. 73)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Electric Power System Engineering I — Course key: [23371]

Lecturers: Thomas Leibfried
Credit points (CP): 6 **Hours per week:** 2/2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [WI3INGETIT1] (S. 73)

Learning Control / Examinations

Prerequisites
None.

Conditions
This course is obligatory within the module and has to be attended.

Learning Outcomes

Content

Course: Power Distribution Systems — Course key: [23382]

Lecturers: Kühner
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [WI3INGETIT1] (S. 73)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Power Transformations

Course key: [23390]

Lecturers: Schäfer
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [WI3INGETIT1] (S. 73)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Power Grid Supervisory and Control — Course key: [23396]

Lecturers: Eichler
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [WI3INGETIT1] (S. 73)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Civil Law for Beginners — Course key: [24012]

Lecturers: Thomas Dreier, Peter Sester
Credit points (CP): 4 **Hours per week:** 4/0
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Elective Module Law [WI3JURA] (S. 84)

Learning Control / Examinations
Assessment will consist of a written exam following §4, Abs. 2, 1 of the SPO. Time: 90 min.

Prerequisites
None.

Conditions
None.

Learning Outcomes
To begin with, the course provides students with a general introduction into law. It shall enable them to understand legal problems and solutions both with regard to lawmaking and to individual cases. Students shall grasp the differences between civil law, public law and criminal law. In particular, students shall learn the fundamental notions and constructions of Civil law as laid down in the German Civil Code (Bürgerliches Gesetzbuch, BGB), such as subjects and objects of law, legally binding declarations, the formation of contracts, standard terms and conditions, consumer protection, performance of contractual promises etc. Students shall be trained to understand legal problems and legal solutions. They shall be able to recognise the legal problems of a given factual situation and develop solutions to simple legal problems.

Content
The course starts with a general introduction into law. What is law, why are legal rules valid, and what is the role of law in conjunction with social behaviour, technological and market developments? What is the relationship between law and justice? Moreover, the distinction between civil law, public law and criminal law will be highlighted. The basiscs of jurisdiction, international conflicts and alternative dispute settlement will be discussed. The main focus of the course is on the fundamental notions of civil law as defined and regulated in the German Civil Code (Bürgerliches Gesetzbuch, BGB), such as subjects and objects of law, legally binding declarations, agency, the formation of contracts, standard terms and conditions, consumer protection, performance of contractual promises. The course ends with an outlook to the law of contracts and property law.

Media
Transparencies/Slides

Basic literature
Tba at the beginning of the course,

Complementary literature
Tba at the beginning of the course,

Course: Public Law I - Basic Principles — Course key: [24016]

Lecturers: Indra Spiecker genannt Döhmann
Credit points (CP): 3 **Hours per week:** 2/0
Term: Wintersemester **Level:** 2
Teaching language: Deutsch
Part of the modules: Elective Module Law [WI3JURA] (S. 84)

Learning Control / Examinations
Assessment will consist of a written exam concerning the courses *Public Law I* [24016] and *Public Law II* [24520] (following §4(2), 1 SPO).

Prerequisites
None.

Conditions
None.

Learning Outcomes
[Jonas wiederherstellen]

Content
The course covers core material of constitutional and administrative law. It begins with the diferenciation between public and private law. In the constitutional law part, the course will concentrate on the rule of law and individual rights, especially those protecting communication and entrepreneurship. The administrative law part will explain the different legal instruments of the administration how to act (rule, order, contract, etc.) and their propositions. Also, court proceedings to sue the administrative will be discussed. Students will learn the technique how to solve (easy) administrative and constitutional cases.

Media
abstracts, sketches on blackboard, slides

Basic literature
tba in srciptum

Complementary literature
tba in scriptum

Remarks
From the winter term 2008 on, the *Public Law I* will be lectured during the winter termn and *Public Law II* will be lectured during the summer term. This means:

1. In the winter term 2008/2009, Public Law I was being lectured.
2. In the summer term 2009, Public Law II will be lectured.

Course: Public Law II - Public Economic Law — Course key: [24520]

Lecturers: Indra Spiecker genannt Döhmann
Credit points (CP): 3 **Hours per week:** 2/0
Term: Sommersemester **Level:** 2
Teaching language: Deutsch
Part of the modules: Elective Module Law [WI3JURA] (S. 84)

Learning Control / Examinations
Assessment will consist of a written exam concerning the courses *Public Law I* [24016] and *Public Law II* [24520] (following §4(2), 1 SPO).

Prerequisites
None.

Conditions
None.

Learning Outcomes
Public economiclaw is of significant importance to supervise the German economy. In order to understand the functionality of mandatory interventions into market mechanisms in a thoroughly normed legal system, appropriate legal knowledge is required. This knowledge is to be provided in the lecture. In doing so, substantive law ought to be dealt with in a deepened way, while responsible authorities and institutions as well as possibilities of legal protection in the area of public commercial law will be taught at a glance. The lecture´s primary aim is to exercise handling the corresponding legal norms. It proceeds the lecture *public law I*.

Content
In a first step legal basics of the economic system (such as financial system and freedom of property and profession) will be presented. In this context, interaction between the Basic Constitutional Law and presettings of European Community law will be elaborated on as well. Thereafter, regulatory instruments of the administrative law will be analysed extensively. As particular matters, we will deal with industrial code, further trade law (handicrafts code; law of gastronomy), basic principles of telecommunication law, state aid law and public procurement law. A last part is devoted to the institutional design of the economy´s regulation.

Media
content structure; documents

Basic literature
Will be announced in the lecture.

Complementary literature
tba in lecture slides

Remarks
In winter term 2008 on, the *Public Law I* will be lectured during the winter term and *Public Law II* will be lectured during the summer term. This means:

1. In the winter term 2008/2009, Public Law I will be lectured.
2. In the summer term 2009, Public Law II will be lectured.

Course: Economics III: Introduction in Econometrics — Course key: [25016]

Lecturers: Markus Höchstötter
Credit points (CP): 5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Statistical Applications of Financial Risk Management [WI3STAT] (S. 58)

Learning Control / Examinations

Prerequisites
staistics I + II

Conditions
None.

Learning Outcomes
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

Basic 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

Complementary literature
Additional literature will be suggested in course

Course: Applied Informatics II - IT Systems for e-Commerce Course key: [25033]

Lecturers: Stefan Tai
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 2
Teaching language: Deutsch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52), Electives in Informatic [WI3INFO2] (S. 53)

Learning Control / Examinations

Prerequisites
Knowledge of content of the courses *Foundations of Informatics I* [25074] and *Foundations of Informatics II* [25076] is expected.

Conditions
None.

Learning Outcomes
The student learns about IT methods and systems in support of modern electronic commerce. The student should be able to select, asess, design, and apply these methods and systems in a context-sensitive manner.

Content
The course introduces methods and systems in support of electronic commerce, including the topics:

- application architectures (incl. client server architectures)
- document description and exchange (incl. XML)
- enterprise middleware (incl. CORBA, Messaging Middleware, Java Enterprise Edition)
- Web services and SOA

Media
Slides, internet resources.

Basic literature
Tba in the lecture.

Course: Private and Social Insurance — Course key: [25050]

Lecturers: Ute Werner, Heilmann, Besserer
Credit points (CP): 2,5 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Insurance Management [WI3BWLFBV4] (S. 38)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Principles of Insurance Management — Course key: [25055]

Lecturers: Ute Werner
Credit points (CP): 4,5 **Hours per week:** 3/0
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Risk and Insurance Management [WI3BWLFBV3] (S. 37), Insurance Management [WI3BWLFBV4] (S. 38)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Remarks
This lecture will be held additionally in the summer term 2009.

Course: Applied Informatics I - Modelling — Course key: [25070]

Lecturers: Andreas Oberweis, Rudi Studer
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 2
Teaching language: Deutsch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52), Electives in Informatic [WI3INFO2] (S. 53)

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
Basic knowledge about the strengths and weaknesses of various modeling approaches including their application areas.

Content
In the context of complex information systems, modelling is of central importance, e.g. – in the context of systems to be developed – for a better understanding of their functionality or in the context of existing systems for supporting maintenance and further development.
Modelling, in particular modelling of information systems, forms the core part of this lecture. The lecture is organized in two parts. The first part mainly covers the modelling of static aspectes, the second part covers the modelling of dynamic aspects of information systems.
The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and 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 as well as well as event driven process chains together with their respective analysis techniques will be introduced.

Media
Slides.

Basic literature
- Bernhard Rumpe. Modellierung mit UML, Springer-Verlag, 2004.
- R. Elmasri, S. B. Navathe. Fundamentals of Database Systems. Pearson Education, 4. Aufl., 2004, ISBN 0321204484.
- W. Reisig. Petri-Netze, Springer-Verlag, 1986.

Complementary 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.

Course: Non-linear Optimization — Course key: [25111]

Lecturers: Oliver Stein
Credit points (CP): 9 **Hours per week:** 4/2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Methods for Continuous Optimization [WI3OR3] (S. 56)

Learning Control / Examinations
The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation.
Examination are held in the semester of the lecture and in the following semester.
Upon attaining more then 50% of the exercise points, the grade of the passed examination is improved by a third of a grading step.
Upon attaining more then 50% of the computer exercise points, the grade of the passed examination is improved by a third of a grading step.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The student

- knows and understands fundamentals of nonlinear optimization,
- is able to choose, design and apply modern techniques of 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:

- Existence results for global minimizers
- 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)
- 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.

Complementary literature

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer 2000

Remarks
The lecture will be offered in SS 2010.

Course: Combinatorial Optimization — Course key: [25128]

Lecturers: N.n.
Credit points (CP): 9 **Hours per week:** 4/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Methods for Combinatorial Optimization [WI3OR2] (S. 55)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Seminar in Continous Optimization — Course key: [25131]

Lecturers: Oliver Stein
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
Attendance is compulsory.
Preferably at least one module offered by the institute should have been chosen before attending this seminar.

Learning Outcomes

Content

Course: Global Optimization — Course key: [25134]

Lecturers: Oliver Stein
Credit points (CP): 9 **Hours per week:** 4/2/2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Methods for Continuous Optimization [WI3OR3] (S. 56)

Learning Control / Examinations
The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation.
The examination is held in the semester of the lecture and in the following semester.
Upon attaining more then 50% of the exercise points, the grade of the passed examination is improved by a third of a grading step.
Upon attaining more then 50% of the computer exercise points, the grade of the passed examination is improved by a third of a grading step.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The student

- knows and understands the fundamentals of deterministic global optimization,
- is able to choose, design and apply modern techniques of deterministic global optimization in practice.

Content
In many optimization problems from economics, engineering and natural sciences, numerical solution methods are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate. The lecture treats methods for global optimization of functions under constraints. It is structured as follows:

- Convex Problems, duality, interior point methods
- Branch and bound methods
- Cutting plane methods
- Interval arithmetic
- Lipschitz optimization and αBB method
- Heuristics

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.

Complementary literature

- W. Alt *Numerische Verfahren der konvexen, nichtglatten Optimierung* Teubner 2004
- C.A. Floudas *Deterministic Global Optimization* Kluwer 2000
- R. Horst, H. Tuy *Global Optimization* Springer 1996
- A. Neumaier *Interval Methods for Systems of Equations* Cambridge University Press 1990

Remarks
The lecture will e offered in winterterm 2010/11.

Course: Mixed-integer Optimization — Course key: [25138]

Lecturers: Oliver Stein
Credit points (CP): 9 **Hours per week:** 4/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Methods for Discrete Optimization [WI3OR1] (S. 54)

Learning Control / Examinations
The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation.
Examination are held in the semester of the lecture and in the following semester.
Upon attaining more then 50% of the exercise points, the grade of the passed examination is improved by a third of a grading step.
Upon attaining more then 50% of the computer exercise points, the grade of the passed examination is improved by a third of a grading step.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The student

- knows and understands the fundamentals of linear and nonlinear mixed integer programming,
- is able to choose, design and apply modern techniques of mixed integer programming in practice.

