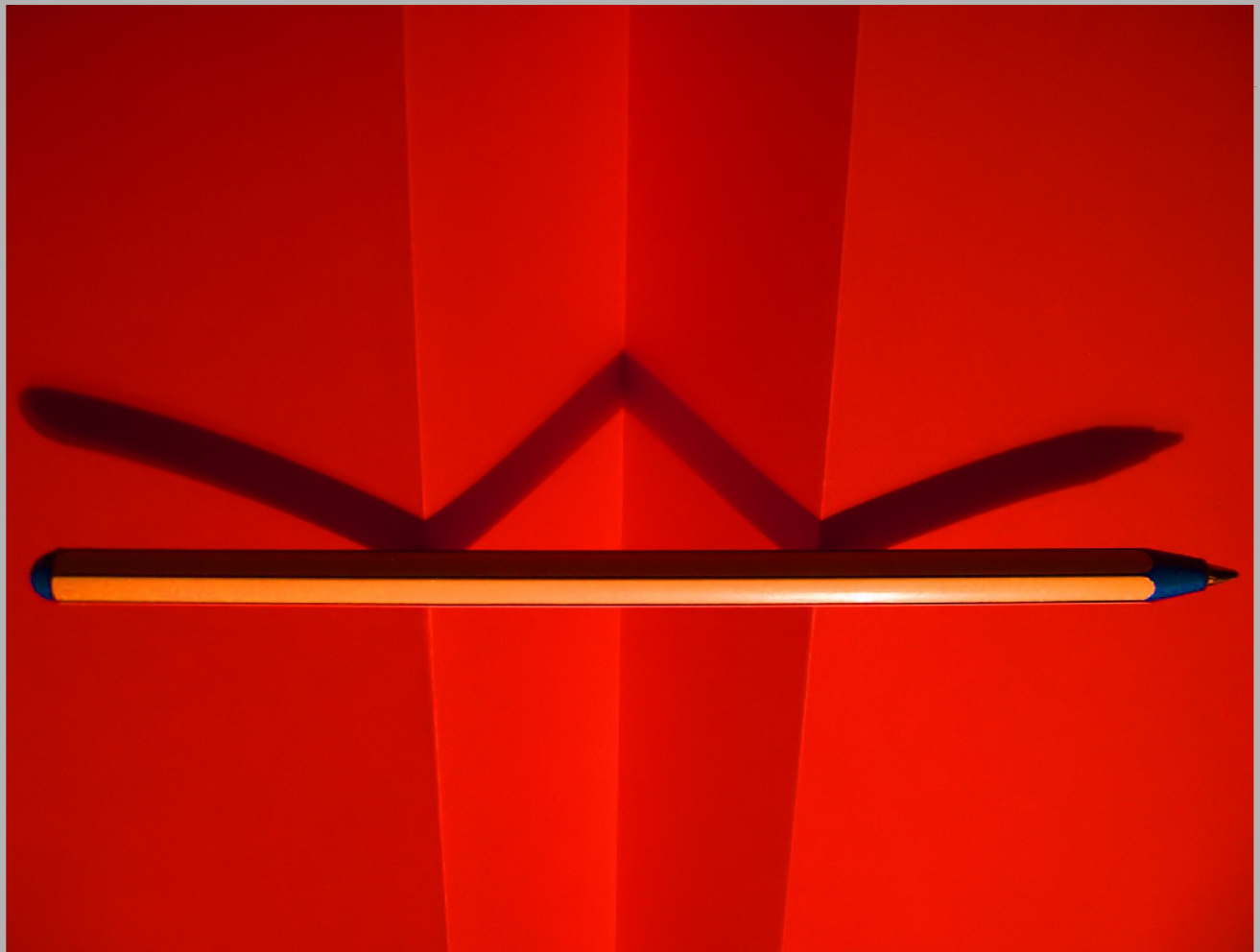# KIT
Karlsruhe Institute of Technology

Module Handbook
Economics Engineering (M.Sc.)

Summer term 2009
Long version
13.03.2009

Faculty of Economics and Business Engineering

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Inhaltsverzeichnis

1   Structure of the Master Programme in Economics Engineering (M.Sc.)

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

Semester	Technische VWL (M.Sc.)										
	Pflichtprogramm						Wahlpflichtprogramm (4 aus 6)				
1	VWL	VWL	BWL	INFO	OR	Seminar + SQ	STAT	VWL	BWL	RECHT o. SOZIO	ING/NW
2	9 LP	9 LP	9 LP	9 LP	9 LP	6 + 3 LP	9 LP	9 LP	9 LP	9 LP	9 LP
3											
4	Masterarbeit 30 LP										
	120 LP (6 Pflichtmodule + 4 Wahlpflichtmodule + Masterarbeit)										

Abbildung 1: Structure of the Master Programme (Recommendation)

Figure 1 shows the structure of the subjects and the credits allocated to the subjects. The student has to choose four elective modules of the mentioned disciplines. Thereby it is only possible to select a maximum of two modules from the same discipline and it is only allowed to choose either one module in law or in sociology.

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

2 Key Skills

The master programme Economics Engineering (M.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, the seminar courses in the master degree programme contribute significantly to the development of key skills by practicing to elaborate and write scientifically sound papers and presentations about special topics. The *integrative* taught key skills, which are acquired throughout the entire programme, can be classified into the following fields:

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

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

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

The integrative acquisition of key skills especially takes place in several obligatory courses during the master programme, namely
1. Seminar module
2. Mentoring of the Master's thesis
3. Business science, economics and informatics modules

Figure 2 shows the classification of key skills within the master 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	Masterstudium				
	BWL	VWL	INFO	Seminar	Materarbeit
Basiskompetenzen (soft skills)					
Teamarbeit, soziale Kommunikation und Kreativitätstechniken			x		
Präsentationserstellung und -techniken				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			
Wissen über internationale Organisationen		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 Masterarbeit)

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

Applied Strategic Decisions [TVWL4VWL2] (S. 20)
remarks

The lecture *Incentives in Markets and Firms* was offered in the winter term 2008/2009 for the last time and though will not be available in the module from summer term 2009 on.
[...]
The lecture *Game TheoryI* can be chosen.

F2 (Finance) [TVWL4BWLFBV2] (S. 29)
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.

F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)
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.

Applications of Actuarial Sciences I (BWL) [TVWL4BWLFBV4] (S. 39)
remarks

The lecture *Saving Societies* [26340] is currently not offered.

Applications of Actuarial Sciences II (BWL) [TVWL4BWLFBV5] (S. 40)
remarks

The lecture *Saving Societies* [26340] will not be offered in the summer term 2009.

Advanced CRM [TVWL4BWLISM1] (S. 46)
remarks

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

Electronic Markets [TVWL4BWLISM2] (S. 47)
remarks

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

Market Engineering [TVWL4BWLISM3] (S. 48)
remarks

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

Business & Service Engineering [TVWL4BWLISM4] (S. 49)
remarks

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

Information & Markets [TVWL4BWLISM5] (S. 50)
remarks

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

Service Management [TVWL4BWLISM6] (S. 51)
remarks

The key of the module has be renamed and ended formerly in BWLIW3.

Information Engineering [TVWL4BWLISM7] (S. 52)

remarks

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

Information and Market Engineering [TVWL4BWLIW1] (S. 53)

remarks

From the summer term 2009 on, the module will not be offered. Students that already began with this module, may finish it regularly.

As a substitution, several new modules are offered (id ends with BWLISM1-7).

Service Engineering [TVWL4BWLIW2] (S. 54)

remarks

From the summer term 2009 on, the module will not be offered. Students that already began with this module, may finish it regularly.

As a substitution, several new modules are offered (id ends with BWLISM1-7).

Mathematical and Empirical Finance [TVWL4STAT1] (S. 61)

remarks

The module is newly-offered in summer 2009 first time.

Statistical Methods in Risk Management [TVWL4STAT2] (S. 62)

remarks

The module is newly offered in summer 2009.

Informatics [TVWL4INFO1] (S. 63)

remarks

The lectures *Computaional Economics* [26458], *Software Engineering* [24073] and *Service Network Coordination* [SNC] 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 lecture.

The lectures *Business Process Modelling* [25736], *Web Service Engineering* [25774] und *Cloud Computing* [CC] are offered.

Emphasis in Informatics [TVWL4INFO2] (S. 65)

remarks

The lectures *Computaional Economics* [26458], *Software Engineering* [24073] and *Service Network Coordination* [SNC] 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 lecture.

The lectures *Business Process Modelling* [25736], *Web Service Engineering* [25774], *Cloud Computing* [CC] and *Service-oriented Computing 2* [25772] are offered.

Electives in Informatic [TVWL4INFO3] (S. 67)

remarks

The lectures *Computaional Economics* [26458], *Software Engineering* [24073] and *Service Network Coordination* [SNC] 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 lecture.

The lectures *Business Process Modelling* [25736], *Web Service Engineering* [25774] und *Cloud Computing* [CC] are offered.

Fuels, Environment and Global Development I [TVWL4INGCV1] (S. 86)

remarks

The module won't be offered since summer term 2009.

4.2   Changes regarding courses

Saving Societies [26340] (S. 341)

remarks

This lecture is irregularly not offered in summer 2009.

5   Modules

5.1   Economics

Module: Innovation and Technical Change   **Module key: [TVWL4VWL1]**

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

Learning Control / **Examinations**

Prerequisites
It is helpful to have attended the course *Innovation* [26274] of the Bachelor programme..

Conditions
None.

Learning Outcomes

Content

Courses in module *Innovation and Technical Change* [TVWL4VWL1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26272	Economics of Innovation (S. 326)	2/2	W	6	Grupp
26291	Managing New Technologies (S. 328)	2/1	S	5	Reiß

Module: Applied Strategic Decisions   Module key: [TVWL4VWL2]

Subject: Economics
Module coordination: Siegfried Berninghaus, Clemens Puppe
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
The student should have basic knowledge of game theory.

Conditions
The course *Game Theory II* [25369] is obligatory. Exception: This lecture was attended in the Bachelor study programme.

Learning Outcomes
The student
- knows and analyzes complex strategic decisions, knows advanced formal solution concepts and how to apply them,
- knows basic solution concepts for simple strategic decisions and is able to apply them to concrete problems,
- knows the experimental method from design of an experiment to evaluation of data and applies them.

Content
The module offers various possibilities of application of game theoretic methods. The main focus is on strategic bargaining and behavior in auctions. Also empirical aspects are taken into account.

Courses in module *Applied Strategic Decisions* [TVWL4VWL2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25369	Game Theory II (S. 232)	2/2	W	4,5	Berninghaus
25525	Game Theory I (S. 238)	2/2	S	4,5	Berninghaus
25408	Auction Theory (S. 236)	2/1	W	4.5	Ehrhart, Seifert
25373	Experimental Economics (S. 233)	2/1	S	4,5	Berninghaus, Bleich
26460	Market Engineering: Information in Institutions (S. 354)	2/1	S	4,5	Weinhardt, Kraemer

Remarks
The lecture *Incentives in Markets and Firms* was offered in the winter term 2008/2009 for the last time and though will not be available in the module from summer term 2009 on.
The lecture Experimental Economics is offered for the last time in summer 2009.
The lecture *Game Theory I* can be chosen.

Module: Money and Payment   Module key: [TVWL4VWL3]

Subject: Economics
Module coordination: Malte Krüger
Credit points (CP): 9

Learning Control / **Examinations**

Prerequisites
Knowledge in the area of Macroecomomics is helpful.

Conditions
None.

Learning Outcomes

Content

Courses in module *Money and Payment* [TVWL4VWL3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26100	Monetary Theory (S. 319)	2/1	S	5	Krüger
26252	International Economics (S. 323)	2/1	W	5	Kowalski

Module: Network Economics   Module key: [TVWL4VWL4]

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

Learning Control / Examinations

Prerequisites
Knowledge in the area of microeconomics and of the content of the course *Economics I: Microeconomics* [25012], respectively, is assumed.

Conditions
None.

Learning Outcomes

Content

Courses in module *Network Economics* [TVWL4VWL4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26240	Competition in Networks (S. 322)	2/1	S	5	Mitusch
26206	Regulation (S. 321)	2	W	4	Kopp

Module: Environmental Economics

Module key: [TVWL4VWL5]

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

Learning Control / **Examinations**

Prerequisites
Knowledge in the area of microeconomics and of the content of the course *Economics I: Microeconomics* [25012], respectively, is assumed.

Conditions
None.

Learning Outcomes

Content

Courses in module *Environmental Economics* [TVWL4VWL5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25547	Environmental Economics and Sustainability (S. 243)	2/1	W	5	Walz
25548	Environmental and Ressource Policy (S. 244)	2/1	S	5	Walz
26003	Energy and Environment (S. 315)	2/1	S	5	Karl, n.n.
24140	Environmental Law (S. 180)	2	W	4	Spiecker genannt Döhmann

Module: Economic Policy   Module key: [TVWL4VWL6]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Economic Policy* [TVWL4VWL6]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26280	Economic Policy (S. 327)	2/1	S	5	Schaffer
26257	Economic integration in Europe (S. 324)	2	W	4	Kowalski
26272	Economics of Innovation (S. 326)	2/2	W	6	Grupp

Remarks

Module: Allocation and Equilibrium   Module key: [TVWL4VWL7]

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

Learning Control / Examinations

Prerequisites
Micro- and macroeconomical knowledge corresponding to the content of the economical courses of the Bachelor Programme is assumed.

Conditions
None.

Learning Outcomes

Content

Courses in module *Allocation and Equilibrium* [TVWL4VWL7]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25527	Advanced Microeconomic Theory (S. 239)	2/1	S	4.5	Puppe
25551	Macroeconomic Theory II (S. 246)	2/1	S	4.5	Barbie
25517	Welfare Economics (S. 237)	2/1	S	4.5	Puppe

Module: Macroeconomic Theory   Module key: [TVWL4VWL8]

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

Learning Control / Examinations

Prerequisites
Micro- and macroeconomical knowledge is assumed.

Conditions
None.

Learning Outcomes

Content

Courses in module *Macroeconomic Theory* [TVWL4VWL8]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25549	Macroeconomic Theory I (S. 245)	2/1	W	4,5	Barbie, Hillebrand
25551	Macroeconomic Theory II (S. 246)	2/1	S	4.5	Barbie
25543	Theory of Economic Growth (S. 242)	2/1	S	4.5	Hillebrand

Module: Social Choice Theory

Module key: [TVWL4VWL9]

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

Learning Control / Examinations

Prerequisites
Micro- and macroeconomical knowledge corresponding to the content of the economical courses of the Bachelor Programme is assumed.

Conditions
None.

Learning Outcomes

Content

Courses in module *Social Choice Theory* [TVWL4VWL9]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25517	Welfare Economics (S. 237)	2/1	S	4.5	Puppe
25525	Game Theory I (S. 238)	2/2	S	4,5	Berninghaus
25537	Decision Theory and Objectives in Applied Politics (S. 240)	2/1	W	4.5	Tangian
25539	Mathematical Theory of Democracy (S. 241)	2/1	S	4.5	Tangian

5.2   Business Administration

Module: F1 (Finance)   Module key: [TVWL4BWLFBV1]

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 *F1 (Finance)* [TVWL4BWLFBV1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26550	Derivatives (S. 371)	2/1	S	4,5	Uhrig-Homburg
25212	Valuation (S. 216)	2/1	W	4.5	Ruckes
26555	Asset Pricing (S. 372)	2/1	S	4.5	Uhrig-Homburg, Ruckes

Module: F2 (Finance)   Module key: [TVWL4BWLFBV2]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
It is obligatory to attend the module *F1 (Finance)* [EE4BWLFBV1].
It is not allowed to choose also the module *F2&F3 (Finance)* [TVWL4BWLFBV3].
The courses *Asset Pricing* [VLAP], *Valuation* [25212] and *Derivatives* [26550] can only be chosen if they have not been chosen in the module *F1 (Finance)* [TVWL4BWLFBV1] already.

Learning Outcomes

Content

Courses in module *F2 (Finance)* [TVWL4BWLFBV2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26560	Fixed Income Securities (S. 373)	2/1	W	4,5	Uhrig-Homburg
25214	Corporate Financial Policy (S. 217)	2/1	S	4.5	Ruckes
25240	Market Microstructure (S. 219)	2/0	W	3	Lüdecke
26565	Credit Risk (S. 374)	2/1	W	4.5	Uhrig-Homburg
25210	Management Accounting (S. 215)	2/1	S	4.5	Lüdecke
26555	Asset Pricing (S. 372)	2/1	S	4.5	Uhrig-Homburg, Ruckes
25212	Valuation (S. 216)	2/1	W	4.5	Ruckes
26550	Derivatives (S. 371)	2/1	S	4,5	Uhrig-Homburg
26570	International Finance (S. 375)	2	S	3	Uhrig-Homburg, Walter
25299	Business Strategies of Banks (S. 222)	2	W	3	Müller
25296	Exchanges (S. 221)	1	S	1.5	Franke
25232	Financial Intermediation (S. 218)	3	W	4.5	Ruckes

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: F2&F3 (Finance)   Module key: [TVWL4BWLFBV3]

Subject: Business Administration
Module coordination: Marliese Uhrig-Homburg
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
None.

Conditions
It is obligatory to attend the module *F1 (Finance)* [EE4BWLFBV1].
It is not allowed to choose also the module *F2&F3 (Finance)* [TVWL4BWLFBV3].
The courses *Asset Pricing* [VLAP], *Valuation* [25212] and *Derivatives* [26550] can only be chosen if they have not been chosen in the module *F1 (Finance)* [TVWL4BWLFBV1] already.

Learning Outcomes

Content

Courses in module *F2&F3 (Finance)* [TVWL4BWLFBV3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26555	Asset Pricing (S. 372)	2/1	S	4.5	Uhrig-Homburg, Ruckes
25212	Valuation (S. 216)	2/1	W	4.5	Ruckes
26550	Derivatives (S. 371)	2/1	S	4,5	Uhrig-Homburg
26560	Fixed Income Securities (S. 373)	2/1	W	4,5	Uhrig-Homburg
26565	Credit Risk (S. 374)	2/1	W	4.5	Uhrig-Homburg
25214	Corporate Financial Policy (S. 217)	2/1	S	4.5	Ruckes
25240	Market Microstructure (S. 219)	2/0	W	3	Lüdecke
25210	Management Accounting (S. 215)	2/1	S	4.5	Lüdecke
25232	Financial Intermediation (S. 218)	3	W	4.5	Ruckes
25296	Exchanges (S. 221)	1	S	1.5	Franke
25299	Business Strategies of Banks (S. 222)	2	W	3	Müller
26570	International Finance (S. 375)	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: Entrepreneurship, Innovation and International Marketing   **Module key:**
[TVWL4BWLMAR6]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
At least two courses out of International Marketing [25164], Marketing and Innovation [25165] and Entrepreneurship and Marketing [25170] have to be chosen.

Learning Outcomes

Content

Courses in module *Entrepreneurship, Innovation and International Marketing* [TVWL4BWLMAR6]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25154	Modern Market Research (S. 199)	2/1	S	5	Gaul
25156	Marketing and Operations Research (S. 200)	2/1	S	5	Gaul
25158	Corporate Planning and Operations Research (S. 201)	2/1	W	5	Gaul
25171	Data Analysis and Operations Research (S. 209)	2/1	W	5	Gaul
25160	e-Business & electronic Marketing (S. 202)	1	S	2,5	Gaul
25164	International Marketing (S. 204)	1	S	2,5	Gaul
25165	Marketing and Innovation (S. 205)	1/1	W	2,5	Gaul
25170	Entrepreneurship and Marketing (S. 208)	1/1	W	2,5	Gaul
25196	Master Seminar in Entrepreneurship, Innovation and International Marketing (S. 214)	2	W/S	4	N.N.

Module: Marketing Planning

Module key: [TVWL4BWLMAR1]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
The courses *Marketing and Operations Research* [25156] and *Corporate Planning and Operations Research* [25158] have to be chosen.

Learning Outcomes

Content

Courses in module *Marketing Planning* [TVWL4BWLMAR1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25154	Modern Market Research (S. 199)	2/1	S	5	Gaul
25156	Marketing and Operations Research (S. 200)	2/1	S	5	Gaul
25158	Corporate Planning and Operations Research (S. 201)	2/1	W	5	Gaul
25171	Data Analysis and Operations Research (S. 209)	2/1	W	5	Gaul
25160	e-Business & electronic Marketing (S. 202)	1	S	2,5	Gaul
25164	International Marketing (S. 204)	1	S	2,5	Gaul
25165	Marketing and Innovation (S. 205)	1/1	W	2,5	Gaul
25170	Entrepreneurship and Marketing (S. 208)	1/1	W	2,5	Gaul
25195	Master-Seminar Marketing Plannning (S. 213)	2	W/S	4	Gaul

Module: Market Research

Module key: [TVWL4BWLMAR2]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
The courses *Modern Market Research* [25154] and *Data Analysis and Operations Research* [25171] have to be chosen.

Learning Outcomes

Content

Courses in module *Market Research* [TVWL4BWLMAR2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25154	Modern Market Research (S. 199)	2/1	S	5	Gaul
25156	Marketing and Operations Research (S. 200)	2/1	S	5	Gaul
25158	Corporate Planning and Operations Research (S. 201)	2/1	W	5	Gaul
25171	Data Analysis and Operations Research (S. 209)	2/1	W	5	Gaul
25160	e-Business & electronic Marketing (S. 202)	1	S	2,5	Gaul
25164	International Marketing (S. 204)	1	S	2,5	Gaul
25165	Marketing and Innovation (S. 205)	1/1	W	2,5	Gaul
25170	Entrepreneurship and Marketing (S. 208)	1/1	W	2,5	Gaul
25193	Master Seminar zu Marktforschung (S. 211)	2	S	4	Gaul

Module: Strategy, Innovation and Data Analysis   Module key: [TVWL4BWLMAR3]

Subject: Business Administration
Module coordination: Bruno Neibecker
Credit points (CP): 9

Learning Control / Examinations
Assessment consist of a written module exam according to §4(2), 1 SPO. The module exam has a duration of 120 min. and contains topics from the main lecture [25166] as well as from one of the chosen lectures [25154] and [25162].
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
- The lecture *Strategic and Innovative Decision Making in Marketing* [25166] has to be attended.
- From the lectures *Modern Market Research* [25154] and *Information Technology and Business Information* [25162], one must be attended.
- At least 9 CP must be achieved.

Learning Outcomes
Students have learned the following outcomes and competences:
- To specify the key terms in strategic management and innovation research, based on methodological and behavioral approaches
- To apply statistical tools to analyze and interpret case specific problems in marketing
- To indentify the main research trends
- To analyze and interpret high level academic articles
- To learn interactive skills to work in teams and to follow a goal-oriented approach
- To gain understanding of methodological research to develop concrete plans for marketing decision-making

Content
The core product is everything a customer or business consumer receives. Marketers must understand what it takes to develop a new product successfully. It is important to understand that innovations differ in their degree of newness (up to radical innovations). This helps to determine how quickly the products will be adopted by a target market. Market orientation is on the front side of the medal, the reverse side includes meeting the needs of diverse stakeholders. To find out the critical success factors a deep understanding of analytical and statistical methods is essential. As a result, the developing of an effective marketing strategy is discussed as an empirical, scientific process.

Courses in module *Strategy, Innovation and Data Analysis* [TVWL4BWLMAR3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25166	Strategic and Innovative Decision Making in Marketing (S. 206)	2/1	S	4,5	Neibecker
25154	Modern Market Research (S. 199)	2/1	S	5	Gaul
25162	Information Technology and Business Information (S. 203)	2/1	S	4,5	Neibecker

Module: Behavioral Approaches in Marketing and Data Analysis   Module key:
[TVWL4BWLMAR4]

Subject: Business Administration
Module coordination: Bruno Neibecker
Credit points (CP): 9

Learning Control / Examinations

Assessment consist of a written module exam according to §4(2), 1 SPO. The module exam has a duration of 120 min. and contains topics from the main lecture [25167] as well as from one of the chosen lectures [25154] and [25162].
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

- The lecture *Behavioral Approaches in Marketing* [25167] has to be attended.
- From the lectures *Modern Market Research* [25154] and *Information Technology and Business Information* [25162], one must be attended.
- At least 9 CP must be achieved.

Learning Outcomes

Students have learned the following outcomes and competences:
- To specify the key terms in marketing and communication management
- To identify and define theoretical constructs in marketing communication, based on behavioral theory
- To indentify the main research trends
- To analyze and interpret high level academic articles
- To learn interactive skills to work in teams and to follow a goal-oriented approach
- To gain understanding of methodological research to develop concrete plans for marketing decision-making

Content

Consumer behavior approaches in Marketing are seen as an important research area with a consumer-based perspective including a strong interdisciplinary and empirical orientation. My goal was to create a marketing module that presents a balanced coverage of both qualitative and quantitative material. That is, a practical, managerial perspective is discussed in relation to psychological, sociological and physiological (neuromarketing) approaches. It is examined how the individual receives information from his or her environment and how this material is learned, stored in memory, and used to form attitudes and to make decisions. A conprehensive understanding of marketing research and marketing data analysis is provided throughout the module, as for example in market segmentation or the definition of a target market a company decides to pursue.

Courses in module *Behavioral Approaches in Marketing and Data Analysis* [TVWL4BWLMAR4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25167	Behavioral Approaches in Marketing (S. 207)	2/1	W	4,5	Neibecker
25154	Modern Market Research (S. 199)	2/1	S	5	Gaul
25162	Information Technology and Business Information (S. 203)	2/1	S	4,5	Neibecker

Module: Successful Market Orientation   Module key: [TVWL4BWLMAR5]

Subject: Business Administration
Module coordination: Wolfgang Gaul
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
None.

Conditions
At least two courses out of *Modern Market Research* [25154], *Marketing and Operations Reseach* [25156] and *Corporate Planning and Operations Research* [25171] have to be chosen.
It is recommended to choose more than the minimum amount of 18 credit points for this module, because you are able to take an examination in those additional courses as well and they might influence the total grade positively.

Learning Outcomes

Content

Courses in module *Successful Market Orientation* [TVWL4BWLMAR5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25154	Modern Market Research (S. 199)	2/1	S	5	Gaul
25156	Marketing and Operations Research (S. 200)	2/1	S	5	Gaul
25158	Corporate Planning and Operations Research (S. 201)	2/1	W	5	Gaul
25171	Data Analysis and Operations Research (S. 209)	2/1	W	5	Gaul
25160	e-Business & electronic Marketing (S. 202)	1	S	2,5	Gaul
25164	International Marketing (S. 204)	1	S	2,5	Gaul
25165	Marketing and Innovation (S. 205)	1/1	W	2,5	Gaul
25170	Entrepreneurship and Marketing (S. 208)	1/1	W	2,5	Gaul
25166	Strategic and Innovative Decision Making in Marketing (S. 206)	2/1	S	4,5	Neibecker
25167	Behavioral Approaches in Marketing (S. 207)	2/1	W	4,5	Neibecker
25162	Information Technology and Business Information (S. 203)	2/1	S	4,5	Neibecker
25192	Master Seminar in Marketing (S. 210)	2	W/S	4	Gaul

Module: Strategic Management and Organization   Module key: [TVWL4BWLUO2]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Strategic Management and Organization* [TVWL4BWLUO2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25900	Management and Strategy (S. 289)	2/0	S	4	Lindstädt
25902	Managing Organizations (S. 290)	2/0	W	4	Lindstädt
25907	Special Topics in Management: Management and IT (S. 292)	1/0	W/S	2	Lindstädt

Module: Strategic Corporate Management and OrganizationModule key: [TVWL4BWLUO1]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
One of the following courses have to be attended: *Managing Organizations* [25902], *Management and Strategy* [25900]

Learning Outcomes

Content

Courses in module *Strategic Corporate Management and Organization* [TVWL4BWLUO1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25904	Organization Theory (S. 291)	2/1	W	6	Lindstädt
25902	Managing Organizations (S. 290)	2/0	W	4	Lindstädt
25908	Modeling Strategic Decision Making (S. 293)	2/1	S	6	Lindstädt
25912	Value-Based Instruments of Corporate Strategy (S. 294)	2	W	4	Pidun, Wolff
25900	Management and Strategy (S. 289)	2/0	S	4	Lindstädt

Remarks
This module was formerly named *Corporate Management.*

Module: Applications of Actuarial Sciences I (BWL)   Module key: [TVWL4BWLFBV4]

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

Learning Control / Examinations

Prerequisites

Knowledge in statistics and the module *Insurance: Calculation and Control* [WW3BWLFBV2] is an advantage, but not a requirement.

Conditions

Two courses out of *Life and Pensions* [26310], *Reinsurance* [26312], *Insurance Optimisation* [26316] and *Saving Societies* [26340] have to be chosen.

Learning Outcomes

Content

Courses in module *Applications of Actuarial Sciences I (BWL)* [TVWL4BWLFBV4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26340	Saving Societies (S. 341)	3/0	S	4,5	Hipp, N.N.
26316	Insurance Optimisation (S. 332)	3	W	4.5	Hipp
26312	Reinsurance (S. 331)	4	S	4.5	Hipp, Stöckbauer
26310	Life and Pensions (S. 330)	3	W	4.5	Hipp, Vogt, Besserer

Remarks

The lecture *Saving Societies* [26340] is currently not offered.

Module: Applications of Actuarial Sciences II (BWL)   Module key: [TVWL4BWLFBV5]

Subject: Business Administration
Module coordination: Christian Hipp
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
Knowledge in statistics and the module *Insurance: Calculation and Control* [WW3BWLFBV2] is an advantage, but not a requirement.

Conditions
All courses of the module have to be attended.

Learning Outcomes

Content

Courses in module *Applications of Actuarial Sciences II (BWL)* [TVWL4BWLFBV5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26310	Life and Pensions (S. 330)	3	W	4.5	Hipp, Vogt, Besserer
26312	Reinsurance (S. 331)	4	S	4.5	Hipp, Stöckbauer
26340	Saving Societies (S. 341)	3/0	S	4,5	Hipp, N.N.
26316	Insurance Optimisation (S. 332)	3	W	4.5	Hipp

Remarks
The lecture *Saving Societies* [26340] will not be offered in the summer term 2009.

Module: Insurance Statistics   Module key: [TVWL4BWLFBV8]

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

Learning Control / **Examinations**

Prerequisites
Knowledge in statistics and the module *Insurance: Calculation and Control* [WW3BWLFBV2] is an advantage, but not a requirement.

Conditions
None.

Learning Outcomes

Content

Courses in module *Insurance Statistics* [TVWL4BWLFBV8]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26303	Insurance Statistics (S. 329)	4/2	W	9	Hipp

Module: Operational Risk Management I   Module key: [TVWL4BWLFBV9]

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

Learning Control / Examinations

Prerequisites
Knowledge in risk management (for example gained in the Bachelor programme) are an advantage.

Conditions
It is only possible to choose the course *Enterprise Risk Management* [26326] if it was not attended in the Bachelor programme. Good complements to this module are as well the engineering science modules *Understanding and Prediction of Disasters I* [WI4INTER1] and *Safety Science I* [WI4INTER4].

Learning Outcomes

Content

Courses in module *Operational Risk Management I* [TVWL4BWLFBV9]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26326	Enterprise Risk Management (S. 336)	3/0	W/S	4,5	Werner
26395	Risk Communication (S. 348)	3/0	W/S	4.5	Werner
26353	International Risk Transfer (S. 343)	2/0	S	2,5	Schwehr
26355	Public Sector Risk Management (S. 345)	2/0	W	2,5	Mechler

Remarks
The courses *Enterprise Risk Management* [26326] and *Risk Communication* [26395] are offered irregularly. For further information, see: http://insurance.fbv.uni-karlsruhe.de

Module: Operational Risk Management II   Module key: [TVWL4BWLFBV10]

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

Learning Control / **Examinations**

Prerequisites
Interest in interdisciplinary research is assumed.
Knowledge in social science disciplines, GIS or Finance is an advantage.

Conditions
Good complements to this module are as well the engineering science modules *Understanding and Prediction of Disasters I* [WI4INTER1] and *Safety Science I* [WI4INTER4].

Learning Outcomes

Content

Courses in module *Operational Risk Management II* [TVWL4BWLFBV10]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26355	Public Sector Risk Management (S. 345)	2/0	W	2,5	Mechler
26354	Risk Management of Microfinance and Private Households (S. 344)	3/0	W/S	4,5	Werner
26328	Multidisciplinary Risk Research (S. 338)	3/0	S	4,5	Werner
26393	Project Work in Risk Research (S. 347)	3	S	4.5	Werner

Remarks
The course *Risk Management of Microfinance and Private Households* [26354] is offered irregularly. For further information, see:
http://insurance.fbv.uni-karlsruhe.de

Module: Insurance Management I   Module key: [TVWL4BWLFBV6]

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

Learning Control / **Examinations**

Prerequisites
Knowledge of the content of the course *Principles of Insurance Management* [25055] (cf. Bachelor module *Risk and Insurance Management* [WW3BWLFBV3] or *Insurance Management* [WW3BWLFBV4] or lecture notes available at http://insurance.fbv.uni-karlsruhe.de/345.php) is assumed.
If the contents were not part of the Bachelor programme and there is no professional experience in the insurance industry so far, the student has to pass a test to proof sufficient prior knowledge in the first third of the term.

Conditions
None.

Learning Outcomes

Content

Courses in module *Insurance Management I* [TVWL4BWLFBV6]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26323	Insurance Marketing (S. 334)	3	W/S	4.5	Werner
26320	Insurance Accounting (S. 333)	3	W	4,5	Werner, Ludwig
26324	Insurance Production (S. 335)	3	W/S	4.5	Werner
26327	Service Management (S. 337)	3	W/S	4.5	Werner
26360	Insurance Contract Law (S. 346)	3	S	4.5	Werner, Schwebler

Remarks
The courses *Insurance Marketing* [26323], *Insurance Production* [26324], and *Service Management* [26327] are offered irregularly.
For further information, see: http://insurance.fbv.uni-karlsruhe.de

Module: Insurance Management II   Module key: [TVWL4BWLFBV7]

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

Learning Control / **Examinations**

Prerequisites
Knowledge of the content of the course *Principles of Insurance Management* [25055] (cf. Bachelor module *Risk and Insurance Management* [WW3BWLFBV3] or *Insurance Management* [WW3BWLFBV4] or lecture notes available at http://insurance.fbv.uni-karlsruhe.de/345.php) is assumed.
If the contents were not part of the Bachelor programme and there is no professional experience in the insurance industry so far, the student has to pass a test to proof sufficient prior knowledge in the first third of the term.

Conditions
None.

Learning Outcomes

Content

Courses in module *Insurance Management II* [TVWL4BWLFBV7]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25050	Private and Social Insurance (S. 192)	2	W	2,5	Werner, Heilmann, Besserer
26360	Insurance Contract Law (S. 346)	3	S	4.5	Werner, Schwebler
26350	Current Issues in the Insurance Industry (S. 342)	2	W	2.5	Werner, Heilmann
26335	Insurance Risk Management (S. 339)	2	S	2,5	Werner, Maser
26336	Risk Controlling in Insurance Groups (S. 340)	1	S	2	Werner, Müller

Module: Advanced CRM   Module key: [TVWL4BWLISM1]

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
None.

Learning Outcomes
The student

- understand service competition as a sustainable competitive strategy and understand the effects of service competition on the design of markets, products, processes and services,
- develops and realizes personalized services, especially in the field of recommendation services,
- analyzes social networks and knows their application field in CRM,
- works in teams.

Content
Besides the foundations of modern customer oriented and service oriented management, developments of CRM systems are lectured.

On one hand, an overview of general aspects and concepts of personalization and their importance for service provider and customers is given. Then, different categories of recommendation systems are presented: Ranging from explizit recommendation services like reviews to implicit services like the calcuation of recommendations based on the historic data about products and/or customers.

On the other hand, there exist a trend towards viewing economic systems and social systems as networks. This approach allows for the application of different methods from mathematics, economic sciences, sociology and physics. In CRM, net work analyses may provide benefits calculating customer network values.

Courses in module *Advanced CRM* [TVWL4BWLISM1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26508	Customer Relationship Management (S. 367)	2/1	W	4,5	Geyer-Schulz
26506	Personalization and Recommender Systems (S. 365)	2/1	S	4,5	Geyer-Schulz
26518	Social Network Analysis in CRM (S. 369)	2/1	W/S	4,5	Hoser

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

Module: Electronic Markets   Module key: [TVWL4BWLISM2]

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
None.

Learning Outcomes
The student

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

Content
What are the conditions that make electronic markets develop?

In this module, the selection of the type of organization as an optimization of transaction costs is treated. Afterwards, the efficiency of electronic markets (price, information and allocation efficiency) as well as reasons for market failure are described. Finally, motivational issues llike bounded rationality and information assymetries (private information and moral hazard), as well as the development of incentive schemes, are presented.

Regarding the market design, especially the interdependencies of market organization, market mechanisms, institutions and products are described and theoretical foundations are lectured.

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

Further topics of the module include the analysis of existing markets, the design for new markets and the implementation of simple auction forms.

Courses in module *Electronic Markets* [TVWL4BWLISM2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26502	Electronic Markets (Principles) (S. 360)	2/1	W	4,5	Geyer-Schulz
26504	Electronic Markets: Institutions and Market Mechanisms (S. 362)	2/1	S	4,5	Geyer-Schulz
26460	Market Engineering: Information in Institutions (S. 354)	2/1	S	4,5	Weinhardt, Kraemer

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

Module: Market Engineering   Module key: [TVWL4BWLISM3]

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 *Market Engineering: Information in Institutions* [26460] has to be attended.

Learning Outcomes
The students

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

Content
This module explains the dependencies between the design von markets and their success. Markets are complex interaction of different institution and participants in a market behave strategically according to the market rules. The development and the design of markets or market mechanisms has a strong influence on the behavior of the participants. A systematic approach and a thorough analysis of existing markets is inevitable to design, create and operate a market place successfully. the approaches for a systematic analysis are explained in the mandatory course *Market Engineering* [26460] by discussing theories about mechanism design and institutional economics. The student can deepen his knowledge about markets in a second course.

Courses in module *Market Engineering* [TVWL4BWLISM3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26460	Market Engineering: Information in Institutions (S. 354)	2/1	S	4,5	Weinhardt, Kraemer
25408	Auction Theory (S. 236)	2/1	W	4.5	Ehrhart, Seifert
26454	eFinance: Information Engineering and Management for Securities Trading (S. 352)	2/1	W	4,5	Weinhardt, Riordan
25373	Experimental Economics (S. 233)	2/1	S	4,5	Berninghaus, Bleich

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

Module: Business & Service Engineering   Module key: [TVWL4BWLISM4]

Subject: Business Administration
Module coordination: Christof Weinhardt, Gerhard Satzger
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
The student should learn to

- develop and implement new markets with regards to the technological progresses of information and communication technology and the increasing economic networking
- restructure and develop new business processes in markets under those conditions
- understand service competition as a sustainable competitive strategy and understand the effects of service competition on the design of markets, products, processes and services.

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

Courses in module *Business & Service Engineering* [TVWL4BWLISM4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26456	Business Models in the Internet: Planning and Implementation (S. 353)	2/1	S	4,5	Weinhardt, Holtmann
26506	Personalization and Recommender Systems (S. 365)	2/1	S	4,5	Geyer-Schulz
26468	Service Innovation (S. 357)	2/1	S	5	Satzger, Neus

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

Module: Information & Markets   Module key: [TVWL4BWLISM5]

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 *Communications Economics* [26462] has to be attended.

Learning Outcomes

Content

Courses in module *Information & Markets* [TVWL4BWLISM5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26462	Communications Economics (S. 355)	2/1	S	4,5	Seifert, Kraemer
26460	Market Engineering: Information in Institutions (S. 354)	2/1	S	4,5	Weinhardt, Kraemer
25408	Auction Theory (S. 236)	2/1	W	4.5	Ehrhart, Seifert

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

Module: Service Management   Module key: [TVWL4BWLISM6]

Subject: Business Administration
Module coordination: Gerhard Satzger, 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 *Business and IT Service Management* [26484] is obligatory.
The course *eServices* [26466] can only be choosen, if it was not attended in the Bachelor programme.

Learning Outcomes
The students

- understand the basics of developing and managing IT-based services,
- understand and apply OR methods in service management,
- analyze and develop supply chain networks, and
- understand and analyze innovation processes in corporations

Content
The module service management addresses the basics of developing and managing IT-based services. The lectures contained in this module teach the basics of developing and managing IT-based services and the application of OR methods in the field of service management. Moreover, students learn to analyze and develop supply chain networks as well as to understand and analyze innovation processes in corporations. Current examples from research and industry demonstrate the relevance of the topics discussed in this module.

Courses in module *Service Management* [TVWL4BWLISM6]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26484	Business and IT Service Management (S. 359)	2/1	W	5	Satzger
26452	Management of Business Networks (S. 351)	2/1	W	4,5	Weinhardt, Kraemer
26468	Service Innovation (S. 357)	2/1	S	5	Satzger, Neus
26466	eServices (S. 356)	2/1	S	5	Weinhardt, Satzger

Remarks
The key of the module has be renamed and ended formerly in BWLIW3.

Module: Information Engineering   Module key: [TVWL4BWLISM7]

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 of the course.

Prerequisites
None.

Conditions
The course *Principles of Information Engineering and Management* [26450] has to be taken.

Learning Outcomes
The student

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

Content
In the lecture *Principles of Information Engineering and Management*, a clear distinction of information as a production, competitive, and economic good is introduced. The central role of information is explained through the concept of the "information lifecycle". The single phases from existence/generation through allocation and evaluation until the distribution and usage of information are analyzed from the business administration perspective and the microeconomic perspective.
In a second course the student can deepen his knowledge on the one hand on the design and operation of markets and on the other hand on the impact of digital goods in network industries regarding the pricing policies, business strategies and regulation issues.

Courses in module *Information Engineering* [TVWL4BWLISM7]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26450	Principles of Information Engineering and Management (S. 350)	2/1	W	5	Weinhardt, Kraemer
26462	Communications Economics (S. 355)	2/1	S	4,5	Seifert, Kraemer
26460	Market Engineering: Information in Institutions (S. 354)	2/1	S	4,5	Weinhardt, Kraemer

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

Module: Information and Market Engineering   Module key: [TVWL4BWLIW1]

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 *Market Engineering: Information in Institutions* [26460] is obligatory.
The course *eFinance: Information Engineering and Management for Securities Trading* [26460] can only be choosen, if it was not attended in the Bachelor programme.

Learning Outcomes
The students

- are able to develop and implement new markets taking technological progress of the information and communication technologies and the interconnectedness of the companies into account,
- are able to reengineer and develop business processes on markets,
- are able to design and build innovative business models and new organisation forms for marketplace operator and networks of marketplace operato,
- develop solutions in teams.

Content
The module Information and Market Engineering addresses the challenges of creating new kinds of markets and market information systems in the context of new developed information and communication technologies and the globalization process. The design of business processes, business models, forms of organization, markets, and competition on markets driven by technological progress are discussed and analyzed.

Courses in module *Information and Market Engineering* [TVWL4BWLIW1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26460	Market Engineering: Information in Institutions (S. 354)	2/1	S	4,5	Weinhardt, Kraemer
26454	eFinance: Information Engineering and Management for Securities Trading (S. 352)	2/1	W	4,5	Weinhardt, Riordan
26502	Electronic Markets (Principles) (S. 360)	2/1	W	4,5	Geyer-Schulz
26504	Electronic Markets: Institutions and Market Mechanisms (S. 362)	2/1	S	4,5	Geyer-Schulz
26450	Principles of Information Engineering and Management (S. 350)	2/1	W	5	Weinhardt, Kraemer

Remarks
From the summer term 2009 on, the module will not be offered. Students that already began with this module, may finish it regularily.
As a substitution, several new modules are offered (id ends with BWLISM1-7).

Module: Service Engineering   Module key: [TVWL4BWLIW2]

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
It is only possible to choose the courses *Customer Relationship Management* [26508] and *Management of Business Networks* [26452] if they have not been attended in the Bachelor programme.