Content
Many optimization problems from economics, engineering and natural sciences are modeled with continuous as well as discrete variables. Examples are the energy minimal design of a chemical process in which several reactors may be switched on or off, or the time minimal covering of a distance with a vehicle equipped with a gear shift. While locally and globally optimal points can be defined straightforwardly, for their numerical identification an interplay of ideas from discrete and continuous optimization is necessary.
The lecture treats methods for the numerical solution of optimization problems which depend on continuous as well as discrete variables. It is structured as follows:

- Existence results
- Concepts of linear and convex optimization
- Mixed-integer linear programming (Gomory cuts, branch and cut methods, lift and project cuts)
- Mixed-integer convex programming (branch and bound methods)
- Generalized Benders decomposition
- Nonconvex mixed-integer optimization
- Heuristics

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.

Complementary literature

- C.A. Floudas, Nonlinear and Mixed-Integer Optimization: Fundamentals and Applications, Oxford University Press, 1995
- G.L. Nemhauser, L.A. Wolsey, Integer and Combinatorial Optimization, Wiley, 1988
- A. Schrijver, Theory of Linear and Integer Programming, Wiley, 1998.
- M. Tawarmalani, N.V. Sahinidis, Convexification and Global Optimization in Continuous and Mixed-Integer Nonlinear Programming, Kluwer, 2002.

Remarks
The lecture will be offered in SS 2009.

Course: Marketing and Consumer Behavior — Course key: [25150]

Lecturers: Wolfgang Gaul
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Foundations of Marketing [WI3BWLMAR] (S. 34)

Learning Control / Examinations

Prerequisites
See corresponding module description.

Conditions
See corresponding module description.

Learning Outcomes

Content
Starting from the S-O-R paradigm where S stands for “stimuli”, O for “organism”, and R for “reactions”, aspects of consumer behavior are explained and possibilities are provided how marketing activities can be used to create desired influences. S-R models describe how consumer reactions depend on stimuli. Cognitive processes and psychical states help to explain how the (unobservable) interior of the organism contributes to the interpretation of reactions. In this context the adequate combination of available marketing instruments (price, product, promotion, place) will be discussed.

Course: Modern Market Research

Course key: [25154]

Lecturers: Wolfgang Gaul
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Foundations of Marketing [WI3BWLMAR] (S. 34)

Learning Control / Examinations

Prerequisites
Basic knowledge of statistics.

Conditions
None.

Learning Outcomes

Content

Course: Marketing and Operations Research — Course key: [25156]

Lecturers: Wolfgang Gaul
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Foundations of Marketing [WI3BWLMAR] (S. 34)

Learning Control / Examinations

Prerequisites
Basics of Operations Research are required.

Conditions
None.

Learning Outcomes

Content

Course: Corporate Planning and Operations Research Course key: [25158]

Lecturers: Wolfgang Gaul
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Specialization in Customer Relationship Management [WI3BWLISM5] (S. 32)

Learning Control / Examinations

Prerequisites
Basics of operations research are assumed.

Conditions
None.

Learning Outcomes

Content

Course: Brand Management — Course key: [25177]

Lecturers: Bruno Neibecker
Credit points (CP): 4 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Foundations of Marketing [WI3BWLMAR] (S. 34)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
(See description of the module)

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.

Media
Slides, Powerpoint presentations, Website with Online Course Readings

Basic literature

- Aaker, J. L.: Dimensions of Brand Personality. In: Journal of Marketing Research 34, 1997, 347-356.
- BBDO-Düsseldorf (Hrsg.): Brand Equity Excellence. 2002.
- Bruhn, M. und GEM: Was ist eine Marke? Gräfelfing: Albrecht (voraussichtlich 2003).
- Esch, F.-R.: Strategie und Technik der Markenführung. München: Vahlen 2003.
- Keller, K. L.: Kundenorientierte Messung des Markenwerts. In: Esch, F.-R. (Hrsg.): Moderne Markenführung. 3. Aufl. 2001.
- 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.
- 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, 3rd ed., Harlow: Pearson 2006.

Course: Bachelor Seminar in Foundations of Marketing — Course key: [25191]

Lecturers: Wolfgang Gaul
Credit points (CP): 2 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Foundations of Marketing [WI3BWLMAR] (S. 34)

Learning Control / Examinations

Prerequisites
Knowledge like it is provided in the course *Foundations of Marketing* [WI3BWLMAR] is assumed.

Conditions
None.

Learning Outcomes

Content

Course: Management Accounting — Course key: [25210]

Lecturers: Torsten Lüdecke
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Topics in Finance I [WI3BWLFBV5] (S. 40), Topics in Finance II [WI3BWLFBV6] (S. 41)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Financial Management

Course key: [25216]

Lecturers: Martin E. Ruckes
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Essentials of Finance [WI3BWLFBV1] (S. 33)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Financial Intermediation — Course key: [25232]

Lecturers: Martin E. Ruckes
Credit points (CP): 4.5 **Hours per week:** 3
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Topics in Finance I [WI3BWLFBV5] (S. 40), Topics in Finance II [WI3BWLFBV6] (S. 41)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Seminar in Finance

Course key: [25293]

Lecturers: Marliese Uhrig-Homburg, Martin E. Ruckes
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Exchanges

Course key: [25296]

Lecturers: Jörg Franke
Credit points (CP): 1.5 **Hours per week:** 1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Topics in Finance I [WI3BWLFBV5] (S. 40), Topics in Finance II [WI3BWLFBV6] (S. 41)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Business Strategies of Banks — Course key: [25299]

Lecturers: Wolfgang Müller
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Topics in Finance I [WI3BWLFBV5] (S. 40), Topics in Finance II [WI3BWLFBV6] (S. 41)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Statistics and Econometrics in Business and Economics Course key: [25325]

Lecturers: Wolf-Dieter Heller
Credit points (CP): 4.5 **Hours per week:** 2/2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Statistical Applications of Financial Risk Management [WI3STAT] (S. 58)

Learning Control / Examinations

Prerequisites
Basic knowledge in statistics is required.

Conditions
None

Learning Outcomes
statistically accurate use of financial market data, particularly time series analysis
Evaluation of various time series models and their applicability

Content
In Part 1 we will provide a thorough description of the quantitative part of investment theory paying attention to the mathematical, probabilistic and statistical methods now widely used in financial practice.
In Part 2 we shall study the methods of construction, identification and verification of te time-series models, which are among most powerful instruments of the financial econometrics. The emphasis will be on the financial and economic indicators forecasting the financial time-series.

Media
transparencies lecture

Basic literature
e.g.

- Franke/Härdle/Hafner : Einführung in die Statistik der Finanzmärkte.
- Ruppert: Statistics and Finance

Complementary literature
See reading list

Course: Bankmanagement und Finanzmärkte, Ökonometrische Anwendungen Course key: [25355]

Lecturers: Karl-Heinz Vollmer
Credit points (CP): 5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Statistical Applications of Financial Risk Management [WI3STAT] (S. 58)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Basic literature

- Bierwag: Duration-Analysis; Managing Interest Rat Risk, 1987
- Andrew Harvey: The Econometric Analysis of Time Series, 2nd. Ed. 1993
- Andrew Harvey: Time Series Models, 2nd. Ed. 1994
- Granger/Newbold: Forecasting Economic Time Series; 2nd. Ed. 1986
- Pindyck, Rubinfeld: Econometric Models and Economic Forecasts, 1998
- B. Rolfes: Gesamtbanksteuerung, 1999

Course: Economics of Uncertainty — Course key: [25365]

Lecturers: Martin Barbie, Siegfried Berninghaus
Credit points (CP): 4,5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Strategic Games [WI3VWL4] (S. 45)

Learning Control / Examinations
Written exam, possible further requirements.

Prerequisites
None.

Conditions
Knowledge in mathematics and statistics is required.

Learning Outcomes
The student will be made familiar with the basics in modern decision making 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
In the first part of the course we deal with problems of decision making under uncertainty and introduce models like expected utility theory, stochastic dominance, risk aversion, and prospect. theory. We also consider the empirical validity of the different approaches.
In the second part the concepts learned in the first part are applied for example to search models and Bayesian games.

Media
overhead slides, possibly additional printed material.

Basic literature

- Hirshleifer und Riley (1997): The Analytics of Uncertainty and Information. London: Cambridge University Press, 4. Aufl.
- Berninghaus, S.K., K.-M. Ehrhart und W. Güth (2006): Strategische Spiele. Berlin u.a.: Springer, 2., überarbeitete und erweiterte Aufl. (oder erste Auflage, 2002)

Complementary literature

- Lippman/McCall, Economics of Uncertainty, in: Handbook of Mathematical Economics I, 1986
- DeGroot, Optimal Statistical Decisions, Kap. 1 und 2, 1970

Course: Game Theory II — Course key: [25369]

Lecturers: Siegfried Berninghaus
Credit points (CP): 4,5 **Hours per week:** 2/2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Applied Game Theory [WI3VWL1] (S. 44), Strategic Games [WI3VWL4] (S. 45)

Learning Control / Examinations

Prerequisites
Basic knowledge of mathematics and statistics is assumed.

Conditions
None.

Learning Outcomes
This course teaches advanced knowledge in strategic decision theory. Latest developments in game theory are discussed. The student learns to judge complex strategic problems and to offer adequate solutions.

Content
This lecture aims at apmplifying the students' knowledge in game theory. Main topics are further concepts of non-cooperative game theory, cooperative game theory, evolutionary game theory and bargaining theory.

Media
Folien, Übungsblätter.

Basic literature
Berninghaus/Ehrhart/Güth, Strategische Spiele, 2. Auflage, Springer Verlag, 2006
van Damme, Stability and Perfection of Nash Equilibria, 2. Auflage, Springer Verlag, 1991

Complementary literature

- Aumann/Hart (edts.), Handbook of Game Theory I-III, Elsevier Publishers, North Holland, 1992/1994/2002

Course: Industrial Organization — Course key: [25371]

Lecturers: Siegfried Berninghaus
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Applied Game Theory [WI3VWL1] (S. 44), Industrial Organization [WI3VWL2] (S. 46)

Learning Control / Examinations
The assessment is a written examination according to §4(2), 1 SPO (80 min). The exam will be offered every term. It is possible to resit the exam at every official examination date.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The students will learn to understand the negative effects of imperfect competition and possible political implications thereof. In every chapter of the course game theoretic models will be introduced with the objective to reveal how the theory of industrial organization can explain real world economic phenomena. The theoretical analysis of economic interrelations will be supplemented by class room experiments and if possible by presentations from business experts.

Content
In the first part of the course different market structures like monopoly, oligopoly and perfect competition will be introduced and compared with each other. In the main part advanced concepts on topics like price discrimination, product differentiation, collusive behavior, as well as different theoretical models on market entry and R&D will be presented.

Media
Slides.

Basic literature
• H. Bester (2007), Theorie der Industrieökonomik.
Berlin: Springer-Verlag

Complementary literature
- J. Tirole (1988), The Theory of Industrial Organization. Cambridge, MA: MIT-Press
- D. Carlton, J. Perloff (2005), Modern Industrial Organization. Reading, Mass.: Addison-Wesley
- N. Schulz (2003), Wettbewerbspolitik: eine Einführung aus industrieökonomischer Perspektive, Tübingen: Mohr Siebeck

Course: Experimental Economics — Course key: [25373]

Lecturers: Siegfried Berninghaus, Bleich
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Applied Game Theory [WI3VWL1] (S. 44)

Learning Control / Examinations
The assessment consists of an 80 min written exam. The lecturer may offer the opportunity to reach up to 10 points by writing a seminar thesis and a presentation to an individually announced topic.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The students should learn

- how to gain scientific experience and knowledge (philosophy of science),
- how Game Theory and Experimental Economics influenced each other in scientific research,
- about the methods as well as the strengths and weaknesses of Experimental Economics,
- some examples of experimental research, such as markets and market equilibria, coordination games, bargaining, decision making under risk,
- how to evaluate data.

Content
Experimental Economics have become a separate field in Economics. Nearly all fields of the economic discipline use economic experiments to verify theoretical results. Besides being used for empricial validation, this method is applied in political and strategic consulting. The lecture gives an introducation to experimental methods in economics and shows differences to experiments in natural sciences. Scientific studies are used to show exemplary applications.

Media
Classroom experiments or experiments in the computer laboratory will be conducted. To some extent, slides are made available online.

Complementary literature

- Strategische Spiele; S. Berninghaus, K.-M. Ehrhart, W. Güth; Springer Verlag, 2nd ed., 2006.
- Handbook of Experimental Economics; J. Kagel, A. Roth; Princeton University Press, 1995.
- Experiments in Economics; J.D. Hey; Blackwell Publishers, 1991.
- Experimental Economics; D.D. Davis, C.A. Holt; Princeton University Press, 1993.
- Experimental Methods: A Primer for Economists; D. Friedman, S. Sunder; Cambridge University Press, 1994.

Remarks
The lecture is held for the last time in summer 2009. Last exams in October 2009 and April 2010.

Course: Data Mining — Course key: [25375]

Lecturers: Gholamreza Nakhaeizadeh
Credit points (CP): 5 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Statistical Applications of Financial Risk Management [WI3STAT] (S. 58)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

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

Basic 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.

Course: Optimization on Graphs and Networks — Course key: [25432]

Lecturers: Stefan Nickel, N.N.
Credit points (CP): 9 **Hours per week:** 4/2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Methods for Discrete Optimization [WI3OR1] (S. 54)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Welfare Economics — Course key: [25517]

Lecturers: Clemens Puppe
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Microeconomic Theory [WI3VWL6] (S. 50)

Learning Control / Examinations

Prerequisites
The courses *Economics I: Microeconomics* [25012] and *Economics II: Macroeconomics* [25014] have to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Game Theory I — Course key: [25525]

Lecturers: Siegfried Berninghaus
Credit points (CP): 4,5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Applied Game Theory [WI3VWL1] (S. 44), Strategic Games [WI3VWL4] (S. 45), Microeconomic Theory [WI3VWL6] (S. 50)

Learning Control / Examinations

Prerequisites
Basic knowledge of mathematics and statistics is assumed.

Conditions
None.

Learning Outcomes
This course conveys established knowledge in theory of strategic decision making. The students shall be able to analyze strategic problems systematically and to give advice for behavior in concrete economic situations.

Content
Main topic is non-cooperative game theory. Models, solution concepts and applications are discussed for simultaneous as well as sequential games. Different equailibrium concepts are introduced and a short introduction to cooperative game theory is given.

Media
Folien, Übungsblätter.

Basic literature
Gibbons, A primer in Game Theory, Harvester-Wheatsheaf, 1992
Holler/Illing, Eine Einführung in die Spieltheorie, 5. Auflage, Springer Verlag, 2003
Gardner, Games for Business and Economics, 2. Auflage, Wiley, 2003
Berninghaus/Ehrhart/Güth, Strategische Spiele, 2. Auflage, Springer Verlag 2006

Complementary literature
- Binmore, Fun and Games, DC Heath, Lexington, MA, 1991

Course: Advanced Microeconomic Theory — Course key: [25527]

Lecturers: Clemens Puppe
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Microeconomic Theory [WI3VWL6] (S. 50)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Theory of Economic Growth

Course key: [25543]

Lecturers: Marten Hillebrand
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Macroeconomic Theory [WI3VWL8] (S. 51)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Macroeconomic Theory I — Course key: [25549]

Lecturers: Martin Barbie, Marten Hillebrand
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Macroeconomic Theory [WI3VWL8] (S. 51)

Learning Control / Examinations

Prerequisites
The courses *Economics I: Microeconomics* [25012] and *Economics II: Macroeconomics* [25014] have to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Macroeconomic Theory II — Course key: [25551]

Lecturers: Martin Barbie
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Macroeconomic Theory [WI3VWL8] (S. 51)

Learning Control / Examinations

Prerequisites
The courses *Economics I: Microeconomics* [25012] and *Economics II: Macroeconomics* [25014] have to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Operations Management — Course key: [25598]

Lecturers: Cornelia Schön
Credit points (CP): 5 **Hours per week:** 3
Term: Wintersemester **Level:** 3
Teaching language: Englisch
Part of the modules: Supply Chain Management [WI3BWLISM2] (S. 29)

Learning Control / Examinations
The assessment of this course consists of a written examination (60 min) (following §4(2), 1 SPO).

Prerequisites
Successfull completion of the module *Introduction to Operations Research* [IW1WWOR].

Conditions
None.

Learning Outcomes
Provide a general introduction to the language, concepts, techniques, tools, and actual developments of operations management.

Content
This course will provide a general introduction to the concepts and techniques of operations management, i.e. the design, planning, control, and improvement of manufacturing and service operations. The course begins with a strategic view of the operations function within a firm at the interface to other business functions such as finance, marketing, and human resources. We stress the role of operations for gaining competitive advantage, and discuss how to coordinate three tiers of operations, namely product development, process management, and supply chain management. As we proceed, we will investigate various problems of operations management at the tactical level in detail.
Particular attention is paid to services which are the largest and fastest growing segment of our economy and which play also an increasing role for manufacturing firms to remain competitive. Services pose particular challenges to managers due to their intangible and experiential nature, perishability and high levels of customer involvement. For services, “process is the product” and the customer often participates in the service delivery process as an external input factor. Accordingly, managing services requires tight integration between operations, strategy, marketing, technology, and organizational issues from an integrated viewpoint with a focus on the customer. Therefore, approaches from manufacturing operations management may not be applied directly to the service context without modifications.
We will cover selected topics in the areas of

- The Process View of the Organization
- Operations Strategy and Management
- Forecasting and Modelling Demand
- Process Analysis and Design
- Product and Service Design
- Logistics and Supply Chain Management
- Inventory Management and Replenishment (EOQ, Newsvendor, Order-up-to Inventory Model, Lot Sizing)
- Capacity Management, Queueing Analysis
- Revenue Management with Capacity Controls
- Project Management and Operations Scheduling
- Layout and Flows
- Push and Pull Production: MRP and JIT
- APS and ERP Systems
- Process Improvement and Quality

The course strives to provide a balance between qualitative (more strategic) concepts and a more quantitative approach at the tactical level drawing on models and methods from Operations Research. In addition to the fundamentals of operations management, we will discuss recent research results from scientific publications and actual case study applications.

Media
Lecture slides.

Course: Simulation I — Course key: [25662]

Lecturers: Karl-Heinz Waldmann
Credit points (CP): 5 **Hours per week:** 2/1/2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Stochastic Methods and Simulation [WI3OR4] (S. 57)

Learning Control / Examinations
The assessment consists of an 1h written exam following §4(2), 1 SPO. Credit from the voluntary computer lab is accounted for in the overall grade raising the exam grade by 0.3 (§4(2), 3 SPO).

Prerequisites
Foundations in the following fields are required:

- Operations Research, as lectured in *Introduction to Operations Research I* [25040] and *Introduction to Operations Research II* [25043].
- Statistics, as lectured in *Statistics I* [25008/25009] and *Statistics II* [25020/25021].

Conditions
None.

Learning Outcomes
The lecture provides insights into the typical process in planning and conducting simulation studies.

Content
As the world is getting more complex it is ofter not possible to analytically provide key figures of interest without overly simplifying the problem. Thus efficient simulation techniques become more and more important. In the lecture important basic concepts are presented in terms of selected case studies.
Topics overview: Discrete event simulation, generation of random numbers, generating discrete and continous random variables, statistical analysis of simulated data, variance reduction techniques, case studies.

Media
Blackboard, Slides, Flash Animations, Simulation Software

Basic literature

- Lecture Notes
- K.-H. Waldmann / U. M. Stocker: Stochastische Modelle - Eine anwendungsorientierte Einführung; Springer (2004).

Complementary literature

- A. M. Law / W. D. Kelton: Simulation Modeling and Analysis (3rd ed); McGraw Hill (2000)

Remarks
The lecture is offered irregularly. The curriculum of the next two years is available online.

Course: Simulation II — Course key: [25665]

Lecturers: Karl-Heinz Waldmann
Credit points (CP): 5 **Hours per week:** 2/1/2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Stochastic Methods and Simulation [WI3OR4] (S. 57)

Learning Control / Examinations
The assessment consists of an 1h written exam following §4(2), 1 SPO. Credit from the voluntary computer lab is accounted for in the overall grade raising the exam grade by 0.3 (§4(2), 3 SPO).

Prerequisites
Foundations in the following fields are required:

- Operations Research, as lectured in *Introduction to Operations Research I* [25040] and *Introduction to Operations Research II* [25043].
- Statistics, as lectured in *Statistics I* [25008/25009] and *Statistics II* [25020/25021].
- *Simulation I*[25662]

Conditions
not any

Learning Outcomes
The lecture provides insights into the typical process in planning and conducting simulation studies.

Content
As the world is getting more complex it is oftern not possible to analytically provide key figures of interest without overly simplifying the problem. Thus efficient simulation techniques become more and more important. In the lecture important basic concepts are presented in terms of selected case studies.
Topics overview: Variance reduction techniques, simulation of stochastic processes, case studies.

Media
Blackboard, Slides, Flash Animations, Simulation Software

Basic literature

- Skript
- K.-H. Waldmann / U. M. Stocker: Stochastische Modelle - Eine anwendungsorientierte Einführung; Springer (2004).

Complementary literature

- A. M. Law / W. D. Kelton: Simulation Modeling and Analysis (3rd ed); McGraw Hill (2000)

Remarks
The lecture is offered irregularly. The curriculum of the next two years is available online.

Course: OR Methods and Models in Information Engineering and Management Course key: [25679]

Lecturers: Karl-Heinz Waldmann
Credit points (CP): 5 **Hours per week:** 2/1/2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Stochastic Methods and Simulation [WI3OR4] (S. 57)

Learning Control / Examinations
The assessment consists of an 1h written exam following §4(2), 1 SPO. Credit from the voluntary computer lab is accounted for in the overall grade raising the exam grade by 0.3 (§4(2), 3 SPO).

Prerequisites
None.

Conditions
None.

Learning Outcomes
The lecture provides students with knowledge of modern techniques of stochastic modelling. Students are able to properly describe and analyze basic stochastic systems.

Content
Markov Chains, Poisson Processes, Markov Chains in Continuous Time, Queuing Systems

Media
Blackboard, Slides, Flash Animations, Simulation Software

Basic literature
Lecture Notes

Complementary literature
Waldmann, K.H. , Stocker, U.M. (2004): Stochastische Modelle - eine anwendungsorientierte Einführung; Springer

Course: Efficient Algorithms — Course key: [25700]

Lecturers: Hartmut Schmeck
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52), Electives in Informatic [WI3INFO2] (S. 53)

Learning Control / Examinations
The assessment of this course is a written examination (60 min) in the first week after the end of the lecturing period. If the exam gets a mark between 1,3 and 4,0, it can be improved by one mark level (i.e. by 0,3 or 0,4) by a tutorial bonus, which is awarded for a minimum number of points on the assignments or for passing an additional “bonus exam”.
Deviations from this type of assessment are announced at the beginning of this course.

Prerequisites
credits for the Informatics modules of years 1 and 2.

Conditions
None.

Learning Outcomes
The student will learn how to use methods and concepts of ëfficient algorithmsänd how to demonstrate adequate innovative capabilities with respect to the used methods.
This course emphasizes the teaching of advanced concepts for the design and application of algorithms, data structures, and computer infrastructures in relation to their applicability in the real world. Based on a fundamental understanding of the covered concepts and methods, students should know how to select appropriate concepts and methods for problem settings in their professional life, and, if necessary, to extend and apply them in an adequate form. The students should be enabled to find adequate arguments for justifying their chosen problem solutions.