Learning Outcomes
The students,

- are able to understand the role of information as an economic good, production and competitive factor
- are able to analyze information mit appropriate concepts and methods
- can reengineer business process taking the role of information into account
- are able to understand competition of services as an business strategy and the impact of service competition on the design of markets, products, processes and services
- learn to develop solutions in teams

Content
This module addresses the challenges of creating new kinds of products, processes, services, and markets from a service perspective in the context of new developed information and communication technologies and the globalization process. The module describes service competition as a business strategy in the long term that leads to the design of business processes, business models, forms of organization, markets, and competition. Real-world examples from e-Finance, personalized services, recommender systems and social platforms are presented in the courses.

Courses in module *Service Engineering* [TVWL4BWLIW2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26450	Principles of Information Engineering and Management (S. 350)	2/1	W	5	Weinhardt, Kraemer
26460	Market Engineering: Information in Institutions (S. 354)	2/1	S	4,5	Weinhardt, Kraemer
26456	Business Models in the Internet: Planning and Implementation (S. 353)	2/1	S	4,5	Weinhardt, Holtmann
26508	Customer Relationship Management (S. 367)	2/1	W	4,5	Geyer-Schulz
26506	Personalization and Recommender Systems (S. 365)	2/1	S	4,5	Geyer-Schulz
26518	Social Network Analysis in CRM (S. 369)	2/1	W/S	4,5	Hoser

Remarks
From the summer term 2009 on, the module will not be offered. Students that already began with this module, may finish it regularily.
As a substitution, several new modules are offered (id ends with BWLISM1-7).

Module: Industrial Production II   Module key: [TVWL4BWLIIP2]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
The course *Planning and Management of Industrial Plants* [25952] is obligatory. In addition to that one more course has to be chosen.

Learning Outcomes

Content

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Courses in module *Industrial Production II* [TVWL4BWLIIP2]

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ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25952	Planning and Management of Industrial Plants (S. 297)	2/2	W	5.5	Schultmann, n.n.
25962	Exhaust Emissions (VWL), Emissions into the Environment (ING) (S. 300)	2/0	W	3.5	Karl
25959	Energy Policy (S. 299)	2/0	S	3.5	Wietschel
25963	The Management of R&D Projects with Case Studies (S. 301)	2/2	W/S	3.5	Schmied
25958	Strategical Aspects of Energy (S. 298)	2/0	W	3.5	Ardone
25995	Material flow analysis and life cycle assessment (S. 310)	2/0	W	3.5	Schebek

Module: Industrial Ergonomics

Module key: [TVWL4BWLIIP1]

Subject: Business Administration
Module coordination: Peter Knauth
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Industrial Ergonomics* [TVWL4BWLIIP1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25988	Changes in th Working World (S. 309)	2	W/S	3	Hornberger
25964	Ergonomics I (S. 302)	2/1	W	3	Knauth
25965	Ergonomics II (S. 303)	2/1	S	3	Karl
25967	Industrial Studies of Time and Motion (S. 304)	2	W	3	Dürrschnabel

Module: Leadership / Change Management   Module key: [TVWL4BWLUO3]

Subject: Business Administration
Module coordination: Peter Knauth
Credit points (CP): 9

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Leadership / Change Management* [TVWL4BWLUO3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25972	Human Resource Management I (S. 307)	2	W	3	Wollert
25973	Human Resource Management II (S. 308)	2	S	3	Wollert
25968	Social Relationships in Organisations (S. 305)	2	S	3	Kraus
25969	Development of Personnal and Organisation (S. 306)	2	W	3	Weisheit

Module: Basics of Liberalised Energy Markets   Module key: [TVWL4IIP4]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Basics of Liberalised Energy Markets* [TVWL4IIP4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25998	Basics of Liberalised Energy Markets (S. 311)	2/1	W	3.5	Fichtner
26020	Energy Trade and Risk Management (S. 316)	2/1	S	3.5	Hufendiek
25959	Energy Policy (S. 299)	2/0	S	3.5	Wietschel
26022	Gas-Markets (S. 317)	2/0	W	3	Fichtner
26025	Simulation Game in Energy Economics (S. 318)	2/0	W	3	Fichtner

Module: Energy Industry and Technology   Module key: [TVWL4IIP5]

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 Industry and Technology* [TVWL4IIP5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
26003	Energy and Environment (S. 315)	2/1	S	5	Karl, n.n.
25958	Strategical Aspects of Energy (S. 298)	2/0	W	3.5	Ardone
26000	Technological Change in Energy Industry (S. 312)	2/0	W	3	Wietschel
26001	Heat Economy (S. 313)	2/0	S	3	Fichtner
26002	Energy Systems Analysis (S. 314)	2/0	S	3	Möst

5.3   Statistics

Module: Econometrics and Risk Management in Finance   Module key: [TVWL4STAT]

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

Learning Control / **Examinations**

Prerequisites
Profound knowledge in the area of probability theory, estimation theory and test theory is recommended.

Conditions
None.

Learning Outcomes

Content

Courses in module *Econometrics and Risk Management in Finance* [TVWL4STAT]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25331	Stochastic Calculus and Finance (S. 224)	2/1	W	4,5	Rachev
25353	Statistical Methods in Financial Risk Management (S. 228)	2/1	W	4,5	Rachev
25357	Portfolio and Asset Liability Management (S. 230)	2/1	S	5	Rachev
25359	Financial Time Series and Econometrics (S. 231)	2/1	W	5	Rachev
25381	Advanced Econometrics of Financial Markets (S. 235)	2/1	S	5	Rachev

Module: Mathematical and Empirical Finance   Module key: [TVWL4STAT1]

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
The lecture *Stochastic Calculus and Finance* [25331] is mandatory.

Learning Outcomes

Content

Courses in module *Mathematical and Empirical Finance* [TVWL4STAT1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25331	Stochastic Calculus and Finance (S. 224)	2/1	W	4,5	Rachev
25359	Financial Time Series and Econometrics (S. 231)	2/1	W	5	Rachev
25381	Advanced Econometrics of Financial Markets (S. 235)	2/1	S	5	Rachev
25357	Portfolio and Asset Liability Management (S. 230)	2/1	S	5	Rachev
25350/1	Finanzmärkte und Banken (S. 227)	2/2	W	5	Vollmer
25355	Bankmanagement und Finanzmärkte, Ökonometrische Anwendungen (S. 229)	2/2	S	5	Vollmer

Remarks
The module is newly-offered in summer 2009 first time.

Module: Statistical Methods in Risk Management   Module key: [TVWL4STAT2]

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
The lecture *Statistical Methods in Financial Risk Management* [25353] is mandatory.

Learning Outcomes

Content

Courses in module *Statistical Methods in Risk Management* [TVWL4STAT2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25353	Statistical Methods in Financial Risk Management (S. 228)	2/1	W	4,5	Rachev
25337	Stochastic and Econometric Models in Credit Risk Management (S. 225)	2/2	S	5	Rachev
25357	Portfolio and Asset Liability Management (S. 230)	2/1	S	5	Rachev
25342	Operational Risk and Extreme Value Theory (S. 226)	2/2	W	5	Rachev
25375	Data Mining (S. 234)	2	W	5	Nakhaeizadeh
25317	Multivariate Verfahren (S. 223)	2/2	S	5	Heller

Remarks
The module is newly offered in summer 2009.

5.4   Informatics

Module: Informatics   **Module key: [TVWL4INFO1]**

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

Learning Control / Examinations

Prerequisites
None.

Conditions
It is only possible to choose a course if the course or a similar one in an other module has not been attended in the Bachelor or Master programme.
One course has to be chosen from the core courses.
Core courses are: *Algorithms for Internet Applications* [25702], *Applied Informatics I - Modelling* [25070], *Applied Informatics II - IT Systems for e-Commerce* [25033], *Complexity Management* [25760], *Database Systems* [25720], *Software Engineering* [25728], *Service-oriented Computing I* [25770] and *Knowledge Management* [25740].
It is only allowed to choose one lab.

Learning Outcomes

Content

Courses in module *Informatics* [TVWL4INFO1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25702	Algorithms for Internet Applications (S. 257)	2/1	W	5	Schmeck
25070	Applied Informatics I - Modelling (S. 193)	2/1	W	4	Oberweis, Studer
25033	Applied Informatics II - IT Systems for e-Commerce (S. 191)	2/1	S	4	Tai
25760	Complexity Management (S. 273)	2/1	S	5	Seese
25720	Datenbanksysteme (S. 260)	2/1	S	5	Oberweis, Dr. D. Sommer
25728	Software Engineering (S. 264)	2/1	W	5	Oberweis, Seese
25770	Service-oriented Computing 1 (S. 279)	2/1	W	5	Tai
25740	Knowledge Management (S. 268)	2/1	W	5	Studer
CC	Cloud Computing (S. 376)	2/1	W	5	Tai, Juling, Kunze
25724	Database Systems and XML (S. 262)	2/1	W	5	Oberweis
25735	Document Management and Groupware Systems (S. 266)	2	S	4	Klink
25700	Efficient Algorithms (S. 254)	2/1	S	5	Schmeck
25786	Enterprise Architecture Management (S. 283)	2/1	W	5	Wolf
25762	Intelligent Systems in Finance (S. 275)	2/1	S	5	Seese
25764	IT Complexity in Practice (S. 278)	1/1	W	3	Kreidler
25742	Knowledge Discovery (S. 270)	2/1	W	5	Studer
25784	Management of IT-Projects (S. 282)	2/1	S	5	Schätzle
25736	Business Process Modelling (S. 267)	2/1	W	5	Oberweis, Mevius
25706	Nature-inspired Optimisation (S. 259)	2/1	W	5	Mostaghim
25704	Organic Computing (S. 258)	2/1	S	5	Schmeck, Mostaghim
25790	Capability maturity models for software and systems engineering (S. 285)	2	S	4	Kneuper
25748	Semantic Web Technologies I (S. 271)	2/1	W	5	Studer, Hitzler, Rudolph, Rudolph
25750	Semantic Web Technologies II (S. 272)	2/1	S	5	Hitzler, Agarwal
25772	Service-oriented Computing 2 (S. 280)	2/1	S	5	Tai, Studer
25730	Software Technology: Quality Management (S. 265)	2/1	S	5	Oberweis
25700sp	Special Topics of Efficient Algorithms (S. 256)	2/1	W/S	5	Schmeck
SBI	Special Topics of Enterprise Information Systems (S. 385)	2/1	W/S	5	Oberweis, Stucky
KompMansp	Special Topics of Complexity Management (S. 383)	2/1	W/S	5	Seese
SSEsp	Special Topics of Software- and Systemsengineering (S. 386)	2/1	W/S	5	Oberweis, Seese
25860sem	Special Topics of Knowledge Management (S. 288)	2/1	W/S	5	Studer
25788	Strategic Management of Information Technology (S. 284)	2/1	S	5	Wolf
25722	Distributed Database Systems: Basic Technology for e-Business (S. 261)	2/1	S	5	Oberweis
25774	Web Service Engineering (S. 281)	2/1	S	5	Zirpins
25726	Workflow-Management (S. 263)	2/1	S	5	Oberweis
25810	Practical Seminar Knowledge Discovery (S. 286)	2	S	4	Studer
PraBI	Computing Lab Information Systems (S. 384)	2	W/S	4	Oberweis, Seese, Stucky, Studer
25700p	Advanced Lab in Efficient Algorithms (S. 255)	3	W/S	4	Schmeck
25762p	Excercises in Intelligent Systems in Finance (S. 277)	3	W/S	4	Seese
KompManp	Excercises in Complexity Management (S. 382)	3	W/S	4	Seese
25820	Lab Class Web Services (S. 287)	2	W	4	Tai, Studer, Satzger, Zirpins
25740p	Ecxercises in Knowlegde Management (S. 269)	3	W/S	4	Studer

Remarks

The lectures *Computaional Economics* [26458], *Software Engineering* [24073] and *Service Network Coordination* [SNC] 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 lecture.

The lectures *Business Process Modelling* [25736], *Web Service Engineering* [25774] und *Cloud Computing* [CC] are offered.

Module: Emphasis in Informatics   Module key: [TVWL4INFO2]

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

Learning Control / Examinations

Prerequisites
The module *Informatics* [TVWL4INFO1] has to be completed successfully.

Conditions
It is only possible to choose a course if the course or a similar one in an other module has not been attended in the Bachelor or Master programme.
One course has to be chosen from the core courses.
Core courses are: *Algorithms for Internet Applications* [25702], *Applied Informatics I - Modelling* [25070], *Applied Informatics II - IT Systems for e-Commerce* [25033], *Complexity Management* [25760], *Database Systems* [25720], *Service-oriented Computing I* [25770], *Software Engineering* [25728] and *Knowledge Management* [25740].
It is only allowed to choose one lab.

Learning Outcomes

Content

Courses in module *Emphasis in Informatics* [TVWL4INFO2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25702	Algorithms for Internet Applications (S. 257)	2/1	W	5	Schmeck
25070	Applied Informatics I - Modelling (S. 193)	2/1	W	4	Oberweis, Studer
25033	Applied Informatics II - IT Systems for e-Commerce (S. 191)	2/1	S	4	Tai
25760	Complexity Management (S. 273)	2/1	S	5	Seese
25720	Datenbanksysteme (S. 260)	2/1	S	5	Oberweis, Dr. D. Sommer
25770	Service-oriented Computing 1 (S. 279)	2/1	W	5	Tai
25728	Software Engineering (S. 264)	2/1	W	5	Oberweis, Seese
25740	Knowledge Management (S. 268)	2/1	W	5	Studer
25724	Database Systems and XML (S. 262)	2/1	W	5	Oberweis
25735	Document Management and Groupware Systems (S. 266)	2	S	4	Klink
25700	Efficient Algorithms (S. 254)	2/1	S	5	Schmeck
25786	Enterprise Architecture Management (S. 283)	2/1	W	5	Wolf
25762	Intelligent Systems in Finance (S. 275)	2/1	S	5	Seese
25764	IT Complexity in Practice (S. 278)	1/1	W	3	Kreidler
25742	Knowledge Discovery (S. 270)	2/1	W	5	Studer
25784	Management of IT-Projects (S. 282)	2/1	S	5	Schätzle
25736	Business Process Modelling (S. 267)	2/1	W	5	Oberweis, Mevius
25706	Nature-inspired Optimisation (S. 259)	2/1	W	5	Mostaghim
25704	Organic Computing (S. 258)	2/1	S	5	Schmeck, Mostaghim
25790	Capability maturity models for software and systems engineering (S. 285)	2	S	4	Kneuper
25748	Semantic Web Technologies I (S. 271)	2/1	W	5	Studer, Hitzler, Rudolph, Rudolph
25750	Semantic Web Technologies II (S. 272)	2/1	S	5	Hitzler, Agarwal
25772	Service-oriented Computing 2 (S. 280)	2/1	S	5	Tai, Studer
25730	Software Technology: Quality Management (S. 265)	2/1	S	5	Oberweis
SBI	Special Topics of Enterprise Information Systems (S. 385)	2/1	W/S	5	Oberweis, Stucky
25700sp	Special Topics of Efficient Algorithms (S. 256)	2/1	W/S	5	Schmeck
KompMansp	Special Topics of Complexity Management (S. 383)	2/1	W/S	5	Seese
SSEsp	Special Topics of Software- and Systemsengineering (S. 386)	2/1	W/S	5	Oberweis, Seese
25860sem	Special Topics of Knowledge Management (S. 288)	2/1	W/S	5	Studer
25788	Strategic Management of Information Technology (S. 284)	2/1	S	5	Wolf
25722	Distributed Database Systems: Basic Technology for e-Business (S. 261)	2/1	S	5	Oberweis
25774	Web Service Engineering (S. 281)	2/1	S	5	Zirpins
25726	Workflow-Management (S. 263)	2/1	S	5	Oberweis
PraBI	Computing Lab Information Systems (S. 384)	2	W/S	4	Oberweis, Seese, Stucky, Studer
25700p	Advanced Lab in Efficient Algorithms (S. 255)	3	W/S	4	Schmeck
25762p	Excercises in Intelligent Systems in Finance (S. 277)	3	W/S	4	Seese
KompManp	Excercises in Complexity Management (S. 382)	3	W/S	4	Seese
25810	Practical Seminar Knowledge Discovery (S. 286)	2	S	4	Studer
25820	Lab Class Web Services (S. 287)	2	W	4	Tai, Studer, Satzger, Zirpins
25740p	Ecxercises in Knowlegde Management (S. 269)	3	W/S	4	Studer
CC	Cloud Computing (S. 376)	2/1	W	5	Tai, Juling, Kunze

Remarks

The lectures *Computaional Economics* [26458], *Software Engineering* [24073] and *Service Network Coordination* [SNC] 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 lecture.

The lectures *Business Process Modelling* [25736], *Web Service Engineering* [25774], *Cloud Computing* [CC] and *Service-oriented Computing 2* [25772] are offered.

Module: Electives in Informatic   Module key: [TVWL4INFO3]

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

Learning Control / Examinations

Prerequisites
The module *Informatics* [TVWL4INFO1] has to be completed successfully.
Knowledge of the content of the module *Emphasis in Informatics* [TVWL4INFO2] is helpful.

Conditions
It is only possible to choose a course if the course or a similar one in an other module has not been attended in the Bachelor or Master programme.
It is only allowed to choose one lab.

Learning Outcomes

Content

Courses in module *Electives in Informatic* [TVWL4INFO3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25702	Algorithms for Internet Applications (S. 257)	2/1	W	5	Schmeck
25070	Applied Informatics I - Modelling (S. 193)	2/1	W	4	Oberweis, Studer
25033	Applied Informatics II - IT Systems for e-Commerce (S. 191)	2/1	S	4	Tai
25760	Complexity Management (S. 273)	2/1	S	5	Seese
25720	Datenbanksysteme (S. 260)	2/1	S	5	Oberweis, Dr. D. Sommer
25770	Service-oriented Computing 1 (S. 279)	2/1	W	5	Tai
25728	Software Engineering (S. 264)	2/1	W	5	Oberweis, Seese
25740	Knowledge Management (S. 268)	2/1	W	5	Studer
25724	Database Systems and XML (S. 262)	2/1	W	5	Oberweis
25735	Document Management and Groupware Systems (S. 266)	2	S	4	Klink
25700	Efficient Algorithms (S. 254)	2/1	S	5	Schmeck
25786	Enterprise Architecture Management (S. 283)	2/1	W	5	Wolf
25762	Intelligent Systems in Finance (S. 275)	2/1	S	5	Seese
25764	IT Complexity in Practice (S. 278)	1/1	W	3	Kreidler
25742	Knowledge Discovery (S. 270)	2/1	W	5	Studer
25784	Management of IT-Projects (S. 282)	2/1	S	5	Schätzle
25736	Business Process Modelling (S. 267)	2/1	W	5	Oberweis, Mevius
25706	Nature-inspired Optimisation (S. 259)	2/1	W	5	Mostaghim
25704	Organic Computing (S. 258)	2/1	S	5	Schmeck, Mostaghim
25790	Capability maturity models for software and systems engineering (S. 285)	2	S	4	Kneuper
25748	Semantic Web Technologies I (S. 271)	2/1	W	5	Studer, Hitzler, Rudolph, Rudolph
25750	Semantic Web Technologies II (S. 272)	2/1	S	5	Hitzler, Agarwal
25772	Service-oriented Computing 2 (S. 280)	2/1	S	5	Tai, Studer
25730	Software Technology: Quality Management (S. 265)	2/1	S	5	Oberweis
SBI	Special Topics of Enterprise Information Systems (S. 385)	2/1	W/S	5	Oberweis, Stucky
25700sp	Special Topics of Efficient Algorithms (S. 256)	2/1	W/S	5	Schmeck
KompMansp	Special Topics of Complexity Management (S. 383)	2/1	W/S	5	Seese
SSEsp	Special Topics of Software- and Systemsengineering (S. 386)	2/1	W/S	5	Oberweis, Seese
25860sem	Special Topics of Knowledge Management (S. 288)	2/1	W/S	5	Studer
25788	Strategic Management of Information Technology (S. 284)	2/1	S	5	Wolf
25722	Distributed Database Systems: Basic Technology for e-Business (S. 261)	2/1	S	5	Oberweis
25774	Web Service Engineering (S. 281)	2/1	S	5	Zirpins
25726	Workflow-Management (S. 263)	2/1	S	5	Oberweis
PraBI	Computing Lab Information Systems (S. 384)	2	W/S	4	Oberweis, Seese, Stucky, Studer
25700p	Advanced Lab in Efficient Algorithms (S. 255)	3	W/S	4	Schmeck
25762p	Excercises in Intelligent Systems in Finance (S. 277)	3	W/S	4	Seese
25810	Practical Seminar Knowledge Discovery (S. 286)	2	S	4	Studer
KompManp	Excercises in Complexity Management (S. 382)	3	W/S	4	Seese
25820	Lab Class Web Services (S. 287)	2	W	4	Tai, Studer, Satzger, Zirpins
25740p	Ecxercises in Knowlegde Management (S. 269)	3	W/S	4	Studer
CC	Cloud Computing (S. 376)	2/1	W	5	Tai, Juling, Kunze

Remarks

The lectures *Computaional Economics* [26458], *Software Engineering* [24073] and *Service Network Coordination* [SNC] 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 lecture.

The lectures *Business Process Modelling* [25736], *Web Service Engineering* [25774] und *Cloud Computing* [CC] are offered.

5.5   Operations Research

Module: Quantitative Marketing and OR   Module key: [TVWL4OR1]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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Courses in module *Quantitative Marketing and OR* [TVWL4OR1]

</div>

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25154	Modern Market Research (S. 199)	2/1	S	5	Gaul
25156	Marketing and Operations Research (S. 200)	2/1	S	5	Gaul
25158	Corporate Planning and Operations Research (S. 201)	2/1	W	5	Gaul
25171	Data Analysis and Operations Research (S. 209)	2/1	W	5	Gaul
25194	Master Seminar in Quantitative Marketing and OR (S. 212)	2	S	4	Gaul

Module: Optimization in Practice   Module key: [TVWL4OR2]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Optimization in Practice* [TVWL4OR2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25111	Non-linear Optimization (S. 194)	4/2/2	S	9	Stein
25134	Global Optimization (S. 197)	4/2/2	W	9	Stein
25138	Mixed-integer Optimization (S. 198)	4/2	S	9	Stein
25128	Combinatorial Optimization (S. 195)	4/2	S	9	N.n.

Remarks
The lectures will be offered this way:
- SS 2009 und SS 2011: Mixed-integer Optimization,
- SS 2010 und SS 2012: Nonlinear Optimization,
- WS 2010/11 und WS 2012/13: Global Optimization.

Module: Stochastic Methods in Economy and Engineering/ Management of Operations
Module key: [TVWL4OR3]

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:
Control charts, sampling plans, experimental design.
Reliability theory, maintenance.

Courses in module [TVWL4OR3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25656	Quality Management I (S. 248)	2/1/2	W/S	5	Waldmann
25659	Quality Management II (S. 249)	2/1/2	W/S	5	Waldmann
25687	Optimization in a Random Environment (S. 252)	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.

Module: Stochastic Modelling and Optimization/ Stochastic and Strategic Models in Information Engineering and Management   Module key: [TVWL4OR4]

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.
Markov decision processes.
Discrete event simulation, generation of random numbers, generating discrete and continuous random variables, statistical analysis of simulated data, variance reduction techniques, case studies.
Game Theory.

Courses in module [TVWL4OR4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
25690	Stochastic Processes (S. 253)	2/1/2	W/S	5	Waldmann
25653	Markovian Decision Processes (S. 247)	2/1/2	W/S	5	Waldmann
25662	Simulation I (S. 250)	2/1/2	W/S	5	Waldmann
25665	Simulation II (S. 251)	2/1/2	W/S	5	Waldmann
25369	Game Theory II (S. 232)	2/2	W	4,5	Berninghaus

Remarks
The lectures *Stochastic Processes* [25690]*, Markov decision processes* [25653], *Simulation I* [25662], and *Simulation II* [25665] are offered irregularly. The curriculum of the next two years is available online.
Credit from the voluntary computer lab in *Stochastic Processes* [25690]*, Markov decision processes* [25653], *Simulation I* [25662], and *Simulation II* [25665] is accounted for in the overall grade raising the exam grade by 1/3 each.

5.6   Natural and Engineering Sciences

Module: Selected Topics in Production Technology I   Module key: [TVWL4INGMB1]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
It is recommended to attend at least one, at best all three basic courses of production technology in the modules *Production Technology I* [WI3INGMB10]*, Production Technology II* [WI3NGMB4]*, Production Technology III* [WI3INGMB7].
The course *Global Business Strategies* [21661] can only be attended as an additional exam in the module. It does not serve for accomplishing the minimum demand of credits.

Learning Outcomes

Content

Courses in module *Selected Topics in Production Technology I* [TVWL4INGMB1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21657	Manufacturing Technology (S. 140)	4/2	W	9	Schulze
21660	Integrated Production Planning (S. 141)	4/2	S	9	Lanza
21652	Machine Tools (S. 139)	4/2	W	9	Munzinger
21692	International Production and Logistics (S. 147)	2	S	3	Lanza
21669	Materials and Processes in Automotive Light-weight Construction (S. 144)	2	W	4.5	Haepp
21667	Quality Management (S. 143)	2	W	4.5	Lanza
21690	Production system and technology in powertrain production (S. 145)	2	S	4.5	Stauch
21690sem	Seminar Industrial Engineering (S. 146)	2	W/S	4.5	Schulze, Lanza, Munzinger
21661	Global Business Strategies (S. 142)	2	W	4.5	Grube

Module: Selected Topics in Production Technology II   Module key: [TVWL4INGMB2]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
It is recommended to attend at least one, at best all three basic courses of production technology in the modules *Production Technology I* [WI3INGMB10]*, Production Technology II* [WI3NGMB4]*, Production Technology III* [WI3INGMB7].
The course *Global Business Strategies* [21661] can only be attended as an additional exam in the module. It does not serve for accomplishing the minimum demand of credits.

Learning Outcomes

Content

Courses in module *Selected Topics in Production Technology II* [TVWL4INGMB2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21657	Manufacturing Technology (S. 140)	4/2	W	9	Schulze
21660	Integrated Production Planning (S. 141)	4/2	S	9	Lanza
21652	Machine Tools (S. 139)	4/2	W	9	Munzinger
21692	International Production and Logistics (S. 147)	2	S	3	Lanza
21669	Materials and Processes in Automotive Lightweight Construction (S. 144)	2	W	4.5	Haepp
21667	Quality Management (S. 143)	2	W	4.5	Lanza
21690	Production system and technology in powertrain production (S. 145)	2	S	4.5	Stauch
21690sem	Seminar Industrial Engineering (S. 146)	2	W/S	4.5	Schulze, Lanza, Munzinger
21661	Global Business Strategies (S. 142)	2	W	4.5	Grube

Module: Introduction to Logistics   Module key: [TVWL4INGMB20]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
It is obligatory to choose one of the following courses: *Logistics* [21078], *Materialflow* [21051] *or Fundamentals of Technical Logistics* [21081]. Apart from that one additional course has to be chosen from the remaining courses.

Learning Outcomes

Content

Courses in module *Introduction to Logistics* [TVWL4INGMB20]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21081	Fundamentals of Technical Logistics (S. 120)	3/1	S	6	Mittwoollen
21078	Logistics (S. 119)	3/1	S	6	Furmans
21051	Materialflow (S. 113)	3/1	W	6	Furmans
21086	Warehouse and Distribution Systems (S. 123)	2	S	3	Lippolt
21056	Airport Logistics (S. 114)	2	W	3	Brendlin
21061	Safety Engineering (S. 116)	2	W	4	Kany
21064	Industrial Application of Technological Logistics instancing Crane Systems (S. 118)	2	W	3	Golder
21089	Industrial Application of Material Handling Systems in Sorting and Distribution Systems (S. 124)	2	S	3	Foller
21692	International Production and Logistics (S. 147)	2	S	3	Lanza
21085	Autotmative Logistics (S. 122)	2	S	3	Furmans

Module: Technical Logistics and Logistic Systems   Module key: [TVWL4INGMB11]

Subject: Engineering Science
Module coordination: Kai Furmans
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
None.

Conditions
It is obligatory to choose two of the following courses: *Logistics* [21078], *Materialflow* [21051]*, Fundamentals of Technical Logistics* [21081], *Analytical Models for Material Flow* [21060], *IT for Intralogistics Systems* [21083] and Supply Chain Management 21062.

Learning Outcomes

Content

Courses in module *Technical Logistics and Logistic Systems* [TVWL4INGMB11]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21081	Fundamentals of Technical Logistics (S. 120)	3/1	S	6	Mittwoollen
21078	Logistics (S. 119)	3/1	S	6	Furmans
21051	Materialflow (S. 113)	3/1	W	6	Furmans
21060	Analytical Models for Material Flow (S. 115)	3/1	W	6	Furmans
21083	IT for Intralogistics Systems (S. 121)	3/1	S	6	Thomas
21062	Supply Chain Management (S. 117)	3/1	W	6	Alicke
21086	Warehouse and Distribution Systems (S. 123)	2	S	3	Lippolt
21056	Airport Logistics (S. 114)	2	W	3	Brendlin
21085	Autotmative Logistics (S. 122)	2	S	3	Furmans
21692	International Production and Logistics (S. 147)	2	S	3	Lanza
21061	Safety Engineering (S. 116)	2	W	4	Kany
21064	Industrial Application of Technological Logistics instancing Crane Systems (S. 118)	2	W	3	Golder
21089	Industrial Application of Material Handling Systems in Sorting and Distribution Systems (S. 124)	2	S	3	Foller

Module: Engine Development   Module key: [TVWL4INGMB17]

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

Learning Control / Examinations

Prerequisites
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* [TVWL4INGMB17]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21101	Combustion Engines A (S. 125)	4/2	W	6	Spicher
21135	Combustion Engines B (S. 130)	2/1	S	3	Spicher
21112	Supercharging of Internal Combustion Engines (S. 127)	2	S	3	Golloch
21114	Simulation of Spray and Mixture Formation in Internal Combustion Engines (S. 128)	2	W	3	Baumgarten
21134	Methods in Analyzing Internal Combustion (S. 129)	2	S	3	Wagner
21109	Motor Fuels for Combustion Engines and their Verifications (S. 126)	2	W	3	Volz
21138	Internal Combustion Engines and Exhaust Gas Aftertreatment Technology (S. 132)	2	S	3	Lox
21137	Engine Measurement Technologies (S. 131)	2	S	3	Bernhardt

Module: Combustion Engines   Module key: [TVWL4INGMB16]

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

Learning Control / Examinations

Prerequisites
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* [TVWL4INGMB16]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21101	Combustion Engines A (S. 125)	4/2	W	6	Spicher
21135	Combustion Engines B (S. 130)	2/1	S	3	Spicher
21137	Engine Measurement Technologies (S. 131)	2	S	3	Bernhardt
21112	Supercharging of Internal Combustion Engines (S. 127)	2	S	3	Golloch
21114	Simulation of Spray and Mixture Formation in Internal Combustion Engines (S. 128)	2	W	3	Baumgarten
21134	Methods in Analyzing Internal Combustion (S. 129)	2	S	3	Wagner
21109	Motor Fuels for Combustion Engines and their Verifications (S. 126)	2	W	3	Volz

Module: Virtual Engineering   Module key: [TVWL4INGMB22]

Subject: Engineering Science
Module coordination: Jivka Ovtcharova
Credit points (CP): 18

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Virtual Engineering* [TVWL4INGMB22]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
21352	Virtual Engineering I (S. 134)	4/3	W	10.5	Ovtcharova
21378	Virtual Engineering II (S. 137)	2/1	S	4.5	
21360	Virtual Engineering for Mechatronic Products (S. 135)	2/0	W	3	Ovtcharova, Rude
21364	Product, Process and Ressource Integration in the Automotive Development (S. 136)	2/1	W/S	4.5	Mbang
21264	Simulation Methods in the Product Creation Process (S. 133)	2/1	W	4.5	Ovtcharova, Albers, Böhlke
21387	Computer Integrated Planning of New Products (S. 138)	2/0	S	3	Kläger

Module: Electrical Power Engineering

Module key: [TVWL4INGETIT4]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
The course *Electric Power System Engineering II* [23372] is obligatory.

Learning Outcomes

Content

Courses in module *Electrical Power Engineering* [TVWL4INGETIT4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
23372	Electric Power System Engineering II (S. 172)	2/2	S	6	Leibfried
23381	Ecologically Generation of Electricity / Windmills (S. 174)	2/0	W	3	Lewald
23385	Benefits of Power Electronics/Understanding HV-CD and FACTS (S. 175)	2/0	W	3	Retzmann
23380	Photovoltaic Systems Engineering (S. 173)	2/0	S	3	Schmidt
23360	High-Voltage Engineering (S. 170)	2/1	S	4,5	Badent
23361	High-Voltage Technology II (S. 171)	2/1	W	4.5	Badent
23392	Hochspannungsprüftechnik (S. 176)	2/1	W	4,5	Badent

Module: Public Transportation Operations   Module key: [TVWL4INGBGU4]

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

Learning Control / Examinations

Prerequisites
The module *Foundations of Guided Systems* [WW3INGBGU2] or *Logistics and Management of Guided Systems* [TV-WL4INGBGU7] will be assumed.

Conditions
The courses *Railway Logistics, Management and Operating - Part II* [19321] and *Operating Models in Railway Engineering* [19327] are obligatory and have to be attended.
The course *Construction and Maintenance of Railway Infrastructure* [19307] is not eligible if the module *Guided Systems Engineering* [TVWL4INGBGU6] is attended at the same time.

Learning Outcomes

Content

Courses in module *Public Transportation Operations* [TVWL4INGBGU4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
19321	Railway Logistics, Management and Operating - Part II (S. 107)	2	S	3	Hohnecker
19327w	Operating Models in Railway Engineering (S. 112)	1	W	1.5	Hohnecker
19327s	Public Transit in Cities and Regions (S. 111)	2	S	3	Hohnecker
19320	Customer Orientation in Public Transport (S. 106)	1	S	1.5	Hohnecker
19307s	Construction and Maintenance of Railway Infrastructure (S. 102)	1	S	1.5	Honecker, Müller
19325	Law in Public Transport (S. 109)	1	W	1.5	Hohnecker

Module: Logistics and Management of Guided Systems   Module key: [TVWL4INGBGU7]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
The module cannot be chosen if the module *Foundations of Guided Systems* [WW3INGBGU2] of the Bachelor programme has been chosen.

Learning Outcomes

Content

Courses in module *Logistics and Management of Guided Systems* [TVWL4INGBGU7]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
19066	basic of ground born guided systems (S. 99)	3/1	S	6	Schedel, Hohnecker
19307w	Station and Rail Transport Facilities (S. 103)	2/1	W	3	Hohnecker

Module: Guided Systems Engineering   Module key: [TVWL4INGBGU6]

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

Learning Control / **Examinations**

Prerequisites
The completion of the module *Foundations of Guided Systems* [WW3INGBGU2] or *Logistic and Management of Guided Systems* [TVWL4INGBGU7] is assumed.

Conditions
The course *Station and Rail Transport Facilities* [19307w] is not eligible if the module *Logistics and Management of Guided Systems* [TVWL4INGBGU7] is attended at the same time.
The course *Electrical Rail Vehicles* [23346], *Mechanical Models in Railway Engineering* [19322] and *Development and Aspects of Guided Sytems* [19326] are obligatory and have to be attended.

Learning Outcomes

Content

Courses in module *Guided Systems Engineering* [TVWL4INGBGU6]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
23346	Electrical Rail Vehicles (S. 169)	2	S	3	Clos
19322	Mechanical Models in Railway Engineering (S. 108)	1	S	1.5	Hohnecker
19307s	Construction and Maintenance of Railway Infrastructure (S. 102)	1	S	1.5	Honecker, Müller
19307w	Station and Rail Transport Facilities (S. 103)	2/1	W	3	Hohnecker
19308	Freight Transport (S. 105)	1	W	1.5	Chlond
19326	Entwicklungen und Aspekte spurgeführter Systeme (S. 110)	1	W	1,5	Hohnecker

Module: Transport Ia   Module key: [TVWL4INGBGU9]

Subject: Engineering Science
Module coordination: Dirk Zumkeller
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
It is assumed that the students did not choose the module *Fundamentals of Spatial and Infrastructural Development* [WW3INGBGU1] of the Bachelor programme. In this case the module *Transport Ib* [TVWL4INGBGU10] has to be chosen.

Learning Outcomes

Content

Courses in module *Transport Ia* [TVWL4INGBGU9]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
19027	Basics in Transport Planning and Traffic Engineering (S. 97)	1/1	S	3	Zumkeller, Chlond
19301w	Transport Planning Methods (S. 100)	1/1	W	3	Zumkeller
19303w	Traffic Engineering and Traffic Telematics (S. 101)	1/1	W	3	Chlond

Module: Transport Ib   Module key: [TVWL4INGBGU10]

Subject: Engineering Science
Module coordination: Dirk Zumkeller
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
To choose this module the content of the module *Fundamentals of Spatial and Infrastructural Development* [WW3INGBGU1] of the Bachelor programme is a prerequisite. Otherwise it is to choose module *Transport Ia* [TVWL4INGBGU9].

Conditions
None.

Learning Outcomes

Content

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Courses in module *Transport Ib* [TVWL4INGBGU10]

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ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
19301w	Transport Planning Methods (S. 100)	1/1	W	3	Zumkeller
19062	Transport System Planning (S. 98)	2/1	S	4.5	Zumkeller
19303w	Traffic Engineering and Traffic Telematics (S. 101)	1/1	W	3	Chlond

Module: Fuels, Environment and Global Development I   Module key: [TVWL4INGCV1]

Subject: Engineering Science
Module coordination: Georg Schaub
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
It is helpful to have attended the course *Reaction Engineering I* [22114] and courses in the area of thermodynamics.

Conditions
None.

Learning Outcomes

Content

Courses in module *Fuels, Environment and Global Development I* [TVWL4INGCV1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
22305	Fuels I: Fundamentals, Liquid Fuels, Petroleum Processing, Bio Fuels (S. 156)	2/1	W	6	Schaub
22303	Fuels II: Gases and Solids (S. 155)	2/1	S	6	Reimert
22501	Combustion Technology 1 (Basics) (S. 159)	2/1	S	6	Bockhorn
22507	Combustion Related Environmental Protection (S. 160)	2	S	4	Bockhorn
22319	Cycles and Global Development (S. 157)	2	W	4	Schaub

Remarks
The module won't be offered since summer term 2009.

Module: Fuels, Environment and Global Development   Module key: [TVWL4INGCV2]

Subject: Engineering Science
Module coordination: Georg Schaub
Credit points (CP): 18

Learning Control / **Examinations**

Prerequisites
It is helpful to have attended courses in the area of chemical engineering and thermodynamics.

Conditions
None.

Learning Outcomes

Content

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Courses in module *Fuels, Environment and Global Development* [TVWL4INGCV2]

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ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
22305	Fuels I: Fundamentals, Liquid Fuels, Petroleum Processing, Bio Fuels (S. 156)	2/1	W	6	Schaub
22303	Fuels II: Gases and Solids (S. 155)	2/1	S	6	Reimert
22501	Combustion Technology 1 (Basics) (S. 159)	2/1	S	6	Bockhorn
22507	Combustion Related Environmental Protection (S. 160)	2	S	4	Bockhorn
22319	Cycles and Global Development (S. 157)	2	W	4	Schaub

Module: Principles of Food Process Engineering   Module key: [TVWL4INGCV3]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
The courses *Principles of Process Engineering referring to Food I* [22213] and *Principles of Process Engineering referring to Food II* [22214] are obligatory and have to be attended.
It has to be chosen an other course, if *Principles of Process Engineering referring to Food I* [22213] has already been attended in the Bachelor programme.

Learning Outcomes

Content

Courses in module *Principles of Food Process Engineering* [TVWL4INGCV3]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
22213	Principles of Process Engineering referring to Food I (S. 151)	2	W	4	Gaukel
22214	Principles of Process Engineering referring to Food II (S. 152)	2	S	4	Gaukel
22205	Quality Management of Food Processing (S. 148)	1/1	S	3	Schuchmann
22207	Food Science and Functionality (S. 149)	2	W	3	Watzl

Module: Specialization in Food Process Engineering   Module key: [TVWL4INGCV4]

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

Learning Control / Examinations

Prerequisites
It is only possible to choose this module in combination with the module *Principles of Food Process Engineering* [TVWL4INGCV3].

Conditions
The course *Quality Management of Food Processing* [22205] is obligatory and has to attended. Has it already been attended in the Bachelor programme, an other course has to be chosen instead.

Learning Outcomes

Content

Courses in module *Specialization in Food Process Engineering* [TVWL4INGCV4]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
22205	Quality Management of Food Processing (S. 148)	1/1	S	3	Schuchmann
22207	Food Science and Functionality (S. 149)	2	W	3	Watzl
22209	Microbiology of Food (S. 150)	2	W	4	Franz
22215	Product Design (S. 153)	2	S	4	Schuchmann
22218	Modern Measurement Techniques for Process Optimization (S. 154)	2	S	4	Regier
22417	Scale up in Biology and Engineering (S. 158)	2	W	4	Hausmann
6602	Fundamentals of Food Chemistry (S. 104)	2	W/S	4	Loske

Module: Water Chemistry   Module key: [TVWL4INGCV5]

Subject: Engineering Science
Module coordination: F.H. Frimmel
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
None.

Conditions
The courses *Chemical Technology of Water* [22601] and *Excercises in Aqueos Chemical Engineering* [22602] are obligatory and have to be attended.
They cannot be attended, if the course *Chemical Technology of Water* [22601] has already been attended in the Bachelor programme.

Learning Outcomes

Content

Courses in module *Water Chemistry* [TVWL4INGCV5]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
22601	Chemical Technology of Water (S. 161)	2	W	4	Frimmel
22602	Excercises in Aqueos Chemical Engineering (S. 162)	1	W	2	Frimmel
22603	Natural Scientific Basics for Anlysis and Assessment of Aquatic Systems (S. 163)	2	W	4	Frimmel
22618	Fundamentals of Waste Water Treatment (S. 167)	2	S	4	Zwiener
22612	Oxidative Drinking Water Treatment (S. 166)	2	S	4	Frimmel, Zwiener
22611	Sorption-Processes in Water Disinfection (S. 165)	2	S	4	Höll
22605	Water Treatment with Membrane Technology (S. 164)	1	W	2	Frimmel
22664	Excercises in Water Chemistry (S. 168)	2	W	4	Frimmel, Abbt-Braun

5.7   Law

Module: Law of the Information Society   Module key: [TVWL4JURA1]

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

Learning Control / Examinations

Prerequisites
Prior knowledge in the area of law totalling at least 9 credit points.

Conditions
Only one module can be chosen from the subjects law and sociology.
Three of the seven courses have to be chosen.
Courses that have already been attended in the Bachelor programme cannot be elected.

Learning Outcomes

Content

Courses in module *Law of the Information Society* [TVWL4JURA1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
24121	Copyright (S. 178)	2/0	W	3	Dreier
24661	Patent Law (S. 187)	2/0	S	3	Geissler
24136/24609	Trademark and Unfair Competition Law (S. 179)	2/0	W/S	3	Matz, Sester
24082	Public Media Law (S. 177)	2	W	3	Kirchberg
24632	Telecommunications Law (S. 184)	2/0	S	3	Spiecker genannt Döhmann
24666	European and International Law (S. 188)	2/0	S	3	Spiecker genannt Döhmann
24671	Law of Contracts (S. 190)	2/0	S	3	Sester

Module: Law of the Information Economy   Module key: [TVWL4JURA2]

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

Learning Control / Examinations

Prerequisites
Prior knowledge in the area of law totalling at least 9 credit points.

Conditions
Only one module can be chosen from the subjects law and sociology.
Three of the seven courses have to be chosen.
Courses that have already been attended in the Bachelor programme cannot be elected.