Content
In a problem oriented way the course presents systematic approaches to the design and analysis of efficient algorithms using standard tasks of information processing as generic examples. Special emphasis is put on the influence of data structures and computer architectures on the performance and cost of algorithms.In particular, the course emphasizes the design and analysis of algorithms on parallel computers and in hardware, which is increasingly important considering the growing presence of multicore architectures.

Media
- powerpoint slides with annotations using a tablet pc
- access to applets and Internet ressources
- lecture recording (camtasia)

Basic literature
Akl, S.G.: The Design and Analysis of Parallel Algorithms. Prentice-Hall, Englewood Cliffs, New Jersey,1989.
Borodin, Munro: The Computational Complexity of Algebraic and Numeric Problems (Elsevier 1975)
Cormen, Leiserson, Rivest: Introduction to Algorithms (MIT Press)
Sedgewick: Algorithms (Addison-Wesley) (many different versions available)

Complementary literature
will be announced in class

Course: Algorithms for Internet Applications — Course key: [25702]

Lecturers: Hartmut Schmeck
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Englisch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52), Electives in Informatic [WI3INFO2] (S. 53)

Learning Control / Examinations

Prerequisites
credits for all the Informatics modules of years 1 and 2 (except for at most one module)

Conditions
None.

Learning Outcomes
The students will learn to master methods and concepts of essential algorithms within Internet applications and to develop capabilities for innovative improvements. The course aims at teaching advanced concepts for the design and application of algorithms with respect to the requirements in networked systems. Based on a fundamental understanding of taught concepts and methods the students should be able to select appropriate concepts and methods for problem settings in their future professional life, and - if necessary - customize and apply them in an adequate way. The students will be capable to find appropriate arguments for their chosen approach to a problem setting.
In particular, the student will - know the structure and elementary protocols of the Internet (TCP/IP) and standard routing algorithms (distance vector and link state routing), - know methods of information retrieval in the WWW, algorithms for searching information and be able to assess the performance of search engines, - know how to design and use cryptographic methods and protocols to guarantee and check confidentiality, data integrity and authenticity, - know algorithmic basics of electronic payment systems and of electronic money, - the architectures and methodologies of firewalls.

Content
Internet and World Wide Web are changing our world, this core course provides the necessary background and methods for the design of central applications of the Internet. After an introduction into Internet technology the following topics are addressed: information retrieval in the www, structure and functioning of search engines, foundations of secure communication, electronic payment systems and digital money, and - if time permits - security architectures (firewalls), data compression, distributed computing on the Internet.

Media
Powerpoint slides with annotations on graphics screen, access to Internet resources, recorded lectures

Basic literature

- Tanenbaum: Computer Networks, 4th edition, Prentice-Hall 2003.
- Baeza-Yates, Ribeiro-Neto: Modern Information Retrieval. Addison-Wesley, 1999.
- Wobst: Abenteuer Kryptologie : Methoden, Risiken und Nutzen der Datenverschlüsselung, 3rd edition. Addison-Wesley, 2001.
- Schneier: Applied Cryptography, John Wiley, 1996.
- Furche, Wrightson: Computer money : Zahlungssysteme im Internet [Übers.: Monika Hartmann]. - 1. Aufl. - Heidelberg : dpunkt, Verl. für Digitale Technologie, 1997.

Complementary literature

- Further references will be given in the course.

Course: Datenbanksysteme — Course key: [25720]

Lecturers: Andreas Oberweis, Dr. D. Sommer
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Electives in Informatic [WI3INFO2] (S. 53)

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

Prerequisites
Knowledge of course *Applied Informatics I - Modelling* [25070] is expected.

Conditions
None.

Learning Outcomes
Students

- are familiar with the concepts and principles of data base models, languages and systems and their applications,
- can design and model relational data bases on the basis of theoretical foundations,
- are able to ensure an error-free operation and the integrity of the data base and
- 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).

Media
Slides, Access to internet resources

Complementary 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.

Course: Software Engineering — Course key: [25728]

Lecturers: Andreas Oberweis, Detlef Seese
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52), Electives in Informatic [WI3INFO2] (S. 53)

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

Prerequisites
Modul “Introduction to Informatics” [WI1INFO] is precondition

Conditions
None.

Learning Outcomes
Students

- are familiar with the concepts and principles of software engineering
- know important and common software development process models
- know methods for requirements analysis and know how to model and evaluate use case models
- know models for systems structuring and controling as well as architecture principles of software systems.
- 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.

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.

Media
Slides, access to internet resources.

Complementary literature

- H. Balzert. Lehrbuch der Software-Technik. Spektrum Verlag 1996.
- B. Boehm. Software Engineering Economics. Englewood Cliffs, N.J.: Prentice-Hall 1981.
- P. Brössler, Johannes Siedersleben. Softwaretechnik. Hanser Verlag 2000.
- E. Denert. Software-Engineering. Springer-Verlag 1991.
- Frühauf, K., J. Ludewig, H. Sandmayr. Software-Projektmanagement und – Qualitätssiche-rung. Teubner 1991.
- E. Gamma et al.. Design Patterns. Addison Wesley 1995.

Further literature is given in the course.

Course: Knowledge Management — Course key: [25740]

Lecturers: Rudi Studer
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52), Electives in Informatic [WI3INFO2] (S. 53)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes
Making students sensitive to the problems of corporate knowledge management, knowledge about the central dimensions of influence as well as of relevant technologies for supporting knowledge management.

Content
In modern corporations, knowledge is an increasingly important aspect for fullfilling central tasls (amelioration of business processes, increasing innovation, increasing customer satisfaction, strategic planning and the like). Therfore, knowledge management has become a determining factor of siccess.
The lecture covers the different types of knowledge that play a role in knowledge management, the corresponding knowledge processes (generation, capture, access and usage of knowledge) as well as methodologies for the introduction of knowledge management solutions.
The lecture will further emphasize the following computer science techniques for knowledge management:

- Communities of Practice, Collaboration Tools, Skill Management
- ontology-based knowledge management
- Business Process oriented Knowledge Management
- Personal Knowledge Management
- Case Based Reasoning (CBR)

Media
Slides.

Basic 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 3-540-40834-7, Springer Verlag, 2004.
- 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

Complementary 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. Handschuh, Staab. Annotation for the Semantic Web. 2003 (ISBN 158603345X).
5. J. Sowa. Knowledge Representation. Brooks/Cole 1999
6. Tim Berners-Lee. Weaving the Web. Harper 1999 geb. 2000 Taschenbuch.

Course: Semantic Web Technologies I — Course key: [25748]

Lecturers: Rudi Studer, Pascal Hitzler, Sebastian Rudolph, Rudolph
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Electives in Informatic [WI3INFO2] (S. 53)

Learning Control / Examinations

Prerequisites
Lectures on Informatics of the Bachelor on Information Management (Semester 1-4) or equivalent.

Conditions
None.

Learning Outcomes

- Basic knowledge about the main ideas and the realisation of Semantic Web Technologies

Content
”Semantic Web” denotes an extension of the World Wide Web by meta data and applications in order to make the meaning (semantics) of data on the web usable by intelligent systems, e.g. in e-commerce and internet portals. Central to this is the representation and processing of knowledge in form of ontologies. This lecture provides the foundations for knowledge representation and processing for the corresponding technologies and presents example applications. It covers the following topics:

- Extensible Markup Language (XML)
- Resource Description Framework (RDF) and RDF Schema
- Web Ontology Language (OWL)
- Rule Languages
- Applications

Media
Slides.

Basic literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web - Grundlagen, Springer, 2008 (ISBN 978-3-540-33993-9)
- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer 2003.

Complementary literature

1. Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, Foundations of Semantic Web Technologies. Textbooks in Computing, Chapman and Hall/CRC Press, 2009.
2. G. Antoniou, Grigoris Antoniou, Frank Van Harmelen, A Semantic Web Primer, MIT Press, 2004
3. Uwe Schöning. Logik für Informatiker. Spektrum Akademischer Verlag, 5. Auflage 2000
4. Steffen Hölldobler. Logik und Logikprogrammierung. Synchron Verlag, 3. Auflage 2003
5. Dieter Fensel. Spinning the Semantic Web. 2003 (ISBN 0262062321).
6. Handschuh, Staab. Annotation for the Semantic Web. 2003 (ISBN 158603345X).
7. J. Sowa. Knowledge Representation. Brooks/Cole 1999
8. Tim Berners-Lee. Weaving the Web. Harper 1999 geb. 2000 Taschenbuch.

Course: Complexity Management — Course key: [25760]

Lecturers: Detlef Seese
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Englisch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52), Electives in Informatic [WI3INFO2] (S. 53)

Learning Control / Examinations
The assessment of this course consists of a written examination (60 min) (following §4(2), 1 SPO). The exam will be offered every semester and may be repeated at every ordinary exam date.
Questions are in English, answers are possible in German or in English.
In case that only a small number of candidates apply for the examination there will be offered an orall examination.

Prerequisites
A basic knowledge in informatics is suitable.

Conditions
None.

Learning Outcomes
Students will be enabled to acquire abilities, methods and instruments in the area of complexity management and learn to use them in an innovative way. The students should be enabled to find arguments for the solution of problems in this area. The basic goal of the lecture is to enable to understand the difficulties to manage complex systems and processes.

Content
Complexity is one of the biggest challenges of our time. Central questions are: - Why humans often fail in complex situations? - What is complexity? -What are reasons for complexity? - Which parameters are essential to control complexity? - How systems have to be designed to reduce their complexity and to enable management of complexity?
The lecture gives a survey on fundamental results and handles the following topics: - Understanding of the difficulties produced by complex systems and complex processes - Foundations: modelling complex systems, complexity theory, descriptive, structural and parametric complexity, dynamic systems, topology, dimension, non-linearity, chaos, randomness and emerging structures, human shortcomings, simulation - Complexity of products and production - Complexity of markets - How to improve complexity management? - Decision support by intelligent use of IT

Media
The slides of the lectures will be provided on the website of the lecture.

Basic literature

- Franz Reither: Komplexitätsmanagement. Gerling Akademie Verlag, München 1997
- G. Schuh, U. Schwenk: Produktkomplexität managen. Carl Hanser Verlag, München 2001
- Ch. Perrow: Normal Accidents. Living with High-Risk technologies, Basic Books, New York, 1984.
- J.D. Sterman: Business Dynamics, Systems Thinking and Modeling for a Complex World, McGraw-Hill Higher Education, 2000.
- R. G. Downey, M.R. Fellows: Parameterized Complexity. Springer 1999
- Heinz-Otto Peitgen, Hartmut Jürgens, Dietmar Saupe: Chaos and Fractals, Springer-Verlag New York, 1992, 2004 (second edition).
- S. Wolfram: A new kind of Science. Wolfram Media Inc. 2002

Complementary literature

- M.R. Garey, D. S. Johnson: Computers and intractability A guide to the theory of NP-completeness, W. H. Freeman and Company, New York, 1979
- N. Immerman: Descriptive Complexity; Springer-Verlag, New York 1999
- R. Diestel: Graphentheorie, Springer 1996
- J. A. Bondy, U.S.R. Murty: Graph Theory, Springer 2008
- H.D. Ebbinghaus, J. Flum, W. Thomas: Mathematical Logic, Springer-Verlag, New York 1984
- Christos H. Papadimitriou: Computational Complexity, Addison-Wesley, Reading, Massachusetts, 1994
- R. Niedermeier: Invitation to Fixed-Parameter Algorithms, Oxford University Press 2006
- W. Metzler: Nichtlineare Dynamik und Chaos, Teubner Studienbücher Mathematik, Stuttgart 1998
- G. Frizelle, H. Richards (eds.): Tackling industrial complexity: the ideas that make a difference. University of Cambridge, Institute of Manufacturing 2002
- W. Bick, S. Drexl-Wittbecker: Komplexität reduzieren, Konzept. Methoden. Praxis, LOG_X Verlag GmbH, Stuttgart, 2008
- U. Lindemann, M. Maurer, T. Braun: Structural Complexity Management, An Approach for the field of Product Design, Springer-Verlag, Berlin, Heidelberg, 2009

- M. J. North, Ch. M. Macal: Managing Busieness Complexity, Discovering Strategic Solutions with Agent-Based Modeling and Simulation, Oxford University Press 2006
- S. Bornholdt, H. G. Schuster (Eds.): Handbook of Graphs and Networks, From the Genome to the Internet, Wiley-VCH, 2003
- Further references will be given in each lecture.