Learning Outcomes

Content

Courses in module *Law of the Information Economy* [TVWL4JURA2]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
24167	Employment Law I (S. 181)	2	W	3	Hoff
24668	Employment Law II (S. 189)	2	S	3	Hoff
24168	Tax Law I (S. 182)	2/0	W	3	Dietrich
24646	Tax Law II (S. 185)	2/0	S	3	Dietrich
24650	Civil Law for Advanced (S. 186)	2/0	S	3	Sester
24612	Computer Contract Law (S. 183)	2/0	S	3	Bartsch
24671	Law of Contracts (S. 190)	2/0	S	3	Sester

5.8   Sociology

Module: Sociology   **Module key: [TVWL4SOZ1]**

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module *Sociology* [TVWL4SOZ1]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
thSoz	Theoretical Sociology (S. 404)	2	W/S	2	Nollmann, Pfadenhauer, Pfaff, Haupt, Grenz, Eisewicht
spezSoz	Special Sociology (S. 403)	2	W/S	4	Nollmann, Pfadenhauer, Pfaff, Haupt, Grenz, Eisewicht
SozSem	Projectseminar (S. 402)	2	W/S	4	Bernart, Kunz, Pfaff, Haupt, Grenz, Eisewicht

5.9   General Modules

Module: Seminar Module   Module key: [TVWL4SEM]

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

Learning Control / **Examinations**

Prerequisites
None.

Conditions
The seminars attended within this module have to be offered from representatives of the Faculty of Economics and Business Engineering.

Learning Outcomes

Content

Courses in module *Seminar Module* [TVWL4SEM]

ID	Course	SWS C/E/T	Term	CP	Responsible Lecturer(s)
SemAIFB1	Seminar in Enterprise Information Systems (S. 387)	2	W/S	3	Studer, Oberweis, Stucky, Wolf, Kneuper
SemAIFB2	Seminar Efficient Algorithms (S. 388)	2	W/S	3	Schmeck
SemAIFB3	Seminar Complexity Management (S. 389)	2	W/S	3	Seese
SemAIFB4	Seminar Knowledge Management (S. 390)	2	W	3	Studer
25131	Seminar in Continous Optimization (S. 196)	2	W/S	3	Stein
25293	Seminar in Finance (S. 220)	2	W/S	3	Uhrig-Homburg, Ruckes
SemFBV1	Seminar in Insurance Management (S. 391)	2	W/S	3	Werner
SemFBV2	Seminar in Operational Risk Management (S. 392)	2	W/S	3	Werner
SemFBV3	Seminar in Risk Theory and Actuarial Science (S. 393)	2	W/S	3	Hipp
SemIIP2	Seminar in Industrial Production (S. 395)	2	W/S	3	Schultmann
SemIIP	Seminar in Ergonomics (S. 394)	2	W/S	3	Knauth, Karl
26510	Master Seminar in Information Engineering and Management (S. 368)	2	W	3	Geyer-Schulz
SemIW	Seminar Information Engineering and Management (S. 396)	2	W/S	3	Weinhardt
26470	Seminar Service Science, Management & Engineering (S. 358)	2	W/S	3	Tai
26420	Topics of Sustainable Management of Housing and Real Estate (S. 349)	2	W/S	3	Lützkendorf
26263	Seminar on Network Economics (S. 325)	2	W/S	3	Mitusch
SemIWW	Seminar in System Dynamics and Innovation (S. 397)	2	W/S	3	Grupp, N.N.
26130	Seminar Financial Sciences (S. 320)	2	W/S	3	Wigger
SemWIOR2	Seminar Economic Theory (S. 399)	2	W/S	3	Puppe
SemWIOR3	Seminar in Experimental Economics (S. 400)	2	W/S	3	Berninghaus
SemWIOR4	Seminar in Game and Decision Theory (S. 401)	2	W/S	3	Berninghaus
SemWIOR1	Seminar Stochastic Models (S. 398)	2	W/S	3	Waldmann
25915	Seminar: Management and Organization (S. 295)	2	S	3	Lindstädt
25916	Seminar: Management and Organization (S. 296)	2	W	3	Lindstädt
HoC1	Elective „Culture - Policy - Science - Technology" (S. 377)	2-	W/S	3	House of Competence
HoC2	Elective „Workshops for Competence and Creativity" (S. 378)	2-	W/S	3	House of Competence
HoC3	Elective Foreig Languages (S. 379)	2 bis 4	W/S	2-4	House of Competence
HoC4	Elective „Tutor Programmes" (S. 380)	k.A.	W/S	3	House of Competence
HoC5	Elective „Personal Fitness & Emotional Competence" (S. 381)	k.A.	W/S	2-3	House of Competence

Module: Master Thesis   **Module key: [TVWL4THESIS]**

Subject: no category
Module coordination: Der Vorsitzende des Prüfungsausschusses
Credit points (CP): 30

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

6   Courses

6.1   All Courses

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: Transport Ia [TVWL4INGBGU9] (S. 84)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Transport System Planning   **Course key: [19062]**

Lecturers: Dirk Zumkeller
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Transport Ib [TVWL4INGBGU10] (S. 85)

Learning Control / Examinations

Prerequisites
As a basis the Bachelor module *Fundamentals of Spatial and Infrastructural Development* [WW3INGBGU1] or the course *Basics in Transport Planning and Traffic Engineering* [19027] is recommended.

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: Logistics and Management of Guided Systems [TVWL4INGBGU7] (S. 82)

Learning Control / Examinations
See module description.

Prerequisites
See module description.

Conditions
Siehe Modulbeschreibung.

Learning Outcomes

Content

Course: Transport Planning Methods   Course key: [19301w]

Lecturers: Dirk Zumkeller
Credit points (CP): 3   **Hours per week:** 1/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Transport Ia [TVWL4INGBGU9] (S. 84), Transport Ib [TVWL4INGBGU10] (S. 85)

Learning Control / Examinations

Prerequisites
As a basis the Bachelor module *Fundamentals of Spatial and Infrastructural Development* [WW3INGBGU1] or the course *Basics in Transport Planning and Traffic Engineering* [19027] is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Traffic Engineering and Traffic Telematics   Course key: [19303w]

Lecturers: Chlond
Credit points (CP): 3   **Hours per week:** 1/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Transport Ia [TVWL4INGBGU9] (S. 84), Transport Ib [TVWL4INGBGU10] (S. 85)

Learning Control / Examinations

Prerequisites
As a basis the Bachelor module *Fundamentals of Spatial and Infrastructural Development* [WW3INGBGU1] or the course *Basics in Transport Planning and Traffic Engineering* [19027] is recommended.

Conditions
None.

Learning Outcomes

Content

Course: Construction and Maintenance of Railway Infrastructure   Course key: [19307s]

Lecturers: Honecker, Müller
Credit points (CP): 1.5   **Hours per week:** 1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Public Transportation Operations [TVWL4INGBGU4] (S. 81), Guided Systems Engineering [TV-WL4INGBGU6] (S. 83)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content

Course: Station and Rail Transport Facilities   Course key: [19307w]

Lecturers: Hohnecker
Credit points (CP): 3   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Logistics and Management of Guided Systems [TVWL4INGBGU7] (S. 82), Guided Systems Engineering [TVWL4INGBGU6] (S. 83)

Learning Control / **Examinations**

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content

Course: Fundamentals of Food Chemistry   **Course key: [6602]**

Lecturers: Loske
Credit points (CP): 4   **Hours per week:** 2
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Specialization in Food Process Engineering [TVWL4INGCV4] (S. 89)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Freight Transport   Course key: [19308]

Lecturers: Chlond
Credit points (CP): 1.5   **Hours per week:** 1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Guided Systems Engineering [TVWL4INGBGU6] (S. 83)

Learning Control / **Examinations**
See module description.

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content

Course: Customer Orientation in Public Transport   **Course key: [19320]**

Lecturers: Hohnecker
Credit points (CP): 1.5   **Hours per week:** 1
Term: Sommersemester   **Level:** ???
Teaching language: Deutsch
Part of the modules: Public Transportation Operations [TVWL4INGBGU4] (S. 81)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Railway Logistics, Management and Operating - Part II   Course key: [19321]

Lecturers: Hohnecker
Credit points (CP): 3   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Public Transportation Operations [TVWL4INGBGU4] (S. 81)

Learning Control / **Examinations**

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Mechanical Models in Railway Engineering   **Course key: [19322]**

Lecturers: Hohnecker
Credit points (CP): 1.5   **Hours per week:** 1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Guided Systems Engineering [TVWL4INGBGU6] (S. 83)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content

Course: Law in Public Transport   Course key: [19325]

Lecturers: Hohnecker
Credit points (CP): 1.5   **Hours per week:** 1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Public Transportation Operations [TVWL4INGBGU4] (S. 81)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Entwicklungen und Aspekte spurgeführter Systeme   **Course key: [19326]**

Lecturers: Hohnecker
Credit points (CP): 1,5   **Hours per week:** 1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Guided Systems Engineering [TVWL4INGBGU6] (S. 83)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content

Course: Public Transit in Cities and Regions   Course key: [19327s]

Lecturers: Hohnecker
Credit points (CP): 3   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Public Transportation Operations [TVWL4INGBGU4] (S. 81)

Learning Control / **Examinations**

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Operating Models in Railway Engineering   **Course key: [19327w]**

Lecturers: Hohnecker
Credit points (CP): 1.5   **Hours per week:** 1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Public Transportation Operations [TVWL4INGBGU4] (S. 81)

Learning Control / Examinations

Prerequisites
See module description.

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 Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TV-WL4INGMB11] (S. 76)

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 Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TV-WL4INGMB11] (S. 76)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Analytical Models for Material Flow   Course key: [21060]

Lecturers: Kai Furmans
Credit points (CP): 6   **Hours per week:** 3/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Technical Logistics and Logistic Systems [TVWL4INGMB11] (S. 76)

Learning Control / Examinations

Prerequisites
The content of the course "stochastics" is assumed.

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: Introduction to Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TV-WL4INGMB11] (S. 76)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Supply Chain Management   Course key: [21062]

Lecturers: Alicke
Credit points (CP): 6   **Hours per week:** 3/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Technical Logistics and Logistic Systems [TVWL4INGMB11] (S. 76)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Industrial Application of Technological Logistics instancing Crane Systems Course key: [21064]

Lecturers: Golder
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Introduction to Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TV-WL4INGMB11] (S. 76)

Learning Control / Examinations

Prerequisites
None.

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: Introduction to Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TV-WL4INGMB11] (S. 76)

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 Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TV-WL4INGMB11] (S. 76)

Learning Control / Examinations

Prerequisites
Technical understanding is recommended.

Conditions
None.

Learning Outcomes

Content

Course: IT for Intralogistics Systems   Course key: [21083]

Lecturers: Thomas
Credit points (CP): 6   **Hours per week:** 3/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Technical Logistics and Logistic Systems [TVWL4INGMB11] (S. 76)

Learning Control / **Examinations**

Prerequisites
None.

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 Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TVWL4INGMB11] (S. 76)

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 Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TV-WL4INGMB11] (S. 76)

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 Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TV-WL4INGMB11] (S. 76)

Learning Control / Examinations

Prerequisites
None.

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 [TVWL4INGMB17] (S. 77), Combustion Engines [TVWL4INGMB16] (S. 78)

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 [TVWL4INGMB17] (S. 77), Combustion Engines [TVWL4INGMB16] (S. 78)

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 [TVWL4INGMB17] (S. 77), Combustion Engines [TVWL4INGMB16] (S. 78)

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 [TVWL4INGMB17] (S. 77), Combustion Engines [TVWL4INGMB16] (S. 78)

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 [TVWL4INGMB17] (S. 77), Combustion Engines [TVWL4INGMB16] (S. 78)

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 [TVWL4INGMB17] (S. 77), Combustion Engines [TVWL4INGMB16] (S. 78)

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 [TVWL4INGMB17] (S. 77), Combustion Engines [TVWL4INGMB16] (S. 78)

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 [TVWL4INGMB17] (S. 77)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content

Course: Simulation Methods in the Product Creation Process   Course key: [21264]

Lecturers: Jivka Ovtcharova, Albert Albers, Thomas Böhlke
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Virtual Engineering [TVWL4INGMB22] (S. 79)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Virtual Engineering I

Course key: [21352]

Lecturers: Jivka Ovtcharova
Credit points (CP): 10.5 **Hours per week:** 4/3
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Virtual Engineering [TVWL4INGMB22] (S. 79)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Virtual Engineering for Mechatronic Products   Course key: [21360]

Lecturers: Jivka Ovtcharova, Stefan Rude
Credit points (CP): 3   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Virtual Engineering [TVWL4INGMB22] (S. 79)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Product, Process and Ressource Integration in the Automotive Development Course key: [21364]

Lecturers: Sama Mbang
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Virtual Engineering [TVWL4INGMB22] (S. 79)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Virtual Engineering II   Course key: [21378]

Lecturers:
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Virtual Engineering [TVWL4INGMB22] (S. 79)

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: Virtual Engineering [TVWL4INGMB22] (S. 79)

Learning Control / Examinations

Prerequisites
None.

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: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74)

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: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74)

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: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74)

Learning Control / **Examinations**

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

Conditions
None.

Learning Outcomes

Content

Course: Global Business Strategies   Course key: [21661]

Lecturers: Grube
Credit points (CP): 4.5   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Quality Management

Course key: [21667]

Lecturers: Lanza
Credit points (CP): 4.5   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Materials and Processes in Automotive Lightweight Construction   Course key: [21669]

Lecturers: Haepp
Credit points (CP): 4.5   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74)

Learning Control / Examinations

Prerequisites
It is recommended to attend the courses *Material Science II* [21782] and *Electrical Engineering II* [23224] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Production system and technology in powertrain production Course key: [21690]

Lecturers: Stauch
Credit points (CP): 4.5   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Seminar Industrial Engineering   Course key: [21690sem]

Lecturers: Volker Schulze, Lanza, Munzinger
Credit points (CP): 4.5   **Hours per week:** 2
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74)

Learning Control / Examinations

Prerequisites
None.

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: Selected Topics in Production Technology I [TVWL4INGMB1] (S. 73), Selected Topics in Production Technology II [TVWL4INGMB2] (S. 74), Introduction to Logistics [TVWL4INGMB20] (S. 75), Technical Logistics and Logistic Systems [TVWL4INGMB11] (S. 76)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Quality Management of Food Processing   **Course key: [22205]**

Lecturers: Schuchmann
Credit points (CP): 3   **Hours per week:** 1/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Principles of Food Process Engineering [TVWL4INGCV3] (S. 88), Specialization in Food Process Engineering [TVWL4INGCV4] (S. 89)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Food Science and Functionality   Course key: [22207]

Lecturers: Watzl
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Principles of Food Process Engineering [TVWL4INGCV3] (S. 88), Specialization in Food Process Engineering [TVWL4INGCV4] (S. 89)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Microbiology of Food   Course key: [22209]

Lecturers: Franz
Credit points (CP): 4   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Specialization in Food Process Engineering [TVWL4INGCV4] (S. 89)

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 Food Process Engineering [TVWL4INGCV3] (S. 88)

Learning Control / Examinations

Prerequisites
None.

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

Learning Outcomes

Content

Course: Principles of Process Engineering referring to Food II   Course key: [22214]

Lecturers: Volker Gaukel
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Principles of Food Process Engineering [TVWL4INGCV3] (S. 88)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Product Design   Course key: [22215]

Lecturers: Schuchmann
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Specialization in Food Process Engineering [TVWL4INGCV4] (S. 89)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Modern Measurement Techniques for Process Optimization   Course key: [22218]

Lecturers: Regier
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Specialization in Food Process Engineering [TVWL4INGCV4] (S. 89)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Fuels II: Gases and Solids   Course key: [22303]

Lecturers: Reimert
Credit points (CP): 6   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Fuels, Environment and Global Development I [TVWL4INGCV1] (S. 86), Fuels, Environment and Global Development [TVWL4INGCV2] (S. 87)

Learning Control / **Examinations**

Prerequisites
It is recommended to attend the course *Reaction Engineering I* [22114] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Fuels I: Fundamentals, Liquid Fuels, Petroleum Processing, Bio Fuels   Course key: [22305]

Lecturers: Georg Schaub
Credit points (CP): 6   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Fuels, Environment and Global Development I [TVWL4INGCV1] (S. 86), Fuels, Environment and Global Development [TVWL4INGCV2] (S. 87)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Reaction Engineering I* [22114] beforehand.

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: Fuels, Environment and Global Development I [TVWL4INGCV1] (S. 86), Fuels, Environment and Global Development [TVWL4INGCV2] (S. 87)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Scale up in Biology and Engineering   Course key: [22417]

Lecturers: Hausmann
Credit points (CP): 4   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Specialization in Food Process Engineering [TVWL4INGCV4] (S. 89)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Combustion Technology 1 (Basics)   Course key: [22501]

Lecturers: Bockhorn
Credit points (CP): 6   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Fuels, Environment and Global Development I [TVWL4INGCV1] (S. 86), Fuels, Environment and Global Development [TVWL4INGCV2] (S. 87)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Reaction Engineering I* [22114] beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Combustion Related Environmental Protection   Course key: [22507]

Lecturers: Bockhorn
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Fuels, Environment and Global Development I [TVWL4INGCV1] (S. 86), Fuels, Environment and Global Development [TVWL4INGCV2] (S. 87)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Reaction Engineering I* [22114] beforehand.

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: Water Chemistry [TVWL4INGCV5] (S. 90)

Learning Control / Examinations

Prerequisites
None.

Conditions
See corresponding module information.

Learning Outcomes

Content

Course: Excercises in Aqueos Chemical Engineering   **Course key: [22602]**

Lecturers: F.H. Frimmel
Credit points (CP): 2   **Hours per week:** 1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Water Chemistry [TVWL4INGCV5] (S. 90)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Natural Scientific Basics for Anlysis and Assessment of Aquatic Systems Course key: [22603]

Lecturers: F.H. Frimmel
Credit points (CP): 4   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Water Chemistry [TVWL4INGCV5] (S. 90)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Water Treatment with Membrane Technology

Course key: [22605]

Lecturers: F.H. Frimmel
Credit points (CP): 2 **Hours per week:** 1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Water Chemistry [TVWL4INGCV5] (S. 90)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Sorption-Processes in Water Disinfection   Course key: [22611]

Lecturers: Höll
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Water Chemistry [TVWL4INGCV5] (S. 90)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Oxidative Drinking Water Treatment   Course key: [22612]

Lecturers: F.H. Frimmel, Zwiener
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Water Chemistry [TVWL4INGCV5] (S. 90)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Fundamentals of Waste Water Treatment   Course key: [22618]

Lecturers: Zwiener
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Water Chemistry [TVWL4INGCV5] (S. 90)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Excercises in Water Chemistry **Course key: [22664]**

Lecturers: F.H. Frimmel, Abbt-Braun
Credit points (CP): 4 **Hours per week:** 2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Water Chemistry [TVWL4INGCV5] (S. 90)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Electrical Rail Vehicles   Course key: [23346]

Lecturers: Clos
Credit points (CP): 3   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Guided Systems Engineering [TVWL4INGBGU6] (S. 83)

Learning Control / **Examinations**

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content

Course: High-Voltage Engineering   **Course key: [23360]**

Lecturers: Badent
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [TVWL4INGETIT4] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: High-Voltage Technology II

Course key: [23361]

Lecturers: Badent
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [TVWL4INGETIT4] (S. 80)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Electric Power System Engineering II   Course key: [23372]

Lecturers: Thomas Leibfried
Credit points (CP): 6   **Hours per week:** 2/2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [TVWL4INGETIT4] (S. 80)

Learning Control / Examinations

Prerequisites
The course *Electric Power System Engineering I* [23371] has to be completed successfully beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Photovoltaic Systems Engineering   Course key: [23380]

Lecturers: Schmidt
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [TVWL4INGETIT4] (S. 80)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Ecologically Generation of Electricity / Windmills   Course key: [23381]

Lecturers: Lewald
Credit points (CP): 3   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [TVWL4INGETIT4] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Benefits of Power Electronics/Understanding HVCD and FACTS   Course key: [23385]

Lecturers: Retzmann
Credit points (CP): 3   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [TVWL4INGETIT4] (S. 80)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Hochspannungsprüftechnik   Course key: [23392]

Lecturers: Badent
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electrical Power Engineering [TVWL4INGETIT4] (S. 80)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Public Media Law

Course key: [24082]

Lecturers: Christian Kirchberg
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Society [TVWL4JURA1] (S. 91)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes
As the traditional media (print, radio, TV) the "new media" (online-services and the Internet) is governed by public law, yet with a different extent of regulation and with apparent effects on private law. The main influences for the media law are constitutional law and European community law. The lectures aims at providing an overview of the common grounds and differences of the current media law regime and of the conceivable perspectives of media convergence. Current developments in politics and economics, which are relevant for public media law, will be used as examples in the lecture. Besides, it is planned to attend a court hearing of the Federal Constitutional Court (Bundesverfassungsgericht) and/or the Federal Court (Bundesgerichtshof).

Content
Initially, the lecture will deal with the constitutional basis of the media law regime. i.e. the responsibilities of the Federal and the State legislatures, freedom of speech, freedom of information, constitutional media rights (Art. 5 para. 1 Constitutional Law) and its limitations by general laws, the ban on censorship and the counterstatement law. In addition, the European community principles on broadcasting and media law will be part of the lecture. Next will be an overview of the individual media laws, namely the broadcasting law (especially Rundfunkstaatsvertrag) the press law of the States and the statute on the so-called "telemedia" services. Finally, the protection of minors in the media will be dealt with (Act on Protection of Minors and Treaty on the Protection of Minors in the Media).

Basic literature
To understand the legal framework it is necessary for the students to have the relevant statutes, for example "Telemediarecht, Telekommunikations- und Multimediarecht", beck-Texte im dtv , 7. Auflage 2007.
As an introduction it is recommended to read: Frank Fechner, Medienrecht, Verlag Mohr Siebeck, Verlag Mohr Siebeck, 8. Auflage 2007.

Course: Copyright

Course key: [24121]

Lecturers: Thomas Dreier
Credit points (CP): 3 **Hours per week:** 2/0
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Society [TVWL4JURA1] (S. 91)

Learning Control / Examinations

Prerequisites
None.

Conditions
none

Learning Outcomes
It is the aim of this course to provide students with knowledge in the area of copyright that builds upon, and goes beyond the knowledge the students have already acquired in the general lecture of "Industrial and intellectual property law". Students shall understand how the legal rules depend upon, and interact with, the economic background, legislative policy and information and communication technologies. Students shall learn about the rules of national, European and international copyright law and to apply these legal rules in practical cases.

Content
The course deals with the subject matter of copyright, the rights of authors, licensing, limitations and exceptions to copyright, term of protection, neighbouring rights, enforcement and collective administration of rights. The course does not merely focus on German copyright law, but likewise puts European and international copyright law into perspective. Students shall understand how the legal rules depend upon, and interact with, the economic background, legislative policy and information and communication technologies. Students shall learn about the rules of national, European and international copyright law and to apply these legal rules in practical cases.

Media
transparancies

Basic literature
Schulze, Gernot Meine Rechte als Urheber Verlag C.H.Beck, current edition

Complementary literature
Additional literature tba in class.

Remarks
It is possible that this course will be taught in the summer instead of the winter semester.

Course: Trademark and Unfair Competition Law   Course key: [24136/24609]

Lecturers: Yvonne Matz, Peter Sester
Credit points (CP): 3   **Hours per week:** 2/0
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Society [TVWL4JURA1] (S. 91)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
It is the aim of this course to provide students with knowledge in the area of trademark rights in the national as well as the European and International context. The course deals with the structure of trademark rights, especially with the procedures of registration and the claims, that result from the infringements of trademark rights, as well as with the right of other marks in the MarkenG.

Content
The course deals with the subject matter of trademark rights: what is a trademark, how can I get the registration of a trademark, what rights and claims do owner of trademarks have, which other marks do exist? The students shall learn about the rules of national, European an international trademark law.

Basic literature

- Berlit, Wolfgang: Markenrecht, Verlag C.H.Beck, ISBN 3-406-53782-0, neueste Auflage.

Course: Environmental Law   Course key: [24140]

Lecturers: Indra Spiecker genannt Döhmann
Credit points (CP): 4   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Environmental Economics [TVWL4VWL5] (S. 23)

Learning Control / Examinations
The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the SPO.
The assessment will be offered in every winter term and can be repeated at every regular examination date.

Prerequisites
None.
Knowledge of Law, esp. Public Law I or II are recommended.

Conditions
None.

Learning Outcomes
Environmental law is a field of law that influences management in many regards. Students shall develop a feeling for the many different aspects of environmental law and its instruments. Aside from so-called "classical" approaches such as law-and-order students will learn about other, economic influenced, instruments such as the gathering and the transfer of
information or the market for certificates. On this basis, the course will center around immissions and waste management law. Additionally, water law, protection of soil law and nature protection law will be covered. Students shall be enabled to deal with easy cases in regard to environmental law.

Content
The lecture begins with an introduction into the special problems faced by environmental law." Different instruments, according to common goods theory, will be presented. In the main part of the lecture, immissions law, waste management law, water law, protection of soil law and nature protection law will be analyzed.

Media
abstracts, sketches on blackboard, slides

Basic literature
Will be announced in the course.

Complementary literature
Will be announced in the course.

Course: Employment Law I   Course key: [24167]

Lecturers: Alexander Hoff
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Economy [TVWL4JURA2] (S. 92)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
It is the aim of this lecture to provide a solid insight into individual-related labour law. The students will understand the importance of labour law as an integral part of social market economy. They will be able to review contractual provisions in employment contracts and to evaluate labour law conflicts.

Content
Students will be introduced to all labour law regulations concerning the beginning, enforcement and termination of an employment. The lecture provides an introduction into procedural matters. A labour court´s trial will be attended.

Basic literature
tba at the beginning of the course.

Course: Tax Law I   Course key: [24168]

Lecturers: Detlef Dietrich
Credit points (CP): 3   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Economy [TVWL4JURA2] (S. 92)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The target of the lecture is an introduction to national business tax law. The legal norms, spread on several individual tax laws, which are decisive for the taxation of the companies and their owners, will be treated. The focus is on basic fiscal knowledge realizable in practice as a component of modern business economics.

Content
Except for a basic knowledge of the existing German company types and the annual financial statements (balance sheet, statement of earnings), no fiscal previous knowledge is required. The lecture intends to give a current global overview about the most important elements of law. The focus is on trade or business companies in the most common forms such like sole traders, partnerships and corporations.

Media
transparancies

Basic literature
- Grashoff Steuerrecht, Verlag C. H. Beck, last edition
- Tipke/Lang Steuerrecht, Verlag C. H. Beck, last edition

Course: Computer Contract Law   Course key: [24612]

Lecturers: Michael Bartsch
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Economy [TVWL4JURA2] (S. 92)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes
It is the aim of this course to provide students with knowledge in the area of contract formation and formulation in practice that builds upon the knowledge the students have already acquired concerning the legal protection of computer programs. Students shall understand how the legal rules depend upon, and interact with, the economic background and the technical features of the subject. The contract drafts shall be prepared by the students and will be corporately completed during the lecture. It is the aim of the course that students will be able to formulate contracts by themselves.

Content
The course deals with contracts from the following areas:
   • Contracts of programming, licencing and maintaining software
   • Contracts in the field of IT employment law
   • IT projects and IT Outsourcing
   • Internet Contracts

From these areas single contracts will be chosen and discussed (e.g. software maintenance, employment contract with a software engineer). Concerning the respective contract the technical features, the economic background and the subsumption in the national law of obligation (BGB-Schuldrecht) will be discussed. As a result different contractual clauses will be developed by the students. Afterwards typical contracts and conditions will be analysed with regard to their legitimacy as standard business terms (AGB). It is the aim to show the effects of the german law of standard business terms (AGB-Recht) and to point out that contracts are a means of drafting business concepts and market appearance.

Media
transparancies

Basic literature
   • Langenfeld, Gerrit Vertragsgestaltung Verlag C.H.Beck, III. Aufl. 2004
   • Heussen, Benno Handbuch Vertragsverhandlung und Vertragsmanagement Verlag C.H.Beck, II. Aufl. 2002
   • Schneider, Jochen Handbuch des EDV-Rechts Verlag Dr. Otto Schmidt KG, III. Aufl. 2002

Complementary literature
tba in the transparencies

Course: Telecommunications Law   Course key: [24632]

Lecturers: Indra Spiecker genannt Döhmann
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Society [TVWL4JURA1] (S. 91)

Learning Control / Examinations
The assessment consists of an written exam (following §4(2), 1 SPO).

Prerequisites
None.

Conditions
None.

Learning Outcomes
Telecommunications is the technical basis of the Information Engineering and Management. In which way for example UMTS is regulated, is of relevant importance for the supply of services in the world of the mobile contents services. The central defaults of the telecommunications regulation are in the telecommunications law (TKG). This was completely amended due to community-legal defaults 2004. The lecture procures for apprehending the basics of legal framework of the information society the essential knowledge in telecommunication law.

Content
The lecture offers an overview of the new TKG. The whole range of the regulation is treated: Of the material-legal instruments of the competition-creative economic regulation (market -, entrance -, payment regulation as well as special supervision of abuse) and the non-economic regulation (customer protection; Broadcasting; Assignment of frequencies, numbers and rights of way; secrecy of telecommunications; Data security and public security) up to the institutional arrangement of the regulation. To assist in the understanding the technical and economic bases are clarified as well as community and constitutional default sat at the beginning of the lecture.

Media
Content structure

Basic literature
Since the law material is to be partly compiled in the discourse with the studying, a current version of the TKG is to be bring along to the lecture.
Further literature will be announced in the lecture.

Complementary literature
tba

Course: Tax Law II   Course key: [24646]

Lecturers: Detlef Dietrich
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Economy [TVWL4JURA2] (S. 92)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes
It is the target of the lecture to provide extended knowledge in business administration related theory of taxation in the field of economics and law, based on the general lecture "introduction to corporate tax law". The students obtain the basis for an economic examination of the fiscal prescriptions and are able to assess the impact on business decisions. The emphasis is on such tax law regulations which allow possibilities for action and decision to the taxpayer.

Content
The lecture requires basic knowledge of commercial law and company law as well as of earnings tax law. Basic and current questions of German corporate taxation are systematically prepared in topic blocs; foils, leaflets and supplementary references are distributed in the individual sessions. There is room for discussion. A recent text collection of the tax laws will be necessary.

Media
transparancies

Basic literature
- Grashoff, Steuerrecht, Verlag C.H. Beck, latest edition.
- Spangemacher, Gewerbesteuer, Band 5, Grüne Reihe, Erich Fleischer Verlag
- Falterbaum/Bolk/Reiß/Eberhart, Buchführung und Bilanz, Band 10, Grüne Reihe, Erich Fleischer Verlag
- Tipke, K./Lang, J., Steuerrecht, Köln, in der neuesten Auflage.
- Jäger/Lang Körperschaftsteuer, Band 6, Grüne Reihe, Erich Fleischer Verlag
- Lippross Umsatzsteuer, Band 11, Grüne Reihe, Erich Fleischer Verlag
- Plückebaum/Wendt/ Niemeier/Schlierenkämper Einkommensteuer, Band 3, Grüne Reihe, Erich Fleischer Verlag

Course: Civil Law for Advanced   Course key: [24650]

Lecturers: Peter Sester
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Economy [TVWL4JURA2] (S. 92)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The course intents to build up extensive knowledge in german corporate law, trade law and civil law especially in contract law. It is designed for students who have already passed the courses *Civil Law for Beginners* [24012], *Advanced Civil Law* [24504], and *Commercial and Corporate Law* [24011/24509]. At the end students should be able to think through complex legal and economic questions.

Content
The course will focus on corporate law, trade law and civil law, especially contract law. We will discuss legal problems on the basis of selected examples in a application orientated way.

Basic literature
Klunzinger, Eugen: Übungen im Privatrecht, Verlag Vahlen, ISBN 3-8006-3291-8, in der neuesten Auflage

Course: Patent Law   Course key: [24661]

Lecturers: Bernhard Geissler
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Society [TVWL4JURA1] (S. 91)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
It is the aim of this course to provide students with knowledge in the area of patent law and the business of technical intellectual property that builds upon, and goes beyond the knowledge the students have already acquired in the general lecture of *Industrial and intellectual property law*. Students shall understand how the legal rules depend upon, and interact with, the economic background and the legislative policy in the field of technical intellectual property, particularly in the field of information and communication technologies. Students shall learn about the rules of national, European and international patent law as well as know-how protection law and to apply these legal rules in practical cases, in particular in the area of utilizing technical intellectual property through agreements and lawsuits. The conflict between the monopoly of a patent and the antitrust law policies in Europe will be reviewed with the students.

Content
The course deals with the subject matter of the law of technical intellectual property, in particular inventions, patents, utility models, design patents, know-how, the rights and obligations of employees as creators of technical IP, licensing, limitations and exceptions to patenting, term of protection, enforcement of the rights and defence against these in invalidation and revocation actions. The course does not merely focus on German patent law, but likewise puts European, US and international patent law into perspective. Students shall understand how the legal rules depend upon, and interact with, the economic background and the legislative policy in the field of technical intellectual property, particularly in the field of information and communication technologies. Students shall learn about the rules of national, European and international patent law as well as know-how protection law and to apply these legal rules in practical cases, in particular in the area of utilizing technical intellectual property through agreements and lawsuits. The conflict between the monopolyöf a patent and the antitrust law policies in Europe will be reviewed with the students.

Media
transparancies

Basic literature

- Schulte, Rainer Patentgesetz Carl Heymanns Verlag, 7. Aufl. 2005 ISBN 3-452-25114-4
- Kraßer, Rudolf, Patentrecht Verlag C.H. Beck, 5. Aufl. 2004 ISBN 3-406-384552

Complementary literature
tba in the transparencies

Course: European and International Law   Course key: [24666]

Lecturers: Indra Spiecker genannt Döhmann
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Society [TVWL4JURA1] (S. 91)

Learning Control / Examinations
The assessment consists of a written exam (following §4(2), 1 SPO).

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Media
Content structure

Basic literature
Further details will be announced in the lecture.

Complementary literature
Further details will be announced in the lecture.

Course: Employment Law II   Course key: [24668]

Lecturers: Alexander Hoff
Credit points (CP): 3   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Economy [TVWL4JURA2] (S. 92)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Students will gain insight into the statutory rights of employees and tariff law. They learn about the importance of employers associations and unions for the economy and gain adequate knowledge of laws concerning industrial action, supply of temporary workers and social security law.

Basic literature
Tba at the beginning of the course.

Course: Law of Contracts   Course key: [24671]

Lecturers: Peter Sester
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Law of the Information Society [TVWL4JURA1] (S. 91), Law of the Information Economy [TVWL4JURA2] (S. 92)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The course will provide an overview of the forming of an contract. The purpose is to translate legal and economic aspects in a contract to secure the volitional position. The course will also consider international questions.

Content
The purpose of the course is to provide students with an understanding of the legal basics of forming a business contract. By means of special examples an overview of typical corporate contracts will be given. The course discusses the Limited (GmbH), ordinary partnership (OHG), limited partnership (KG), European Economic Interest Grouping (EWIV), club (Verein) and the pubilc limited company (Aktiengesellschaft). In addition it will also focus on international relations.

Basic literature
Tba at the beginning of the course.

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

Lecturers: Stefan Tai
Credit points (CP): 4   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 2
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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 II [TVWL4BWLFBV7] (S. 45)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Applied Informatics I - Modelling

Course key: [25070]

Lecturers: Andreas Oberweis, Rudi Studer
Credit points (CP): 4   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 2
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / **Examinations**

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: Optimization in Practice [TVWL4OR2] (S. 70)

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: Optimization in Practice [TVWL4OR2] (S. 70)

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 [TVWL4SEM] (S. 94)

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: Optimization in Practice [TVWL4OR2] (S. 70)

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: Optimization in Practice [TVWL4OR2] (S. 70)

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: 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: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31), Marketing Planning [TVWL4BWLMAR1] (S. 32), Market Research [TVWL4BWLMAR2] (S. 33), Strategy, Innovation and Data Analysis [TVWL4BWLMAR3] (S. 34), Behavioral Approaches in Marketing and Data Analysis [TVWL4BWLMAR4] (S. 35), Successful Market Orientation [TVWL4BWLMAR5] (S. 36), Quantitative Marketing and OR [TVWL4OR1] (S. 69)

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: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31), Marketing Planning [TVWL4BWLMAR1] (S. 32), Market Research [TVWL4BWLMAR2] (S. 33), Successful Market Orientation [TVWL4BWLMAR5] (S. 36), Quantitative Marketing and OR [TVWL4OR1] (S. 69)

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: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31), Marketing Planning [TVWL4BWLMAR1] (S. 32), Market Research [TVWL4BWLMAR2] (S. 33), Successful Market Orientation [TVWL4BWLMAR5] (S. 36), Quantitative Marketing and OR [TVWL4OR1] (S. 69)

Learning Control / Examinations

Prerequisites
Basics of operations research are assumed.

Conditions
None.

Learning Outcomes

Content

Course: e-Business & electronic Marketing   Course key: [25160]

Lecturers: Wolfgang Gaul
Credit points (CP): 2,5   **Hours per week:** 1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31), Marketing Planning [TVWL4BWLMAR1] (S. 32), Market Research [TVWL4BWLMAR2] (S. 33), Successful Market Orientation [TVWL4BWLMAR5] (S. 36)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Information Technology and Business Information   Course key: [25162]

Lecturers: Bruno Neibecker
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Strategy, Innovation and Data Analysis [TVWL4BWLMAR3] (S. 34), Behavioral Approaches in Marketing and Data Analysis [TVWL4BWLMAR4] (S. 35), Successful Market Orientation [TVWL4BWLMAR5] (S. 36)

Learning Control / Examinations
Examination performance will consist of a written exam accorcing to the description of the module (written exam following §4(2), 1 of the examination regulation).

Prerequisites
None.

Conditions
None.

Learning Outcomes
(see description of the course)

Content
The goal of the course is to create a text that is comprehensive, practical, applied, and managerial and that presents a balanced coverage of both, quantitative and qualitative approaches. It takes the perspective of users of marketing research and set out to reflect the current trends in the use of computers (e.g. statistical packages and online research). The course covers as main topics an introduction to interactive mulimedia systems, techniques of internet marketing research, methods of primary data collection including questionnaires and scaling of psychological attributes, methods of observation, program analyzer, psychobiological methods, content analysis and cognitive response approach, experimental designs and panels, secondary data collection, management support systems, a case study in marketing decision support and an overview of philosophy of science.

Basic literature
(Literature is in English and German, see German description)

Course: International Marketing   Course key: [25164]

Lecturers: Wolfgang Gaul
Credit points (CP): 2,5   **Hours per week:** 1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31), Marketing Planning [TVWL4BWLMAR1] (S. 32), Market Research [TVWL4BWLMAR2] (S. 33), Successful Market Orientation [TVWL4BWLMAR5] (S. 36)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Marketing and Innovation   Course key: [25165]

Lecturers: Wolfgang Gaul
Credit points (CP): 2,5   **Hours per week:** 1/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31), Marketing Planning [TVWL4BWLMAR1] (S. 32), Market Research [TVWL4BWLMAR2] (S. 33), Successful Market Orientation [TVWL4BWLMAR5] (S. 36)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Strategic and Innovative Decision Making in Marketing   Course key: [25166]

Lecturers: Bruno Neibecker
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Strategy, Innovation and Data Analysis [TVWL4BWLMAR3] (S. 34), Successful Market Orientation [TV-WL4BWLMAR5] (S. 36)

Learning Control / Examinations
Examination performance will consist of a written exam accorcing to the description of the module (written exam following §4(2), 1 of the examination regulation).

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes
(see description of the course)

Content
The course places emphasis on the role of marketing in strategic planning. The planning and implementation stages are discussed using a case study in business portfolio analysis, talking about experience effects, approaches in defining strategic business units. A critical view on established paradigms versus weak signals from management practice is given. Further topics are innovation and diffusion models, behavioral approaches to innovative decision processes and a discussion on Porter's single diamond theory and globalization.

Basic literature
(Literature is in English and German, see German description)

Course: Behavioral Approaches in Marketing

Course key: [25167]

Lecturers: Bruno Neibecker
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Behavioral Approaches in Marketing and Data Analysis [TVWL4BWLMAR4] (S. 35), Successful Market Orientation [TVWL4BWLMAR5] (S. 36)

Learning Control / Examinations
Examination performance will consist of a written exam accorcing to the description of the module (written exam following §4(2), 1 of the examination regulation).

Prerequisites
None.

Conditions
(see description of the module)

Learning Outcomes

Content
This course gives an introduction to consumer behavior and the influence of cognitive and emotional information processing on consumer decision making. The contribution of advertising response models is considered and faced with social and environmental aspects (e.g. cross-cultural influences) on consumer behavior, mass communication and internet advertising. In addition, a scientific case study on the effectiveness of TV-commercials is discussed. Central issues of the course:
Case Studies in brand management and advertising response.
Psychological factors (research design and test marketing / arousal / effectiveness of TV-commercials as case studies).
Emotions in marketing.
Information processing and retention in memory (schema theory / visual information processing).
Complex advertising response models (attitude towads the ad / attitude towards the brand / persuasion / context effects in learning / decision making / Means-end-theory and strategic advertising).
Social processes (culture / subculture / cross cultural influence / product design).

Basic literature
(Literature is in English and German, see German description)

Course: Entrepreneurship and Marketing   Course key: [25170]

Lecturers: Wolfgang Gaul
Credit points (CP): 2,5   **Hours per week:** 1/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31), Marketing Planning [TVWL4BWLMAR1] (S. 32), Market Research [TVWL4BWLMAR2] (S. 33), Successful Market Orientation [TVWL4BWLMAR5] (S. 36)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The Student should ...

Content

Course: Data Analysis and Operations Research   Course key: [25171]

Lecturers: Wolfgang Gaul
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31), Marketing Planning [TVWL4BWLMAR1] (S. 32), Market Research [TVWL4BWLMAR2] (S. 33), Successful Market Orientation [TVWL4BWLMAR5] (S. 36), Quantitative Marketing and OR [TVWL4OR1] (S. 69)

Learning Control / Examinations

Prerequisites
Basics of data analysis and operations research are assumed.

Conditions
None.

Learning Outcomes

Content

Course: Master Seminar in Marketing   **Course key: [25192]**

Lecturers: Wolfgang Gaul
Credit points (CP): 4   **Hours per week:** 2
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Successful Market Orientation [TVWL4BWLMAR5] (S. 36)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Master Seminar zu Marktforschung   Course key: [25193]

Lecturers: Wolfgang Gaul
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Market Research [TVWL4BWLMAR2] (S. 33)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Master Seminar in Quantitative Marketing and OR   Course key: [25194]

Lecturers: Wolfgang Gaul
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Quantitative Marketing and OR [TVWL4OR1] (S. 69)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Master-Seminar Marketing Plannning   Course key: [25195]

Lecturers: Wolfgang Gaul
Credit points (CP): 4   **Hours per week:** 2
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Marketing Planning [TVWL4BWLMAR1] (S. 32)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Master Seminar in Entrepreneurship, Innovation and International MarketingCourse key: [25196]

Lecturers: N.N.
Credit points (CP): 4   **Hours per week:** 2
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Entrepreneurship, Innovation and International Marketing [TVWL4BWLMAR6] (S. 31)

Learning Control / **Examinations**

Prerequisites
None.

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: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Valuation   Course key: [25212]

Lecturers: Martin E. Ruckes
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: F1 (Finance) [TVWL4BWLFBV1] (S. 28), F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Corporate Financial Policy   Course key: [25214]

Lecturers: Martin E. Ruckes
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

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: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Market Microstructure   Course key: [25240]

Lecturers: Torsten Lüdecke
Credit points (CP): 3   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
This lecture makes students familiar with the fundamental models of trading in financial markets. It starts with generic design features of financial markets which are used to frame price discovery as the key element of the trading process. The link between market design and market quality is pointed out by using alternative measures of market quality. Seminal models of market microstructure are used to show how dealer inventoy and/or asymmetric information affect market prices and the pricing of securities. Theoretical models are shown to provide predictions which are consistent with empiricial evidence.