Remarks
The content of the lecture will permanently be adapted to actual developments. This can be the cause to changes of the described contend and schedule.

Course: Intelligent Systems in Finance — Course key: [25762]

Lecturers: Detlef Seese
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: eFinance [WI3BWLISM3] (S. 30), Electives in Informatic [WI3INFO2] (S. 53)

Learning Control / Examinations
see the German part

Prerequisites
None.

Conditions
None.

Learning Outcomes

- The students acquire abilities and knowledge of methods and systems from the area of machine learning and learn how to use them in the area of finance, which is the core area of application of this lecture.
- It is taught the ability to choose and change these methods and systems adequate to the situation and to use them for problem solving in the area of finance.
- The students get the ability to find strategic and creative answers in their search for solutions for precisely defined, concrete and abstract problems.
- At the same time the lecture aims to give foundational knowledge and methods in the context of their application in practise. On the basis of the basic understanding of concepts and methods of informatics the students should be able to comprehend quickly the new developments in the area and to use them correctly.

Content
A new generation of computing methods, commonly known as “intelligent systems”, has recently been successfully applied to a variety of business and financial modelling tasks. In many application fields these novel methods outperform traditional statistical techniques. The lecture provides a comprehensive coverage of the area, including foundations and applications. In particular it deals with intelligent software agents, genetic algorithms, neural networks, support vector machines, fuzzy-logic, expert systems and intelligent hybrid systems. The presented applications focus on the finance area and are related to risk management (credit risk, operational risk), financial trading, portfolio management and economic modelling. The lecture is given in cooperation with the company msgGILLARDON. The lecture starts with an introduction of the central problems of application in this area, e.g. decision support for investors, Portfolioselection under constraints, information retrieval from business reports, automatic development of trading rules for the capital market, modelling of time series at the capital market, explanation of phenomena at capital markets by simulation, decision support in risk management (credit risk, operational risk). After this the basics of intelligent systems are discussed. Basic ideas and essential results for different stochastic heuristics for local search are discussed next, especially Hill Climbing, Simulated Annealing, Threshold Accepting and Tabu Search. After this different population-based approaches of evolutionary methods are presented, e.g. Genetic Algorithms, Evolutionary Strategies and Programming, Genetic Programming, Memetic Algorithms and Ant-Algorithms. It follows an introduction into Neural Networks, Support Vector Machines and Fuzzylogic. Softwareagents and agentbased stock market models are the next topic. The lecture ends with an overview on the complexity of algorithmic problems in the area of finance, giving in this way one of the key reasons for the necessity to use heuristics and intelligent systems. Essential examples and basic applications are choosen from the area of finance.

Media
Slides.

Basic literature
There is no text book covering completely the content of the lecture.

- Z. Michalewicz, D. B. Fogel. How to Solve It: Modern Heuristics. Springer 2000.
- J. Hromkovic. Algorithms for Hard Problems. Springer-Verlag, Berlin 2001.
- P. Winker. Optimization Heuristics in Econometrics. John Wiley & Sons, Chichester 2001.
- A. Brabazon, M. O´Neill. Biologically Inspired Algorithms for Financial Modelling. Springer, 2006.
- A. Zell. Simulation Neuronaler Netze. Addison-Wesley 1994.
- R. Rojas. Theorie Neuronaler Netze. Springer 1993.
- N. Cristianini, J. Shawe-Taylor. An Introduction to Support Vector Machines and other kernal-based learning methods. Cambridge University Press 2003.
- G. Klir, B. Yuan. Fuzzy Sets and Fuzzy Logic: Theory and Applications. Prentice-Hall, 1995.
- F. Schlottmann, D. Seese. Modern Heuristics for Fiance Problems: A Survey of Selected Methods and Applications. In S. T. Rachev (Ed.) Handbook of Computational and Numerical Mrthods in Finance, Birkhäuser, Boston 2004, pp. 331 - 359.

Further references will be given in each lecture.

Complementary literature

- S. Goonatilake, Ph. Treleaven (Eds.). Intelligent Systems for Finance and Business. John Wiley & Sons, Chichester 1995.
- F. Schlottmann, D. Seese. Financial applications of multi-objective evolutionary algorithms, recent developments and future directions. Chapter 26 of C. A. Coello Coello, G. B.Lamont (Eds.) Applications of Multi-Objective Evolutionary Algorithms, World Scientific, New Jersey 2004, pp. 627 - 652.
- D. Seese, F. Schlottmann. Large grids and local information flow as reasons for high complexity. In: G. Frizelle, H. Richards (eds.), Tackling industrial complexity: the ideas that make a difference, Proceedings of the 2002 conference of the Manufacturing Complexity Network, University of Cambridge, Institute of Manufacturing, 2002, pp. 193-207. (ISBN 1-902546-24-5).
- R. Almeida Ribeiro, H.-J. Zimmermann, R. R. Yager, J. Kacprzyk (Eds.). Soft Computing in Financial Engineering. Physica-Verlag, 1999.
- S. Russel, P. Norvig. Künstliche Intelligenz Ein moderner Ansatz. 2. Auflage, Pearson Studium, München 2004.
- M. A. Arbib (Ed.). The Handbook of Brain Theory and neural Networks (second edition). The MIT Press 2004.
- J.E. Gentle, W. Härdle, Y. Mori (Eds.). Handbook of Computational Statistics. Springer 2004.
- F. Schweitzer. Brownian Agents and Active Particles. Collective Dynamics in the Natural and Social Sciences, Springer 2003.
- D. Seese, C. Weinhardt, F. Schlottmann (Eds.) Handbook on Information Technology in Finance, Springer 2008.
- Further references will be given in the lecture.

Remarks

The content of the lecture will permanently be adapted to actual developments. This can be the cause to changes of the described contend and schedule.

Course: Service-oriented Computing 1 Course key: [25770]

Lecturers: Stefan Tai
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Electives in Informatic [WI3INFO2] (S. 53)

Learning Control / Examinations
The assessment of this course is a written examination (60min.) in the first week after lecture period (nach §4(2), 1 SPO).

Prerequisites
Lecture *AI2* [25033] is recommended.

Conditions
None.

Learning Outcomes
The course introduces concepts, methods, and techniques of "service-oriented computing", including languages for (Web) service description, methods and tools for the development of services, and platforms (middleware, runtimes) for the Web-based deployment, delivery, and execution of services. In addition, software-as-a-service models and emerging trends (incl. Cloud Computing) will be presented and discussed. The course provides a solid technical foundation that enables the student to address the increasingly relevant challenges of developing "service-oriented architectures (SOA)" in the industry.

Content
Web services represent the next-generation of Web technology, and are an evolution of conventional distributed middleware. They enable new and improved ways for enterprise computing, including application interoperability and integration, and business process management. Modern software systems are being designed as service-oriented architectures (SOA), introduding increased agility and flexibilty at both the software systems and the business level. Web services and SOA thus have a profound impact on software development and the businesses that they support. The course "Service-oriented Computing" introduces the concepts, methods and technology that provide a solid foundation in this area. Topics include:

- Service description
- Service engineering, including development and implementation
- Service composition (aggregation), including process-based service orchestration
- Interoperability formats and protocols
- Service platforms and runtimes (middleware)
- Software-as-a-Service models
- Service intermediaries (markets)
- Mashups and situational applications
- Cloud computing

Media
Slides, access to internet resources.

Basic literature
Will be given in the course.

Course: Service-oriented Computing 2 Course key: [25772]

Lecturers: Stefan Tai, Rudi Studer
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52)

Learning Control / Examinations
The assessment of this course is a written examination (60min.) in the first week after lecture period (nach §4(2), 1 SPO).

Prerequisites
It is recommended to attend the course *Service-oriented Computing* [25770] beforehand.

Conditions
None.

Learning Outcomes
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 select topics of advanced 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.

Basic literature
Literature will be announced in the lecture.

Course: Advanced Programming - Java Network Programming Course key: [25780]

Lecturers: Detlef Seese, Ratz
Credit points (CP): 5 **Hours per week:** 2/1/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52)

Learning Control / Examinations
see German version

Prerequisites
Successful completion of the course *Introduction to Programming with Java* [25030].

Conditions
None.

Learning Outcomes
see German version

Content
see German version

Basic literature
D. Ratz, J. Scheffler, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java - Band 2: Einführung in die Programmierung kommerzieller Systeme. 2. aktualisierte und überarbeitete Auflage, Hanser 2006.

Complementary literature

- D. Ratz, J. Scheffler, D. Seese, J. Wiesenberger. Grundkurs Programmieren in Java - Band 1: Der Einstieg in Programmierung und Objektorientierung. 4. überarbeitete Auflage, Hanser 2007.
- S. Zakhour, S. Hommel, J. Royal. Das Java Tutorial. Addison Wesley 2007.
- M. Schader, L. Schmidt-Thieme. Java - Einführung in die objektorientierte Programmierung. Springer 2003.
- Further references will be given in the lecture.

Course: Advanced Programming - Application of Business Software Course key: [25886]

Lecturers: Andreas Oberweis, Stefan Klink
Credit points (CP): 5 **Hours per week:** 2/1/2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Emphasis Informatics [WI3INFO1] (S. 52)

Learning Control / Examinations
The assessment is a written examination of 2 hours according to §4, Abs. 2, 1 of the examination regulation and of assignments during the course.
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.

Prerequisites
Knowledge of the course “Grundlagen der Informatik I und II” are helpfull.

Conditions
None.

Learning Outcomes
Students

- master basic concepts and principles of enterprise information systems,
- can model and implement operative workflows
- apply standard software for modelling busines processes and for analysing them to given criteria
- master the installation, configuration, and parameterisation of enterprise information systems in business and
- assess economical aspects of such systems.

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.

Media
Slides, access to internet resources.

Complementary literature

- Schwabe, Streitz, Unland. CSCW-Kompendium. Lehr- und Handbuch zum computerunterstützen kooperativen Arbeiten.
- Krcmar, Schwarzer. Wirtschaftsinformatik.
- Stucky. Petri-Netze zur Modellierung verteilter DV-Systeme.

Further literature will be given during the course.

Course: Management and Strategy — Course key: [25900]

Lecturers: Hagen Lindstädt
Credit points (CP): 4 **Hours per week:** 2/0
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Strategy and Organization [WI3BWLUO1] (S. 39)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The participants learn about central concepts of strategic management along the ideal-typical strategy process: internal and external strategic analysis, concept and sources of competitive advantages, their importance when establishing competitive and corporate strategies as well as strategy assessment and implementation. This aims in particular to provide a summary of the basic concepts and models of strategic management, i.e. to provide in particular an action-oriented integration.

Content

- Corporate management principles
- Strategic management principles
- Strategic analysis
- Competitive strategy: modelling and selection on a divisional level
- Strategies for oligopolies and networks: anticipation of dependencies
- Corporate strategy: modelling and evaluation on a corporate level
- Strategy implementation

Media
Slides.

Basic literature

- Grant, R.M.: *Contemporary Strategy Analysis.* Blackwell, 5. Aufl. Massachusetts 2005.
- Lindstädt, H.; Hauser, R.: *Strategische Wirkungsbereiche von Unternehmen.* Gabler, Wiesbaden 2004.

The relevant excerpts and additional sources are made known during the course.

Course: Managing Organizations — Course key: [25902]

Lecturers: Hagen Lindstädt
Credit points (CP): 4 **Hours per week:** 2/0
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Strategy and Organization [WI3BWLUO1] (S. 39)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
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 organisational 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.