Content
The focus of this lecture is on the question how the microstructure of financial markets affects price discovery and market quality. First, issues in designing market structure are presented and linked to fundamental dimensions of market quality, i.e liquidity and trading costs. In particular, the services and privileges of market makers are stressed. The main part of the lecture covers inventory-models of dealer markets and models of information-based trading. The final part gives attention to some econometric models to analyze the short-term behavior of security prices.

Media
Folien.

Basic literature
keine

Complementary literature
Siehe Reading List.

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 [TVWL4SEM] (S. 94)

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: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

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: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Multivariate Verfahren   Course key: [25317]

Lecturers: Wolf-Dieter Heller
Credit points (CP): 5   **Hours per week:** 2/2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Statistical Methods in Risk Management [TVWL4STAT2] (S. 62)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Basic literature
- Fahrmeir L., Hamerle A., Tut G.: Multivariate statistische Verfahren; de Gruyter 1996
- Jobson J.D.: Applied Multivariate Data Analysis Vol. I/II, Springer 1991
- Dobson A.J.: An Introduction to Statistical Modelling, Chapman and Hall
- Hosmer D.W., Lemeshow S.: Applied Logistic Regression, J. Wiley 1989
- Jambu M.: Explorative Datenanalyse, G. Fischer 1992

Course: Stochastic Calculus and Finance   Course key: [25331]

Lecturers: Svetlozar Rachev
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Econometrics and Risk Management in Finance [TVWL4STAT] (S. 60), Mathematical and Empirical Finance [TVWL4STAT1] (S. 61)

Learning Control / Examinations
The assessment of this course consists of a written examination (following §4(2), 1 SPO) and of possibble additional assignments during the course (following §4(2), 3 SPO).

Prerequisites
None.

Conditions
None

Learning Outcomes
After successful completion of the course students will be familiar with many common methods of pricing and portfolio models in finance. Emphasis we be put on both finance and the theory behind it.

Content
Stochastic processes (Poisson-process, Brownian motion, martingales), stochastic Integral (Integral, quadratic und co-variation, Ito-formula), stochastic differential equation for price-processes, trading strategies, option pricing(Feynman-Kac), neutral risk rating(equivalent martingale measure, Girsanov theorem), term structure models

Media
transparencies, exercises.

Basic literature
To be announced in lecture.

Complementary literature
Hull, J., Options, Futures, & Other Derivatives, Prentice Hall, Sixth Edition, (2005).

Course: Stochastic and Econometric Models in Credit Risk Management   Course key: [25337]

Lecturers: Svetlozar Rachev
Credit points (CP): 5   **Hours per week:** 2/2
Term: Sommersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Statistical Methods in Risk Management [TVWL4STAT2] (S. 62)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
The deregulation of European markets and the advent of monetary union has resulted in greater liquidity and more competition, creating a truly homogeneous European credit market. Second, given the low level of nominal interest rates, investors are willing to take on more credit risk to boost returns. Third, the regulatory authorities are set to accept the use of internal models for risk management. This will enable banks to better identify and measure credit risk and therefore manage it more effectively.
The course is intended as a mathematically rigorous introduction to the stochastic and econometric models used in credit risk modeling. We will start with a review on term-structure models, and then continue with pricing credit risk and credit risk derivatives using

- firm's value models,
- intensity models,
- pricing credit derivatives.

Basic literature
David Lando, Credit Risk Modeling: Theory and Applications, Princeton Series in Finance, 2004
Philipp J. Schönbucher, Credit Derivatives Pricing Models: Model, Pricing and Implementation, Wiley-Finance, 2003
Darrell Duffie, Kenneth J. Singleton, Credit Risk: Pricing, Measurement and Management, Princeton Series in Finance, Princeton University Press, 2003

Course: Operational Risk and Extreme Value Theory   Course key: [25342]

Lecturers: Svetlozar Rachev
Credit points (CP): 5   **Hours per week:** 2/2
Term: Wintersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Statistical Methods in Risk Management [TVWL4STAT2] (S. 62)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Operational risk is defined as a consequence of critical contingencies most of which are quantitative in nature and many important questions regarding economic capital allocation for operational risk remain open. The existing quantitative models for operational risk (as well as for market and credit risk) make various assumptions about "normality" and practically exclude extreme and rare events. In this course we formalize the theory of operational risk and apply the extreme value theory for the purpose of calculating the economic capital requirement against unexpected operational losses.

Basic literature
Chernobai, A. Rachev, S., Fabozzi, F. Modeling, Analyzing, and Quantifying Operational Risk , John Wiley, Finance, 2006
P. Embrechts, C. Kluppelberg, T. Mikosch , Modeling Extremal Events , Springer, Berling 1997
Marcelo G. Cruz: Modelling, Measuring and Hedging Operational Risk, Wiley, NY, 2001

Course: Finanzmärkte und Banken   Course key: [25350/1]

Lecturers: Karl-Heinz Vollmer
Credit points (CP): 5   **Hours per week:** 2/2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Mathematical and Empirical Finance [TVWL4STAT1] (S. 61)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Basic literature
- Andrew Harvey: The Econometric Analysis of Time Series, 2nd Ed. 1993
- Andrew C. Harvey: Time Series Models, 2nd. Ed.
- Walter Enders: Applied Econometric Time Series, 2nd Ed., 1994
- Granger/Newbold: Forecasting Economic Time Series 2nd. Ed.
- Pindyck/Rubinfeld: Econometric Models and Economic Forecasts, 1998
- Elton/Gruber: Modern Portfolio Theory and Investment Analysis, 1995
- Byrne, Peter, Decision-Making in Property Development, 2nd Ed. 1996

Course: Statistical Methods in Financial Risk Management   Course key: [25353]

Lecturers: Svetlozar Rachev
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Econometrics and Risk Management in Finance [TVWL4STAT] (S. 60), Statistical Methods in Risk Management [TVWL4STAT2] (S. 62)

Learning Control / Examinations
The assessment of this course consists of a written examination (following §4(2), 1 SPO) and of possible additional assignments during the course (following §4(2), 3 SPO).

Prerequisites
None.

Conditions
None.

Learning Outcomes
Introduction of statistical methods, topics commonly covered by courses on advanced statistics and econometrics supplemented by the latest scientific results in this area

Content
Financial risk management in financial instruments (risk indicators: Single Fixed Flow,Fixed Rate Bond, FRA, Interest Rate Futures, Interest Rate Swaps, FX Spot, FX Forward, "Plain Vanilla" Optionen) and portfolios (risk indicators: Pricing Environment, Interest Rate Factors, FX factors), credit risk, value-at-risk (VAR) and
asset liability management, evaluation of calibration models and measures of success in risk models, determination of operativ risk in the finacial industry.

Media
transparencies, exercises.

Basic literature
To be announced in lecture.

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: Mathematical and Empirical Finance [TVWL4STAT1] (S. 61)

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: Portfolio and Asset Liability Management   Course key: [25357]

Lecturers: Svetlozar Rachev
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Econometrics and Risk Management in Finance [TVWL4STAT] (S. 60), Mathematical and Empirical Finance [TVWL4STAT1] (S. 61), Statistical Methods in Risk Management [TVWL4STAT2] (S. 62)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
Introduction and deepening of various portfolio management techniques in the financial industry.

Content
Portfolio theory: principles of investment, Markowitz- portfolio analysis, Modigliani-Miller theorems and absence of arbitrage, efficient markets, capital asset pricing model (CAPM), multi factorial CAPM, arbitragepricing theory (APT), arbitrage and hedging, multi factorial models, equity-portfolio management, passive strategies, active investment
Asset liability: statistical portfolio analysis in stock allocation, measures of success, dynamic multi seasonal models, models in building scenarios, stochastic programming in bond and liability management, optimal investment strategies, integrated asset liability management

Media
transparencies, exercises.

Basic literature
To be announced in lecture.

Complementary literature
To be announced in lecture.

Course: Financial Time Series and Econometrics   Course key: [25359]

Lecturers: Svetlozar Rachev
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Econometrics and Risk Management in Finance [TVWL4STAT] (S. 60), Mathematical and Empirical Finance [TVWL4STAT1] (S. 61)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
After successful completion of the course students will have the knowledge and qualification to comprehend the essential models -incl. state of the arts science- in financial econometrics, as well as risk measurement and management.

Content
Linear financial time series models: ARMA, ARIMA and forecasting, integrated time series models and so called long memory processes.
Non linear financial time series models: test for odyssey properties, stochastic variance and ARCH-process, regime switching models, test for non linearity, root of unit test and cointegration

Media
transparencies lecture, exercises

Basic literature
Mills: The Econometric Modelling Of Financial Markets. Cambridge University Press.

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 Strategic Decisions [TVWL4VWL2] (S. 20), Stochastic Modelling and Optimization/ Stochastic and Strategic Models in Information Engineering and Management [TVWL4OR4] (S. 72)

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: 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 Strategic Decisions [TVWL4VWL2] (S. 20), Market Engineering [TVWL4BWLISM3] (S. 48)

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 introduction 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 Methods in Risk Management [TVWL4STAT2] (S. 62)

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: Advanced Econometrics of Financial Markets   Course key: [25381]

Lecturers: Svetlozar Rachev
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Econometrics and Risk Management in Finance [TVWL4STAT] (S. 60), Mathematical and Empirical Finance [TVWL4STAT1] (S. 61)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
After successful completion of the course students will have attained both knowledge and competency to comprehend the theories behind portfolio management of major financial institutions. Hence students can adapt this understanding to the more specialised needs of the intermediary.

Content
Advanced Econometrics of Financial Markets covers: Forecasting stock return, market microstructure(non-synchronised trading, spread and modelling transactions), "event studies analysis", capital asset pricing model, multi-factor price models, intertemporal equilibrium models.

Media
transparencies, exercises.

Basic literature
Campbell, Lo, McKinlay: The Econometrics of Financial Markets. Princeton University Press.

Course: Auction Theory   Course key: [25408]

Lecturers: Karl-Martin Ehrhart, Stefan Seifert
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Applied Strategic Decisions [TVWL4VWL2] (S. 20), Market Engineering [TVWL4BWLISM3] (S. 48), Information & Markets [TVWL4BWLISM5] (S. 50)

Learning Control / Examinations
Written exam of 80 mins (§4(2), 1 SPO). Exam is offered each semester.

Prerequisites
The course *Game Theory II* [25369] is a prerequisite for this course.

Conditions
None.

Learning Outcomes
The student
- understands problems of auction design and empirical methods,
- designs and analyzes auction desgins,
- evaluates empirically demo-experiments.

Content
Auction theory is based on game theory. Practical aspects and experiences are also discussed. Main topics are: Single- and multi-unit auctions, procurement auctions, license auctions, electronic auctions (e.g. eBay, C2C, B2B), multi-attributive auctions.

Complementary literature
Berninghaus, S., K.-M. Ehrhart und W. Güth: Strategische Spiele, 2nd extended edition, Springer Verlag, 2006
● Krishna, V.: Auction Theory, Academic Press,2002
● Kräkel, M.: Auktionstheorie und interne Organisation, Gabler Verlag, 1992
● Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2004
● Ausubel, L.M. und P. Cramton: Demand Reduction and Inefficiency in Multi-Unit Auctions, University of Maryland, 1999

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: Allocation and Equilibrium [TVWL4VWL7] (S. 25), Social Choice Theory [TVWL4VWL9] (S. 27)

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 Strategic Decisions [TVWL4VWL2] (S. 20), Social Choice Theory [TVWL4VWL9] (S. 27)

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: Allocation and Equilibrium [TVWL4VWL7] (S. 25)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Decision Theory and Objectives in Applied Politics   **Course key: [25537]**

Lecturers: Tangian
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Social Choice Theory [TVWL4VWL9] (S. 27)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Mathematical Theory of Democracy

Course key: [25539]

Lecturers: Tangian
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Social Choice Theory [TVWL4VWL9] (S. 27)

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 [TVWL4VWL8] (S. 26)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Environmental Economics and Sustainability   Course key: [25547]

Lecturers: Rainer Walz
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Environmental Economics [TVWL4VWL5] (S. 23)

Learning Control / Examinations

Prerequisites
It is recommended to already have knowledge in the area of macro- and microeconomics. This knowledge may be acquired in the courses *Economics I: Microeconomics* [25012] and *Economics II: Macroeconomics* [25014].

Conditions
None.

Learning Outcomes

Content

Course: Environmental and Ressource Policy   Course key: [25548]

Lecturers: Rainer Walz
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Environmental Economics [TVWL4VWL5] (S. 23)

Learning Control / Examinations

Prerequisites
It is recommended to already have knowledge in the area of industrial organization and economic policy. This knowledge may be acquired in the courses *Introduction to Industrial Organization* [25371] and *Economic Policy* [26280].

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 [TVWL4VWL8] (S. 26)

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: Allocation and Equilibrium [TVWL4VWL7] (S. 25), Macroeconomic Theory [TVWL4VWL8] (S. 26)

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: Markovian Decision Processes   Course key: [25653]

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 Modelling and Optimization/ Stochastic and Strategic Models in Information Engineering and Management [TVWL4OR4] (S. 72)

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.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The lecture provides students with knowledge on Markov decision processes for analysis to control and optimize stochastic dynamic systems. They are able to apply the theory aquired and to adjust the models to actual problems. They develop the optimality criterion and can solve the resulting optimal value function efficiently to gain optimal policies and the optimal value.

Content
See module.

Media
Blackboard, Slides, Flash Animations.

Basic literature
Lecture Notes.

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

Course: Quality Management I   Course key: [25656]

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 in Economy and Engineering/ Management of Operations [TVWL4OR3] (S. 71)

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
The lecture provides students with knowledge of modern techniques in quality management. Students learn to use the techniques, such as control charts, experimental design, efficiently and targeted.

Content
See module.

Media
Blackboard, Slides, Flash Animations.

Basic literature
Lecture Notes

Complementary literature
   • Montgomory, D.C. (2005): Introduction to Statistical Quality Control (5e); Wiley.

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

Course: Quality Management II   Course key: [25659]

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 in Economy and Engineering/ Management of Operations [TVWL4OR3] (S. 71)

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
The lecture provides students with knowledge of modern techniques in reliability engineering.

Content
See module.

Media
Blackboard, Slides, Flash Animations.

Basic literature
Lecture Notes

Complementary literature
   • BARLOW, R.E., PROSCHAN, F.: Statistische Theorie der Zuverlässigkeit. Harri Deutsch, Thun-Frankfurt, 1978.
   • KOHLAS, J.: Zuverlässigkeit und Verfügbarkeit. B.G. Teubner, Stuttgart, 1987.
   • BIROLINI, A: Qualität und Zuverlässigkeit technischer Systeme, Springer, Berlin, 1991.

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

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 Modelling and Optimization/ Stochastic and Strategic Models in Information Engineering and Management [TVWL4OR4] (S. 72)

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 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: 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 Modelling and Optimization/ Stochastic and Strategic Models in Information Engineering and Management [TVWL4OR4] (S. 72)

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: Optimization in a Random Environment   Course key: [25687]

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 in Economy and Engineering/ Management of Operations [TVWL4OR3] (S. 71)

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
Students are enabled to apply their knowledge about techniques and methodology on current problems such as the measurement and evaluation of operational risk as required by the Basel II accord.

Content
See module.

Media
Blackboard, Slides, Flash Animations, Simulation Software

Basic literature
Lecture Notes.

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

Course: Stochastic Processes   Course key: [25690]

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 Modelling and Optimization/ Stochastic and Strategic Models in Information Engineering and Management [TVWL4OR4] (S. 72)

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.

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students learn modern techniques to model and analyze discrete and continuous time random dynamic systems. They are enabled to use this powerful analysis instrument, e.g. to develop key figures in queueing systems or stochastic networks.

Content
See module.

Media
Blackboard, Slides, Flash Animations.

Basic literature
Lecture Notes.

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

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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations
The assessment consists of assignments or of a bonus exam (wrt §4 (2), 3 SPO), and a written exam (60 min.) in the week after the end of the lecturing periodwrt (§4 (2), 3 SPO).
If the mark obtained in the written exam is in between 1.3 and 4.0, a successful completion of the assignments or the bonus exam will improve the mark by one level (i.e. by 0.3 or 0.4).

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: Advanced Lab in Efficient Algorithms   Course key: [25700p]

Lecturers: Hartmut Schmeck
Credit points (CP): 4   **Hours per week:** 3
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Special Topics of Efficient Algorithms   **Course key: [25700sp]**

Lecturers: Hartmut Schmeck
Credit points (CP): 5   **Hours per week:** 2/1
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations
The assessment of this course consists of a written examination (60 min) (following §4(2), 1 SPO) and an additional written examination (called "bonus exam", 60 min) (following §4(2), 3 SPO) (the bonus exam may be split into several shorter written tests).
The grade of this course is the achieved grade in the written examination. If this grade is at least 4.0 and at most 1.3, a passed bonus exam will improve it by one grade level (i.e. by 0.3 or 0.4).

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: Organic Computing   Course key: [25704]

Lecturers: Hartmut Schmeck, Sanaz Mostaghim
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The student acquires the ability to master methods and concepts of Organic Computing and to demonstrate innovation skills regarding the used methods.
Therefore the course aims at the teaching of fundamentals and methods of Organic Computing within the context of its applicability in practice. On the basis of a fundamental understanding of the taught concepts and methods the students should be able to choose the adequate methods and concepts, if necessary further develop them according to the situation and use them properly when facing related problems in their later job. The students should be capable of finding arguments for the chosen solutions and express them to others.

Content
The mission of Organic Computing is to tame complexity in technical systems by providing appropriate degrees of freedom for self-organized behaviour adapting to changing requirements of the execution environment, in particular with respect to human needs. According to this vision an organic computer system should be aware of its own capabilities, the requirements of the environment, and it should be equipped with a number of "self-x" properties allowing for the anticipated adaptiveness and for a reduction in the complexity of system management. These self-x properties are self-organisation, self-configuration, self-optimization, self-healing, self-protection and self-explanation. In spite of these self-x properties, an organic system should be open to external control actions which might be necessary to prevent undesired behaviour.

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

Basic literature
   • Autonomic Computing: Concepts, Infrastructure and Applications. M. Parashar and S. Hariri (Ed.), CRC Press. December 2006.
   • Self-Organization in Biological Systems. S. Camazine, J. Deneubourg, N. R. Franks, J. Sneyd, G. Theraulaz and E. Bonabeau. Princeton University Press, 2003.
   • Complex Adaptive Systems: An Introduction. H. G. Schuster, Scator Verlag, 2001.
   • Introduction to Evolutionary Computing. A. E. Eiben and J. E. Smith. Natural Computing Series, Springer Verlag, 2003. Swarm Intelligence: From Natural to Artificial Systems.Eric Bonabeau, Marco Dorigo and Guy Theraulaz. Oxford University Press, 1999.
   • Control of Complex Systems. K. Astrom, P. Albertos, M. Blanke, A. Isidori and W. Schaufelberger. Springer Verlag, 2001.

Complementary literature
   • **Adaptive and Self-organising Systems,** Christian Müller-Schloer, Moez Mnif, Emre Cakar, Hartmut Schmeck, Urban Richter,
     June 2007. Preprint.Submitted to ACM Transactions on Autonomous and Adaptive Systems (TAAS)
   • **Organic Computing - Addressing Complexity by Controlled Self-organization,** Jürgen Branke, Moez Mnif, Christian Müller-Schloer, Holger Prothmann, Urban Richter, Fabian Rochner, Hartmut Schmeck, In Tiziana Margaria, Anna Philippou, and Bernhard Steffen, *Proceedings of ISoLA 2006*, pp. 200-206. Paphos, Cyprus, November 2006.
   • Evolutionary Optimization in Dynamic Environments. J. Branke. Kluwer Academic Publishers, 2002.
   • Self-star Properties in Complex Information Systems: Conceptual and Practical Foundations (Lecture Notes in Computer Science. O. Babaoglu, M. Jelasity, A. Montresor, C. Fetzer, S. Leonardi, A. van Moorsel and M. van Steen. Springer Verlag, 2005.
   • Design and Control of Self-organizing Systems. C. Gershenson. PhD thesis, Vrije Universiteit Brussel, Brussels, Belgium, 2007.
   • VDE / ITG / GI - Positionspapier: Organic Computing - Computer- und Systemarchitektur im Jahr 2010. Juli 2003. it - Information Technology, Themenheft Organic Computing, Oldenbourg Verlag. Volume: 47, Issue: 4/2005.

further references will be announced in class

Course: Nature-inspired Optimisation   Course key: [25706]

Lecturers: Sanaz Mostaghim
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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: Distributed Database Systems: Basic Technology for e-Business   Course key: [25722]

Lecturers: Andreas Oberweis
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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

Prerequisites
Knowledge of course *Database Systems and XML* [25724] is expected.

Conditions
None.

Learning Outcomes
Students are familiar with the requirements and limitations of distributed database systems. Based on sound theoretical basis and practical exercises, they are able to design and build a distributed database system. They know methods to ensure error-free operation and the consistency of distributed databases and they are able to identify and to assess current and future application areas of distributed database systems. Furthermore, they know how to use them taking into account aspects of economy.

Content
This lecture deals with tasks in spatially distributed data management under special consideration of aspects of economy. Based on existing general knowledge in the field of database systems, the following topics will be addressed among other things: networked systems, design of distributed databases, distributed transaction concepts, request handling in distributed databases, distributed multi-user control, distributed error handling, and distributed data management on the internet.

Media
Slides, access to internet resources.

Basic literature
   • P. Dadam: Verteilte Datenbanken und Client/Server-Systeme. Springer 1996
   • M. T. Özsu, P. Valduriez: Principles of Distributed Database Systems. Prentice-Hall 1991

Complementary literature
Further literature is given in each lecture.

Course: Database Systems and XML

Course key: [25724]

Lecturers: Andreas Oberweis
Credit points (CP): 5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

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

Prerequisites

None.