Content

- Principles of organisational management
- Managing organisational structures and processes: the selection of design parameters
- Ideal-typical organisational structures: choice and effect of parameter combinations
- Managing organisational changes

Media
Slides.

Basic literature

- Kieser, A.; Walgenbach, P.: *Organisation*. Schäffer-Poeschel, 4. Aufl. Stuttgart 2003.
- Robey, D.; Sales, C.A.: *Designing Organizations*, McGraw-Hill. 4. Aufl. Boston 1994.
- Scholz, C.: *Strategische Organisation*. 2. Aufl. Landsberg/Lech 2000.
- Staehle, W.H.: *Management*. Vahlen, 8. Aufl. München 1999.

The relevant excerpts and additional sources are made known during the course.

Course: Special Topics in Management: Management and IT Course key: [25907]

Lecturers: Hagen Lindstädt
Credit points (CP): 2 **Hours per week:** 1/0
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Strategy and Organization [WI3BWLUO1] (S. 39)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The course discusses management questions and concepts that are clearly motivating from a current and practical perspective. Here the integration of IT and process issues into corporate management from the management's perspective is one of the subjects of particular interest. The event takes place in close cooperation with leading, practical managers.

Content
(Excerpt):

- A summary of current management concepts and questions.

Media
Slides.

Basic literature
The relevant excerpts and additional sources are made known during the course.

Course: Seminar: Management and Organization — Course key: [25915]

Lecturers: Hagen Lindstädt
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes
The aim of the seminar is to describe corporate and organisational management approaches, to assess them critically and clarify them using practical examples. The focus is on assessing the models with a view to their applicability and theoretical limits.

Content
The subjects are redefined each semester on the basis of current issues.

Media
Slides.

Basic literature
The relevant sources are made known during the course.

Course: Fundamentals of Production Management — Course key: [25950]

Lecturers: Frank Schultmann
Credit points (CP): 5.5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Industrial Production I [WI3BWLIIP] (S. 42)

Learning Control / Examinations
See module description.

Prerequisites
None.

Conditions
None.

Learning Outcomes
Formulation of basic problems and development of solutions in the framework of production management.

Content
This lecture is designed as an introduction to Industrial Production. It focusses on among others on strategic production management and ecological aspects. After an introduction in production management and system theory, topics treated cover industrial R&D, siting, industrial logistics as well as reverse logistics and finally transport and stockkeeping. The topics presented are additionally illustrated by several case studies from industry.

Media
Media will be provided on learning platform ILIAS.

Basic literature
Dietger Hahn and Gert Laßmann. Produktionswirtschaft. Bd. 1, Physica-Verlag, Heidelberg, 3. Aufl., 1999.
Christoph A. Schneeweiß. Einführung in die Produktionswirtschaft. Springer-Verlag, 8. Auflage, 2002.
Klaus Brockhoff. Forschung und Entwicklung: Planung und Kontrolle. Oldenbourg, München, 5. Auflage, 1999.
Jüergen Weber and Sebastian Kummer. Logistikmanagement. Schäfer-Poeschel, Stuttgart, 2. Auflage, 1998.

Complementary literature
Dietger Hahn and Gert Laßmann. Produktionswirtschaft. Bd. 1, Physica-Verlag, Heidelberg, 3. Aufl., 1999.
Christoph A. Schneeweiß. Einführung in die Produktionswirtschaft. Springer-Verlag, 8. Auflage, 2002.
Klaus Brockhoff. Forschung und Entwicklung: Planung und Kontrolle. Oldenbourg, München, 5. Auflage, 1999.
Jürgen Weber and Sebastian Kummer. Logistikmanagement. Schäfer-Poeschel, Stuttgart, 2. Auflage, 1998.

Course: Energy Policy — Course key: [25959]

Lecturers: Martin Wietschel
Credit points (CP): 3.5 **Hours per week:** 2/0
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Industrial Production I [WI3BWLIIP] (S. 42), Energy Economics [WI3BWLIIP2] (S. 43)

Learning Control / Examinations

Prerequisites
Keine.

Conditions
Keine.

Learning Outcomes

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.

Basic literature
Will be anounced in the lecture.

Course: Material and Energy Flows in the Economy — Course key: [25960]

Lecturers: Michael Hiete, Hiete
Credit points (CP): 3.5 **Hours per week:** 2/0
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Industrial Production I [WI3BWLIIP] (S. 42)

Learning Control / Examinations

Prerequisites
The successful completion of the courses *Business Administration and Management Science A* [25023] / B [25024/25025] / C [25026/25027] is required.

Conditions
None.

Learning Outcomes

Content

Course: Introduction in to Energy Economics — Course key: [26010]

Lecturers: Wolf Fichtner
Credit points (CP): 5.5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Energy Economics [WI3BWLIIP2] (S. 43)

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Renewable Energy Sources - Technologies and Potentials Course key: [26012]

Lecturers: Wolf Fichtner
Credit points (CP): 3.5 **Hours per week:** 2/0
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Energy Economics [WI3BWLIIP2] (S. 43)

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Public Revenues

Course key: [26120]

Lecturers: Berthold Wigger
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Financial Sciences [WI3VWL9] (S. 49)

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.

Prerequisites
Foundations of financial sciences are required.

Conditions
None.

Learning Outcomes

Content

Course: Fiscal Policy — Course key: [26121]

Lecturers: Berthold Wigger
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Financial Sciences [WI3VWL9] (S. 49)

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.

Prerequisites
Foundations of financial sciences are required.

Conditions
None.

Learning Outcomes

Content

Course: Seminar Financial Sciences

Course key: [26130]

Lecturers: Berthold Wigger
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Competition in Networks — Course key: [26240]

Lecturers: Kay Mitusch
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Specialization in Customer Relationship Management [WI3BWLISM5] (S. 32)

Learning Control / Examinations

Prerequisites
Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required. Useful, but not necessary, are basic knowledge of industrial economics, prinicpal agent theory, and contract theory.

Conditions
None.

Learning Outcomes
The Student should ...

Content

Course: International Economics

Course key: [26252]

Lecturers: Jan Kowalski
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Economic Policy [WI3VWL5] (S. 48)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: International Economic Policy — Course key: [26254]

Lecturers: Jan Kowalski
Credit points (CP): 4 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: International Economics [WI3VWL3] (S. 47)

Learning Control / Examinations

Prerequisites
Macroeconomics, foreign trade

Conditions
None.

Learning Outcomes

Content

Course: Managenment and Organisation of Projects in Developing Countries Course key: [26259]

Lecturers: Sieber
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: International Economics [WI3VWL3] (S. 47)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Seminar on Network Economics

Course key: [26263]

Lecturers: Kay Mitusch
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Innovation

Course key: [26274]

Lecturers: Hariolf Grupp
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Industrial Organization [WI3VWL2] (S. 46), Economic Policy [WI3VWL5] (S. 48)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Applying Industrial Organization — Course key: [26287]

Lecturers: Hariolf Grupp, Dirk Fornahl
Credit points (CP): 6 **Hours per week:** 2/2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Industrial Organization [WI3VWL2] (S. 46)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Insurance Models

Course key: [26300]

Lecturers: Christian Hipp
Credit points (CP): 5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Insurance: Calculation and Control [WI3BWLFBV2] (S. 35)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Insurance Marketing — Course key: [26323]

Lecturers: Ute Werner
Credit points (CP): 4.5 **Hours per week:** 3
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Insurance Management [WI3BWLFBV4] (S. 38)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Remarks
This course is offered irregularly. For further information, see: http://insurance.fbv.uni-karlsruhe.de

Course: Enterprise Risk Management — Course key: [26326]

Lecturers: Ute Werner
Credit points (CP): 4,5 **Hours per week:** 3/0
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Risk and Insurance Management [WI3BWLFBV3] (S. 37)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
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 optimization approaches that allow to consider area-specific objectives, risk-bearing capacity and risk acceptance.

Content

1. Concepts and practice of risk management, based on decision theory
2. Goals, strategies and measures 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.

Basic 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.

Remarks
This course is offered irregularly. For further information, see: http://insurance.fbv.uni-karlsruhe.de

Course: Insurance Contract Law

Course key: [26360]

Lecturers: Ute Werner, Schwebler
Credit points (CP): 4.5 **Hours per week:** 3
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Insurance Management [WI3BWLFBV4] (S. 38)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Insurance Game

Course key: [26372]

Lecturers: Christian Hipp
Credit points (CP): 4 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Insurance: Calculation and Control [WI3BWLFBV2] (S. 35)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Real Estate Management II — Course key: [26400]

Lecturers: Thomas Lützkendorf
Credit points (CP): 4,5 **Hours per week:** 2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Real Estate Management [WI3BWLOOW2] (S. 36)

Learning Control / Examinations
Written exam (60 min.) (according to §4(2), 1 SPO) or oral exam (20 min.) (according to §4(2), 2 SPO).
Exams are offered both winter and summer term and can be retried at any time.

Prerequisites
A combination with the module *Design Construction and Assessment of Green Buildings I* [WI3BWLOOW1] 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)

Conditions
None.

Learning Outcomes
Application of economic methods to the fields of real estate economics and sustainable construction.

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.

Media
Presentation slides and supplementary material is provided partly as printout, partly online for download.

Complementary literature
See german version.

Remarks
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

Course: Real Estate Management I — Course key: [26400w]

Lecturers: Thomas Lützkendorf
Credit points (CP): 4,5 **Hours per week:** 2/2
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Real Estate Management [WI3BWLOOW2] (S. 36)

Learning Control / Examinations
Written exam (60 min.) (according to §4(2), 1 SPO) or oral exam (20 min.) (according to §4(2), 2 SPO).
Exams are offered both winter and summer term and can be retried at any time.

Prerequisites
A combination with the module *Design Construction and Assessment of Green Buildings I* [WI3BWLOOW1] 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)

Conditions
None.

Learning Outcomes
Application of economic methods to the fields of real estate economics and sustainable construction.

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.

Media
Presentation slides and supplementary material is provided partly as printout, partly online for download.

Remarks
The course is replenished by excursions and guest lectures by practicioners out of the real estate business.

Course: Sustainability Assessment of Construction Works Course key: [26404]

Lecturers: Thomas Lützkendorf
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Sustainable Construction [WI3BWLOOW1] (S. 27)

Learning Control / Examinations
Oral exam (20 min.) (according to §4(2), 2 SPO).
Exams are offered both winter and summer term and can be retried at any time.

Prerequisites
A combination with the module *Real Estate Management* [WI3BWLOOW2] and with engineering science modules from the areas building physics and structural designis recommended.

Conditions
None.

Learning Outcomes
Knowledge in the area of economic and wnvironmental assesment of construction works.

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.

Complementary literature
See german version.

Course: Design, Construction and Assessment of Green Buildings I Course key: [26404w]

Lecturers: Thomas Lützkendorf
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Sustainable Construction [WI3BWLOOW1] (S. 27)

Learning Control / Examinations
Oral exam (20 min.) (according to §4(2), 2 SPO).
Exams are offered both winter and summer term and can be retried at any time.

Prerequisites
None.

Conditions
A combination with the module *Real Estate Management* [WI3BWLUO1] and with engineering science modules in the area of building physics and structural design is recommended.

Learning Outcomes
Knowledge in the area of sustainable construction concerning whole buildings, building components, equipment and appliances as well as building material.

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.

Media
For a better clearness videos and simulation tools will be presented during the lectures.

Complementary literature
See german version.

Course: Topics of Sustainable Management of Housing and Real Estate Course key: [26420]

Lecturers: Thomas Lützkendorf
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations
The assessment of this course is (according to §4(2), 3 SPO) in form of an examination of the written seminar thesis and a presentation.

Prerequisites
None.

Conditions
None.

Learning Outcomes

- Students autonomously compile a paper treating of a marked-off subject within the area of real estate economics respectively sustainable construction, and present their results within the seminar.
- Therefore they master the principles of scientific writing, especially research, reasoning and citation, as well as handling information suspiciously.
- Through own and observed experiences they develop the ability to hold scientific presentations, including technical, formal, rethorical and didactical aspects.

Content
The seminar deals with changing up-to-date topics concerning Real Estate Economics or Sustainable Construction.
Current topics and schedules are announced at the beginning of term.

Media
A reader dealing with the basics of scientific writing is provided (in german language).

Course: Management of Business Networks Course key: [26452]

Lecturers: Christof Weinhardt, Jan Kraemer
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Englisch
Part of the modules: eBusiness and Servicemanagement [WI3BWLISM1] (S. 28), Supply Chain Management [WI3BWLISM2] (S. 29)

Learning Control / Examinations
The total grade for this lecture will consist to 50% of the grade achieved in the written mid term examination, to 10% of the assignments during the exercises, and to 40% of a project work, which includes a term paper and a presentation.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The student will become acquainted with the theoretical fundamentals of economic networks and how to manage them. Support of economic networks by information systems will be accomplished by several case studies, which will be worked on by groups autonomously. Basic knowledge of organisation theory, network analysis, strategic & operative management and logic systems will be communicated to the student. Furthermore, he will have a focused view on the mechanisms and supporting tools for interaction between companies, especially in negotiations and negotiation-supporting systems. In small groups, the student is trained in team-oriented and autonomous working techniques. Within this domain, the student will be trained to seek and read relevant technical literature in English, the language of science, and to adopt it to a specific problem.

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.

Media
Powerpoint presentations, recorded lecture available on the internet, (if circumstances allow videoconferencing).

Basic 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.

Course: eFinance: Information Engineering and Management for Securities TradingCourse key: [26454]

Lecturers: Christof Weinhardt, Ryan Riordan
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: eBusiness and Servicemanagement [WI3BWLISM1] (S. 28), eFinance [WI3BWLISM3] (S. 30)

Learning Control / Examinations
70% of the mark is based on the written examination and 30% is based on assignments during the exercises.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The goal of the lecture is to make the students familiar with the theoretical as well as the practical aspects of electronic trading and exchanges and the IT systems used in the financial industry. While markets for products and services are discussed, the focus is on the trading of financial securities. Existing centralized equity exchanges face competition from new alternative trading systems make possible by today´s information technology. This course will also examine the impact and implications of this dynamic. The focus is on the economic and technical design of markets as information processing systems.

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.

Media
Powerpoint presentations, recorded lecture available on the internet

Basic 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

Complementary 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

Course: eServices — Course key: [26466]

Lecturers: Christof Weinhardt, Gerhard Satzger
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Englisch
Part of the modules: eBusiness and Servicemanagement [WI3BWLISM1] (S. 28), Specialization in Customer Relationship Management [WI3BWLISM5] (S. 32)

Learning Control / Examinations
The assessment of this course is a written examination (following §4(2), 1 SPO) and by submitting written papers as part of the exercise (following §4(2), 3 SPO). The total grade for this lecture will consist to 70% of the grade achieved in the written examination and to 30% of the assignments during the exercises.

Prerequisites
None.

Conditions
None.

Learning Outcomes
This lecture presents concepts, methods and application examples for the engineering and management of eServices. The students will get to know the basic principles and elements of eServices and their specific properties compared to physical goods. Creating eServices needs an overall view of information technology with regards to flexibility, safety, data security, measurability and cost allocation.
In addition, problems and solutions in designing and providing eServices are discussed; the elementary relationship to information management will also be treated. Application examples from industry stress the concepts´ application in the economy.

Content
So far, management studies usually focused on physical goods. However, due to the increasing development of information and communication technology, distribution of electronic services is becoming more important. Electronic services are characterized by an increasing degree of intangibility, interactivity and individuality. Traditional, goods-oriented models, methods and tools for are often found to be inadequate for service engineering and management.
Building on a systematic categorization of (e)Services, we cover concepts and foundations for engineering and managing IT-based services, allowing further specialization in subsequent courses. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.
In addition, application examples, guest lectures (e.g. business model changes driven by the advent of eServices) and a number of hands-on exercises will illustrate the applicability of the concepts.

Media
PowerPoint slides;

Course: Seminar Service Science, Management & Engineering Course key: [26470]

Lecturers: Stefan Tai
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
Lecture *eServices* [26462] is recommended.

Learning Outcomes
Autonomously deal with a special topic in the Service Science, Management and Engineering field adhering to scientific standards.

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.

Course: Customer Relationship Management — Course key: [26508]

Lecturers: Andreas Geyer-Schulz
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Englisch
Part of the modules: CRM and Service Management [WI3BWLISM4] (S. 31)

Learning Control / Examinations
The assessment of this course is a written examination (60 min) (following §4(2), 1 SPO) and by submitting written papers as part of the exercise (following §4(2), 3 SPO). The total grade for this lecture will consist to about 90% of the grade achieved in the written exam (maximum 100 points) and to about 10% of the written papers for the exercise (maximum 12 points). The written exam is considered successfully taken if at least 50 points are acquired.
The grades of this lecture are assigned following the table below. At least 50 points have to be acquired to pass the written exam. All additional points from excersise work will be added to the exam points once 50 points have been achieved:

Grade	Minimum points
1.0	104
1.3	98
1.7	92
2.0	86
2.3	80
2.7	74
3.0	68
3.3	62
3.7	56
4.0	50
4.7	40
5.0	0

Prerequisites
None.

Conditions
None.

Learning Outcomes
The objective of this course is to make students aware of the goals and different aspects of Service Management. Furthermore it is intended to embed Service Management and its different apects in the concepts of business administration. The students should acquire the theoretical and practical knowledge as well as tools to implement projects in this area sucessfully. The link between Service Managemetn and CRM is also to be tought within this course.

Content
Course: The course begins with an introduction into Service Management as the strategic concepts 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.

Media
Slides

Basic literature
Christian Grönroos. Service Management and Marketing : A Customer Relationship Management Approach. Wiley, Chichester, 2nd edition, 2000.

Complementary 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.

Course: Operative CRM — Course key: [26520]

Lecturers: Andreas Geyer-Schulz
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: CRM and Service Management [WI3BWLISM4] (S. 31), Specialization in Customer Relationship Management [WI3BWLISM5] (S. 32)

Learning Control / Examinations
Assessment consists of a written exam of 1 hour length following §4, Abs. 2, 1 SPO and by submitting written papers as part of the exercise following §4, Abs. 2, 3 SPO. The total grade for this lecture will consist to about 90% of the grade achieved in the written exam (maximum 100 points) and to about 10% of the written papers for the exercise (maximum 12 points). The written exam is considered successfully taken if at least 50 points are acquired.
The grades of this lecture are assigned following the table below. At least 50 points have to be acquired to pass the written exam. All additional points from excersise work will be added to the exam points once 50 points have been achieved:

Grade	Minimum points
1.0	104
1.3	98
1.7	92
2.0	86
2.3	80
2.7	74
3.0	68
3.3	62
3.7	56
4.0	50
4.7	40
5.0	0

Prerequisites
None.

Conditions
The attendance of courses 26508 (CRM) and 26522 (Analyitical CRM) is advised.

Learning Outcomes
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.

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.

Basic 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.

Complementary 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.

Course: Analytical CRM — Course key: [26522]

Lecturers: Andreas Geyer-Schulz
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: CRM and Service Management [WI3BWLISM4] (S. 31), Specialization in Customer Relationship Management [WI3BWLISM5] (S. 32)

Learning Control / Examinations
Assessment will consist of a written exam of 1 hour length following §4, Abs. 2, 1 SPO and by submitting written papers as part of the exercise following §4, Abs. 2, 3 SPO. The total grade for this lecture will consist to about 90% of the grade achieved in the written exam (maximum 100 points) and to about 10% of the written papers for the exercise (maximum 12 points). The written exam is considered successfully taken if at least 50 points are acquired.
The grades of this lecture are assigned following the table below. At least 50 points have to be acquired to pass the written exam. All additional points from excersise work will be added to the exam points once 50 points have been achieved:

Grade	Minimum points
1.0	104
1.3	98
1.7	92
2.0	86
2.3	80
2.7	74
3.0	68
3.3	62
3.7	56
4.0	50
4.7	40
5.0	0

Prerequisites
None.

Conditions
We expect knowledge about data models and the UML modelling language concerning information systems.

Learning Outcomes
The Student should

- understand the principal scientific methods from statistics and informatics used in analytical CRM and their application to enterprise decision problems and be able to independently apply these methods to standard cases,
- understand the components for creating and managing a data warehouse from operative system sources including the processes and steps involved and should be able to apply these methods to a simple example, and
- use his knowledge to conduct a standard CRM analysis on enterprise data for a busines decision problem and deduce and justify 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).

Media
slides

Basic literature
Swift, Ronald S. Accelerating Customer Relationships: Using CRM and RelationshipTechnologies. Prentice Hall, Upper Saddle River, 2001
Silverston, Len The Data Model Resource Book: A Library of Universal Data Models for All Entreprises. John Wiley & Sons, 1 edition, 2001.
Hoppe, Daniel Customer Lifetime Value. Diplomarbeit, Universität Karlsruhe (TH), 2003.
Duda, Richard O. und Hart, Peter E. und Stork, David G. Pattern Classification. Wiley-Interscience, New York, 2 edition, 2001.

Berson, Alex und Thearling, Kurt und Smith, Stephen J. Building Data Mining Applications for CRM. Mc Graw-Hill, New York, 2000.

Complementary literature

Greenberg, Paul. CRM at the Speed of Light: Capturing and Keeping Customers in Internet Real Time. Osborne/McGraw-Hill, 3 edition, 2004.
Sharp, Duane E. Customer Relationship Management Systems Handbook. Auerbach, 2002.
Todman, Chris. Designing a Data Warehouse : Supporting Customer Relationship Management. Prentice Hall, Upper Saddle River, 1 edition, 2001.
Teorey, Toby J. Database Modeling and Design. Morgan Kaufmann, San Francisco, 3 edition, 1999.
Silverston, Len. The Data Model Resource Book: A Library of Universal Data Models by Industry Types. John Wiley & Sons, 2 revised edition, 2001.

Course: Bachelor Seminar in Information Engineering and Management [26524] Course key:

Lecturers: Andreas Geyer-Schulz
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes
The student is able to

- to perform a literature search for a given topic, to identify, find, value and evaluate the relevant literature.
- to write his seminar thesis (and later on, the bachelors/masters thesis) with the text setting system LaTeX and include format requirements as used by scientific publishers.
- to do a presentation in an adequate scientific manner.
- to write down the results of his investigations in the form of scientific publications.

Content
This seminar serves as an introduction into the process of scientific work. Students write a review for a selected scientific article. A profound literature search is required to judge the article. The review is written with LaTeX by using formating styles similiar to those of scienfitic publishers.
The seminar treats questions of Customer Relationship Management.

Basic literature
A CRM-specific article is assigned to every student participating in this seminar. The chosen articles are published in the beginning of every term.

Complementary literature

- W. Thomson. A Guide for the Young Economist. The MIT Press, 2001
- D.J. Brauner, H.-U. Vollmer. Erfolgreiches wissenschaftliches Arbeiten. Verlag Wissenschaft & Praxis, 2004
- University of Chicago Press. The Chicago Manual of Style. University of Chicago Press, 13th ed., 1982
- American Psychological Association. Concise of Rules of APA Style. American Psychological Association, 2005
- American Psychological Association. Publication Manual of the American Psychological Association. American Psychological Association, 2001

Course: Derivatives — Course key: [26550]

Lecturers: Marliese Uhrig-Homburg
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Topics in Finance I [WI3BWLFBV5] (S. 40), Topics in Finance II [WI3BWLFBV6] (S. 41)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
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.

Media
Slides, Exercises/Exercise sheets

Basic literature
- Hull (2005): Options, Futures, & Other Derivatives, Prentice Hall, 6th Edition

Complementary literature
Cox/Rubinstein (1985): Option Markets, Prentice Hall

Course: International Finance — Course key: [26570]

Lecturers: Marliese Uhrig-Homburg, Walter
Credit points (CP): 3 **Hours per week:** 2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Topics in Finance I [WI3BWLFBV5] (S. 40), Topics in Finance II [WI3BWLFBV6] (S. 41)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Investments

Course key: [26575]

Lecturers: Marliese Uhrig-Homburg
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: eFinance [WI3BWLISM3] (S. 30), Essentials of Finance [WI3BWLFBV1] (S. 33)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Systems for Electrical Energy — Course key: [909081]

Lecturers: Thomas Leibfried
Credit points (CP): 6 **Hours per week:** 2/2
Term: Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [WI3INGETIT1] (S. 73)

Learning Control / Examinations

Prerequisites
For a successful participation knowledge of the content of the course *Higher mathematics* and especially of complex computation is assumed.

Conditions
The course is an obligatory course within the module and has to be attended.

Learning Outcomes

Content

Course: Elective “Culture - Policy - Science - Technology” Course key: [HoC1]

Lecturers: House of Competence
Credit points (CP): 3 **Hours per week:** mehrheitlich 2/0
Term: Winter-/Sommersemester **Level:** ???
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Elective “Workshops for Competence and Creativity” Course key: [HoC2]

Lecturers: House of Competence
Credit points (CP): 3 **Hours per week:** mehrheitlich 2/0
Term: Winter-/Sommersemester **Level:** ???
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Elective Foreig Languages — Course key: [HoC3]

Lecturers: House of Competence
Credit points (CP): 2-4 **Hours per week:** 2 bis 4
Term: Winter-/Sommersemester **Level:** ???
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
Depending on the choice of the language and the level prior knowledge is assumed.

Conditions
Basic level english language courses can only be attended if english language skills were not acquired in school before.

Learning Outcomes

Content

Course: Elective “Tutor Programmes” Course key: [HoC4]

Lecturers: House of Competence
Credit points (CP): 3 **Hours per week:** k.A.
Term: Winter-/Sommersemester **Level:** ???
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
The participation in this program requires that the student has been or will be a tutor for at least two semesters.
The application for this program takes place via the dean’s office and in consultation with the corresponding chair.

Conditions
None.

Learning Outcomes

Content

Course: Elective “Personal Fitness & Emotional Competence” Course key: [HoC5]

Lecturers: House of Competence
Credit points (CP): 2-3 **Hours per week:** k.A.
Term: Winter-/Sommersemester **Level:** ???
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
None.

Conditions
Keine.

Learning Outcomes

Content

Course: Seminar in Enterprise Information Systems Course key: [SemAIFB1]

Lecturers: Rudi Studer, Andreas Oberweis, Wolffried Stucky, Thomas Wolf, Ralf Kneuper
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations
The assessment of this course is according to §4(2), 3 SPO in form of an examination of the written seminar thesis and a presentation.
The final mark is based on the examination of the written seminar thesis but can be upgraded or downgraded according to the quality of the presentation.
The seminar is for bachelor as well as master students. The differentiation will be made by selection of different topics and different standards of evaluation.

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes
Students are able to

- do literature search based on a given topic: identify relevant literature, find, assess and evaluate this literature.
- write the seminar thesis (and later the Bachelor-/Masterthesis) with a minimal learning curve by using format requirements such as those recommended by well-known publishers.
- give presentations in a scientific context in front of an auditorium. These techniques are presented and learned during the seminar.
- present results of the research in written form generally found in scientific publications.

Content
The seminar intensifies and extends specific topis which are discussed within corresponding lectures. Knowledge of these lecture topics is an advantage but not a precondition.
Specific titles and the topics of offered seminars will be announced before the start of a semester in the internet at http://www.aifb.uni-karlsruhe.de/Lehre

Basic literature
Literature will be given individually in the specific seminar.

Course: Seminar Efficient Algorithms

Course key: [SemAIFB2]

Lecturers: Hartmut Schmeck
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content

Course: Seminar Complexity Management — Course key: [SemAIFB3]

Lecturers: Detlef Seese
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations
see German part

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes
see German part

Content
see German part

Remarks
The number of participants is limited. Please take notice about the inscription procedure at the institutes website.
In the summer term 2009, the seminar is offered in form of *End-to-End-Management komplexer Geschäftsprozesse* [25868] and *Applications of Intelligent Systems in Finance* [25869].

Course: Seminar Knowledge Management — Course key: [SemAIFB4]

Lecturers: Rudi Studer
Credit points (CP): 3 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
Mandatory lectures from the module.

Conditions
None.

Learning Outcomes
Autonomously deal with a special topic in the knowledge management field.

Content
Each year, the seminar will cover topics from a different selected subfield of knowledge management, e.g.:

- Ontology-based knowledge management,
- Information Retrieval and Text Mining,
- Data Mining,
- Personal Knowledge Management,
- Case Based Reasoning (CBR),
- Collaboration and Scoial Computing.

Media
Slides.

Basic literature

- I. Nonaka, H. Takeuchi: The Knowledge Creating Company. Oxford University Press 1995
- G. Probst et al.: Wissen managen - Wie Unternehmen ihre wertvollste Ressource optimal nutzen. Gabler Verlag, Frankfurt am Main/ Wiesbaden, 1999
- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolf, York Sure: Semantic Web - Grundlagen, Springer, 2008 (ISBN 978-3-540-33993-9)
- S. Staab, R. Studer: Handbook on Ontologies, ISBN 3-540-40834-7, Springer Verlag, 2004
- Modern Information Retrieval, Ricardo Baeza-Yates & Berthier Ribeiro-Neto. New York, NY: ACM Press; 1999; 513 pp. (ISBN: 0-201-39829-X.)

Complementary literature
None.

Course: Seminar in Insurance Management

Course key: [SemFBV1]

Lecturers: Ute Werner
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content

Course: Seminar in Operational Risk Management — Course key: [SemFBV2]

Lecturers: Ute Werner
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content

Course: Seminar in Risk Theory and Actuarial Science — Course key: [SemFBV3]

Lecturers: Christian Hipp
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
Knowledge of statistics and actuary science is an advantage.
The seminar is a good addition to the Bachelor module *Calculation and Control* [WI3BWLFBV2] and to the Master modules *Applications of Actuarial Sciences I/II* [WW4BWLFBV4/5] and *Insurance Statistics* [WW4BWLFBV8]. However these modules are not a prerequisite for the participation in the seminar.

Learning Outcomes

Content

Course: Seminar in Ergonomics

Course key: [SemIIP]

Lecturers: Peter Knauth, Dorothee Karl
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content

Course: Seminar in Industrial Production

Course key: [SemIIP2]

Lecturers: Frank Schultmann
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Seminar Information Engineering and Management Course key: [SemIW]

Lecturers: Christof Weinhardt
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations
The student is evaluated based on the written work, a presentation of the results in front of an audience and his contribution to the discussion

Prerequisites
See corresponding module information.

Conditions
Business Engineering/Economics Engineering: Preferably at least one module offered by the institute should have been chosen before attending this seminar.

Learning Outcomes
The student should be able to do a literature review based on a predefined topic in the context of information engineering and management. The approach comprises the identification of relevant literature according to the topic and an analysis as well as an evaluation of the methods presented in the literature. The student learns to present his results in a paper and in front of an audience on a academic level. This process gives him the knowledge and practice for further research work like a master thesis or a doctoral thesis

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 Information Engineering and Management across different industry sectors. This problem analysis requires a interdisciplinary examination.

Media
- Powerpoint,
- eLearning Platform Ilias
- Software Tools, if necessary

Basic literature
The student will receive the necessary literature for his research topic.

Remarks
- Students from Bachelor and Master Course can visit the seminar. The research topic as well as the evaluation of the work and the presentation will have a different focus between Bachelor and Master Course.
- All the seminars offered at the chair of Prof. Dr. Weinhardt can be chosen. The current topics of the seminars are available at the following homepage: http://www.im.uni-karlsruhe.de/lehre.

Course: Seminar in System Dynamics and Innovation — Course key: [SemIWW]

Lecturers: Hariolf Grupp, N.N.
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
The courses *Innovation* [26274] and *Applying Industrial Organization* [26287] should preferably be attended beforehand.

Learning Outcomes

Content

Course: Seminar Stochastic Models — Course key: [SemWIOR1]

Lecturers: Karl-Heinz Waldmann
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations
The assessment of this course is in form of an examination of the written seminar thesis and a presentation. The final mark is the result of both the paper and its presentation.

Prerequisites
None.

Conditions
None.

Learning Outcomes
In case studies students comprehend stochastic relationships and gain deep knowledge of modelling, evaluation, and optimization of stochastic systems. In group presentations, students learn basic academic presentation and argument skills.

Content
The actual topic as well as the contemporary issues are available online; cf.
http://www4.wiwi.uni-karlsruhe.de/LEHRE/SEMINARE/

Media
Power Point and related presentation techniques.

Basic literature
Will be presented with the actual topic.

Course: Seminar Economic Theory — Course key: [SemWIOR2]

Lecturers: Clemens Puppe
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations

Prerequisites
See corresponding module information.
At least one of the courses *Game Theory I* [25525] and *Welfare Economics* [25517] should have been attended beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Seminar in Experimental Economics — Course key: [SemWIOR3]

Lecturers: Siegfried Berninghaus
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations
Term paper and presentation

Prerequisites
See corresponding module information.
The course Experimental Economics [25373] or an other course in the field of Game Theory should be attended beforehand.

Conditions
None.

Learning Outcomes
The seminar wants to deepen the methods of scientific work. Students shall learn to discuss critical the latest research results in Experimental Economics.
Students learn the technical basics of presentation and to argument scientifically. Also rethoric skills shall be amplified.

Content
The seminar's topic will be announced before the beginning of each semester on the internet (http://www.wior.uni-karlsruhe.de/LS_Berninghaus/Studium/).

Media
Slides.

Course: Seminar in Game and Decision Theory — Course key: [SemWIOR4]

Lecturers: Siegfried Berninghaus
Credit points (CP): 3 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [WI3SEM] (S. 86)

Learning Control / Examinations
Term paper and presentation

Prerequisites
Completion of all 1st an 2nd year modules of the Bachelor Program.

Conditions
None.

Learning Outcomes
The seminar wants to deepen the methods of scientific work. Students shall learn to discuss critical the latest research results in game theory.
Procurement of SQs: Students learn the technical basics of presentation and to argument scientifically. Also rethoric skills shall be amplified.

Content
The seminar's topic will be announced before the beginning of each semester on the internet (http://www.wior.uni-karlsruhe.de/LS_Berninghaus/Studium/).

Media
Slides.

Course: Projectseminar

Course key: [SozSem]

Lecturers: Bernart, Kunz, Pfaff, Haupt, Grenz, Eisewicht
Credit points (CP): 4 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Sociology/Empirical Social Research [WI3SOZ] (S. 85)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Modelling and Identification — Course key: [VLMI]

Lecturers: N.N.
Credit points (CP): 4.5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Control Engineering [WI3INGETIT2] (S. 74)

Learning Control / Examinations

Prerequisites
The course *System Dynamics and Control Engineering* [23155] has to be completed beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Production Scheduling

Course key: [VLPP]

Lecturers: N.N.
Credit points (CP): 9 **Hours per week:** 4/2
Term: Wintersemester **Level:** 1
Teaching language: Deutsch
Part of the modules: Methods for Combinatorial Optimization [WI3OR2] (S. 55)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Special Sociology

Course key: [spezSoz]

Lecturers: Gerd Nollmann, Pfadenhauer, Pfaff, Haupt, Grenz, Eisewicht
Credit points (CP): 2 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 3
Teaching language: Deutsch
Part of the modules: Sociology/Empirical Social Research [WI3SOZ] (S. 85)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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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.

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(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

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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.

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(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.

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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.

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§ 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.

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§ 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.

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§ 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)

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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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