Conditions

None.

Learning Outcomes

Students know the basics of XML, as well as appropriate data models and are capable of generating XML documents. They are able to use XML database systems and to formulate queries to XML documents. Furthermore, they know to assess the use of XML in operational practice in different application contexts.

Content

Databases are a proven technology for managing large amounts of data. The oldest database model, the hierarchical model, was replaced by different models such as the relational or the object-oriented data model. The hierarchical model became particularly important with the emergence of the Extensible Markup Language XML. XML is a data format for structured, semi-structured, and unstructured data. In order to store XML documents consistently and reliably, databases or extensions of existing data base systems are required. Among other things, this lecture covers the data model of XML, concepts of XML query languages, aspects of storage of XML documents, and XML-oriented database systems.

Media

Slides, access to internet resources.

Basic literature

- M. Klettke, H. Meyer: XML & Datenbanken: Konzepte, Sprachen und Systeme. dpunkt.verlag 2003
- H. Schöning: XML und Datenbanken: Konzepte und Systeme. Carl Hanser Verlag 2003
- W. Kazakos, A. Schmidt, P. Tomchyk: Datenbanken und XML. Springer-Verlag 2002
- R. Elmasri, S. B. Navathe: Grundlagen der Datenbanksysteme. 2002
- G. Vossen: Datenbankmodelle, Datenbanksprachen und Datenbankmanagementsysteme. Oldenbourg 2000

Course: Workflow-Management   Course key: [25726]

Lecturers: Andreas Oberweis
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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 workflow management concepts and systems and their applications. Based on theoretical foundations they can model business process models. Furthermore they have an overview of further problems of workflow management systems in commercial use.

Content
A workflow is that part of a business process which is automatically executed by a computerized system. Workflow management includes the design, modelling, analysis, execution and management of workflows. Workflow management systems are standard software systems for the efficient control of processes in enterprises and organizations. Knowledge in the field of workflow management systems is especially important during the design of systems for process support.
The course covers the most important concepts of workflow management. Modelling and design techniques are presented and an overview about current workflow management systems is given. Standards, which have been proposed by the workflow management coalition (WfMC), are discussed. Petri nets are proposed as a formal modelling and analysis tool for business processes. Architecture and functionality of workflow management systems are discussed. The course is a combination of theoretical foundations of workflow management concepts and of practical application knowledge.

Media
Slides, Access to internet resources.

Basic literature
   • M. Dumas, W. van der Aalst, A. H. ter Hofstede (Hrsg.): Process Aware Information Systems. Wiley-Interscience, 2005
   • J.F. Chang: Business Process Management. Auerbach Publications, 2006

Complementary literature
   • W. van der Aalst, H. van Kees: Workflow Management: Models, Methods and Systems, Cambridge 2002: The MIT Press
   • G. Vossen, J. Becker (Hrsg.): Geschäftsprozessmodellierung und Workflow-Management. Modelle, Methoden, Werkzeuge; Int. Thomson Pub. Company, 1996.
   • A. Oberweis: Modellierung und Ausführung von Workflows mit Petri-Netzen. Teubner-Reihe Wirtschaftsinformatik, B.G. Teubner Verlag, 1996.
   • G. Alonso, F. Casati, H. Kuno, V. Machiraju: Web Services, 2004, Springer Verlag, Heidelberg 1997
   • S. Jablonski, C. Bussler: Workflow-Management, Modeling Concepts, Architecture and Implementation, Int. Thomson Computing Press, 1996.

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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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

Prerequisites
Modul "Introduction to Informatics" [WW1INFO] 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: Software Technology: Quality Management   Course key: [25730]

Lecturers: Andreas Oberweis
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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

Prerequisites
Programming I: Java, Computer Science I and II is expected

Conditions
None.

Learning Outcomes
Students are familiar with basic concepts and principles of software quality and software quality management. They know key measures and models for certification of quality in software development. They are aware of different test methods and evaluation methods. Furthermore, they are able to asses quality management aspects in different standard process models.

Content
This lecture imparts fundamentals of active software quality management (quality planning, quality testing, quality control, quality assurance) and illustrates them with concrete examples, as currently applied in industrial software development. Keywords of the lecture content are: software and software quality, process models, software process quality, ISO 9000-3, CMM(I), BOOTSTRAP, SPICE, software tests.

Media
Slides, access to internet resources.

Basic literature
   • Helmut Balzert: Lehrbuch der Software-Technik. Spektrum-Verlag 1998
   • Peter Liggesmeyer: Software-Qualität, Testen, Analysieren und Verifizieren von Software. Spektrum Akademischer Verlag 2002

Complementary literature
Further literature is given in lectures.

Course: Document Management and Groupware Systems   Course key: [25735]

Lecturers: Stefan Klink
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students master the basics of integration and structure of document management systems (DMS) and know the complete DMS process - from document capture of the archiving until retrieval. Students know how to realize operative workflows. They know which activities are needed to carry out the conceptual design and installation of DMS and they are able to apply a DMS as an archive system, workflow system and retrieval system. Furthermore, they know groupware systems exemplarily and can use them for collaborative tasks.

Content
The lecture gives basics of document management and groupware systems. It covers different system categories, their interaction and their use areas and illustrates this with concrete examples. These include document management in the strict sense, scanning, Document Imaging (acquisition and visualization of scanned documents), indexing, electronic archiving, retrieval of relevant documents, workflow, groupware, and office communications.

Media
Slides, access to internet resources.

Basic literature
- Klaus Götzer, Udo Schneiderath, Berthold Maier, Torsten Komke: Dokumenten-Management. Dpunkt Verlag, 2004, 358 Seiten, ISBN 3-8986425-8-5
- Jürgen Gulbins, Markus Seyfried, Hans Strack-Zimmermann: Dokumenten-Management. Springer, Berlin, 2002, 700 Seiten, ISBN 3-5404357-7-8
- Uwe M. Borghoff, Peter Rödig, Jan Scheffcyk, Lothar Schmitz: Langzeitarchivierung – Methoden zur Erhaltung digitaler Dokumente. Dpunkt Verlag, 2003, 299 Seiten, ISBN 3-89864-258-5

Complementary literature
Further literature is given in each lecture individually.

Course: Business Process Modelling   Course key: [25736]

Lecturers: Andreas Oberweis, Marco Mevius
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students know goals of business process modelling and master different modelling languages. They are able to choose the appropriate modelling language according to a given context and to use the modelling language with suitable modelling tools. They master methods for analysing and assessing process modells and methods for analysing them according to specific quality characteristics.

Content
The proper modeling of relevant aspects of business processes is essential for an efficient and effective design and implementation of processes. This lecture presents different classes of modeling languages and discusses the respective advantages and disadvantages of using actual application scenarios. For that simulative and analytical methods for process analysis are introduced. In the accompanying exercise the use of process modeling tools is practiced.

Media
Slides, access to internet resources.

Basic literature
Literature will be given in the lecture.

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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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: Ecxercises in Knowlegde Management

Course key: [25740p]

Lecturers: Rudi Studer
Credit points (CP): 4   **Hours per week:** 3
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Knowledge Discovery   Course key: [25742]

Lecturers: Rudi Studer
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
Familiarity with fundamental knowledge discovery techniques, especially with standard supervised and unsupervised machine learning algorithms.

Content
The lecture gives an overview about techniques for knowledge discovery from structured and unstructured datasets and texts. The lecture will probably cover: CRISP process model and data warehouses, OLAP-techniques and visualization of large amounts of data, supervised learning techniques (in particular decision trees, neural networks, support vector machines and instance based learning), unsupervised learning techniques (in particular association rules and clustering) as well as text mining.

Media
Slides.

Basic literature
  • Mitchell T: Machine Learning, 1997, McGraw-Hill.
  • Berthold M, Hand D (eds): Intelligent Data Analysis, An Introduction, 2003, Springer.
  • Witten IH, Frank E: Data Mining: Practical Machine Learning Tools and Techniques, 2005.

Complementary literature
None.

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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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: Semantic Web Technologies II   Course key: [25750]

Lecturers: Pascal Hitzler, Sudhir Agarwal
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
Lectures on Informatics of the Bachelor on Information Management (Semester 1-4) or equivalent. Semantic Web Technologies [25748] is recommended.

Conditions
none.

Learning Outcomes
- Detailed knowledge about the management and the usage of ontologies for Semantic Web Technologies
- Advanced skills in modelling knowledge for Semantic Web Technologies

Content
Building upon the content of the lecture "Semantic Web Technologies I", the lecture covers methods for the realisation of intelligent systems on the world wide web and in other application domains. The lecture covers central aspects in the life cycle of ontologies and meta data, and in particular the following topics:
- Tools for managing metadaten and ontologies
- Knowledge representation using ontologies
-
- Semantic wikis
- Semantic Web Services
- Information integration
- Semantic Search
- 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. Edition 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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

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: Excercises in Intelligent Systems in Finance   Course key: [25762p]

Lecturers: Detlef Seese
Credit points (CP): 4   **Hours per week:** 3
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / **Examinations**
see German version

Prerequisites
see German version

Conditions
see German version

Learning Outcomes
see German version

Content
see German version

Complementary literature
Literature will be announced in the first meeting.

Remarks
see German version

Course: IT Complexity in Practice   **Course key: [25764]**

Lecturers: Kreidler
Credit points (CP): 3   **Hours per week:** 1/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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), introducing 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: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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: Web Service Engineering   Course key: [25774]

Lecturers: Christian Zirpins
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / **Examinations**
The assessment consists of an oral exam (20 min) (following §4(2), 2 SPO).

Prerequisites
None.

Conditions
The course might be combined with the lectures "Applied Informatics II - IT Systems for e-Commerce" and "Service-Oriented Computing 1".

Learning Outcomes
Students will acquire a deep and systematic understanding of service-oriented software systems and their embedding in organizations. Equipped with practical and research-based knowledge, they will be enabled to engineer state-of-art service-oriented applications with Web technologies and gain a broad understanding of tools and methodologies for their own work.

Content
The lecture "Web Service Engineering" covers technical and organizational aspects with respect to the development of modern service-oriented software as socio-technical systems in enterprises and Web environments. It introduces background, state-of-technology and emerging trends of methods, tools and processes for application development with Web services. The topics of the lecture include e.g.:
● Web service foundations and base technologies
● Service-oriented software and enterprise architectures (SOA)
● SOA life cycle and development processes
● Analysis and requirements engineering for SOA
● Service-oriented design and modeling
● Construction and testing of Web service applications
● Web service development tools
● Trends: e.g. development with service mashups / cloud services

Media
Slides in PDF-format will be provided via the course webpages.

Basic literature
Compulsory literature will be announced in the course.

Remarks
This course will be offered from summer term 2009 on.

Course: Management of IT-Projects   Course key: [25784]

Lecturers: Roland Schätzle
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students know the terminology of IT project management and typical used methods for planning, handling and controlling. They are able to use methods appropiate to current project phases and project contexts and they know how to consider organisational and social impact factors.

Content
The lecture deals with the general framework, impact factors and methods for planning, handling, and controlling of IT projects. Especially following topics are addressed:
- project environment
- project organisation
- project planning including the following items:
    - plan of the project structure
    - flow chart
    - project schedule
    - plan of resources

- effort estimation
- project infrastructur
- project controlling
- risk management
- feasibility studies
- decision processes, conduct of negotiations, time management.

Media
Slides, access to internet resources.

Basic literature
- B. Hindel, K. Hörmann, M. Müller, J. Schmied. Basiswissen Software-Projektmanagement. dpunkt.verlag 2004
- Project Management Institute Standards Committee. A Guide to the Project Management Body of Knowledge (PMBoK guide). Project Management Institute. Four Campus Boulevard. Newton Square. PA 190733299. U.S.A.

Further literature is given in each lecture individually.

Course: Enterprise Architecture Management   Course key: [25786]

Lecturers: Thomas Wolf
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / **Examinations**
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students understand the connection between enterprise strategy, business processes and business objects and IT architecture; they know methods to depict these connections and how they can be developed based on each other.

Content
The following topics will be covered: components of enterprise architecture, enterprise strategy including methods to develop strategies, business process (re)engineering, methods to implement changes within enterprises (management of change)

Media
Slides, access to internet resources.

Basic literature
- Nolan, R., Croson, D.: Creative Destruction: A Six-Stage Process for Transforming the Organization. Harvard Business School Press, Boston Mass. 1995
- Doppler, K., Lauterburg, Ch.: Change Management. Campus Verlag 1997
- Jacobson, I.: The Object Advantage, Business Process Reengineering with Object Technology. Addison-Wesley Publishing Company, Wokingham England 1994
- Keller, G., Teufel, Th.: SAP R/3 prozessorientiert anwenden. Addison Wesley 1998
- Österle, H.: Business Engineering Bd. 1 und 2. Springer Verlag, Berlin 1995

Course: Strategic Management of Information Technology   Course key: [25788]

Lecturers: Thomas Wolf
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students know the outer frame of IT in an enterprise and know which functions IT has within an enterprise. They unterstand the organization and the content of these functions.

Content
The following topics will be covered: strategic planing of ICT, architecture of ICT, overall planning of ICT, outsourcing, operation and controlling of ICT.

Media
Slides, internet resources

Basic literature
- Nolan, R., Croson, D.: Creative Destruction: A Six-Stage Process for Transforming the Organization. Harvard Business School Press, Boston Mass. 1995
- Heinrich, L. J., Burgholzer, P.: Informationsmanagement, Planung, Überwachung, Steuerung d. Inform.-Infrastruktur. Oldenbourg, München 1990
- Nolan, R.: Managing the crises in data processing. Harvard Business Review, Vol. 57, Nr. 2 1979
- Österle, H. et al.: Unternehmensführung und Informationssystem. Teubner, Stuttgart 1992
- Thome, R.: Wirtschaftliche Informationsverarbeitung. Verlag Franz Vahlen, München 1990

Course: Capability maturity models for software and systems engineering   Course key: [25790]

Lecturers: Ralf Kneuper
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students master the basics of capability maturity models, oversee the whole process in project management and development processes according to CMMI and SPICE. They know how to use capability maturity models for quality assurance.

Content
Capability maturity models like CMMI and SPICE are an important tool for assessing and improving software development. A significantly increasing number of companies use these models in their own approach to improve their development and to demonstrate a certain minimum quality and effective external presentation. This is the case in Germany, especially in the automotive industry, but also many other industries.

Preliminary Structure of the lecture:
1. Introduction and Overview, motivation
2. Project management according to CMMI
3. Development processes according to CMMI
4. Process management and supporting processes according toCMMI
5. Differences between SPICE and CMMI
6. Introduction of capability maturity models
7. Assessments and Appraisals
8. Costs and benefits of capability maturity models

Media
Slides, access to internet resources.

Basic literature
Literature is given in each lecture individually.

Course: Practical Seminar Knowledge Discovery   Course key: [25810]

Lecturers: Rudi Studer
Credit points (CP): 4   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
None.

Conditions
Lecture "Knowledge Discovery" recommended.

Learning Outcomes
Independent preparation and presentation of a seminar topic from the fields of knowledge discovery or text mining adhering to scientific standards. In case of a practical course, additionally, example implementation and/or experiments.

Content
The seminar/practical course will cover topics in the field of Knowledge Discovery. Each term, the seminar will cover a different specialization field, e.g.:

- Text Mining,
- Ontology Learning and Information Extraction,
- Inductive Logic Programming,
- Learning with Background Knowledge.

The topics are usually arranged as a seminar talk + practical work to be acknowledged as seminar/practical course. In individual cases, this course can also be acknowledged just as seminar (without practical work).
Details will be announced every semester.

Media
Slides.

Basic literature

- Christopher Manning and Hinrich Schütze. Foundations of Statistical NLP, MIT Press, 1999.
- Tom Mitchell, Machine Learning, McGraw Hill, 1997.
- Ricardo Baeza-Yates and Berthier Ribeiro-Neto, Modern Information Retrieval, Addison-Wesley, 1999.
- James Allen. Natural Language Understanding, 2nd edition.

Complementary literature
None.

Course: Lab Class Web Services   Course key: [25820]

Lecturers: Stefan Tai, Rudi Studer, Gerhard Satzger, Christian Zirpins
Credit points (CP): 4   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations
The assessment of this course is according to §4(2), 3 of the Prüfungsordnung für Informationswirtschaft in form of an examination of the written seminar thesis, a presentation and a project. The final mark is based on the examination of the written seminar thesis and the project but can be upgraded or downgraded according to the quality of the presentation.

Prerequisites
The lecture "Service-oriented Computing 1" is recommeded.

Conditions
None.

Learning Outcomes
Students will acquire the technical expertise to apply service-oriented platforms and tools. Thereby, they will be enabled to develop practical solutions for concrete problems of constructing service-oriented IT infrastructure for provision of electronic services over the Internet.

Content
The "Praktikum (lab class) Web Services" provides a practical introduction to fundamental Web service technologies and their application to support service value networks on the Internet. Based on concrete application scenarios for Web-based business service networks, the class focuses on the development of software solutions for specific aspects of service-oriented IT-infrastructure. This includes the complete development lifecycle of a large-scale software project and its implementation in small project teams.

Basic literature
For introduction, the following books are recommended:
● M. P. Papazoglou. Web Services: Principles and Technology. Pearson, 2007.
● G. Alonso, F. Casati, H. Kuno, and V. Machira ju. Web Services - Concepts, Architec-tures and Applications. Springer, 2004.
Specific literature will be announced in the course.

Course: Special Topics of Knowledge Management   Course key: [25860sem]

Lecturers: Rudi Studer
Credit points (CP): 5   **Hours per week:** 2/1
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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: Strategic Management and Organization [TVWL4BWLUO2] (S. 37), Strategic Corporate Management and Organization [TVWL4BWLUO1] (S. 38)

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: Strategic Management and Organization [TVWL4BWLUO2] (S. 37), Strategic Corporate Management and Organization [TVWL4BWLUO1] (S. 38)

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: Organization Theory   Course key: [25904]

Lecturers: Hagen Lindstädt
Credit points (CP): 6   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Strategic Corporate Management and Organization [TVWL4BWLUO1] (S. 38)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The participants are made familiar with mostly classical principles of economic organisational theory and institutional economics. This includes transaction cost theory and agency-theory approaches, models for the function and design of organisational information and decision-making systems, transfer price models to coordinate the exchange of goals and services within companies, models on incentive systems and relative performance tournaments as well as selected OR optimisation approaches to designing organisational structures. The course therefore lays the basis for a deeper understanding of the advanced literature on this key economic area.

Content
- Basic considerations and institution-economic principles of organisational theory
- Transfer prices and internal market-price relationships
- Design and coordination without conflicting objectives
- Organisation under asymmetric information and conflicting objectives: agency theory principles

Media
Folien.

Basic literature
- Laux, H.; Liermann, F.: Grundlagen der Organisation. Springer, 5. Aufl. Berlin 2003.
- Milgrom, P.; Roberts, J.: Economics, Organization and Management. Prentice Hall, Englewoods Cliffs 1992.

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: Strategic Management and Organization [TVWL4BWLUO2] (S. 37)

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: Modeling Strategic Decision Making

Course key: [25908]

Lecturers: Hagen Lindstädt
Credit points (CP): 6   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Strategic Corporate Management and Organization [TVWL4BWLUO1] (S. 38)

Learning Control / Examinations

Prerequisites
None.

Conditions
Following § 17, 3 of „Prüfungsordnung Informationswirtschaft" a seminar of this module has to be chosen and completed.

Learning Outcomes
Starting from the basic model of economic decision theory, fundamental decision principles and calculi for multi-attribute decisions in certain and uncertain conditions up to subjective expected utility theory and the economic assessment of information are described. To confront numerous infringements by decision-makers against principles and axioms of this calculus, in addition non-expected utility calculi and advanced models for decisions by economic agents are discussed; these are especially important for management decisions.

Content
   • Principles of strategic management decisions
   • Basic economic decision models
   • Economic assessment of information
   • Limits of the basic models and advanced concepts
   • Advanced models: individual decisions with uncertainty and vague information

Media
Slides.

Basic literature
   • Eisenführ, F.; Weber, M.: *Rationales Entscheiden*. Springer, 4. Aufl. Berlin 2002.
   • Laux, H.: *Entscheidungstheorie*. Springer, 5. Aufl. Berlin 2003.
   • Lindstädt, H: *Entscheidungskalküle jenseits des subjektiven Erwartungsnutzens*. In: Zeitschrift für betriebswirtschaftliche Forschung 56 (September 2004), S. 495– 519.

Course: Value-Based Instruments of Corporate Strategy   Course key: [25912]

Lecturers: Ulrich Pidun, Michael Wolff
Credit points (CP): 4   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Strategic Corporate Management and Organization [TVWL4BWLUO1] (S. 38)

Learning Control / Examinations

Prerequisites
None.

Conditions
none.

Learning Outcomes
The course follows two learning objectives. Firstly, the course participants are presented with the key concepts and models on which the current approaches of value-based management are based in theory and practice. Secondly the course participants should be enabled to transfer the concepts presented to real situations. In order to achieve these learning objectives the connection to classical strategy development instruments is discussed first. Then the various value levers and the concepts of value-based corporate management are presented. This includes both external aspects (such as valuing acquisitions) as well as internal ones ("integrated value management") by value-based corporate management.

Content
  • Strategy development in corporate groups
  • Growth as a strategic value lever
  • Strategic valuation of acquisitions
  • Introduction to value management
  • Integrated value-based corporate management
  • Downsides of multi-business corporations

Media
Slides.

Basic literature
  • Brealy, R.A./Myers, S.C. (2000): Principles of Corporate Finance
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 [TVWL4SEM] (S. 94)

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: Seminar: Management and Organization   Course key: [25916]

Lecturers: Hagen Lindstädt
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [TVWL4SEM] (S. 94)

Learning Control / Examinations

Prerequisites
Completion of all 1st an 2nd year modules of the Bachelor Program or Admission to the Master Program.

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: Planning and Management of Industrial Plants

Course key: [25952]

Lecturers: Frank Schultmann, n.n.
Credit points (CP): 5.5 **Hours per week:** 2/2
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Industrial Production II [TVWL4BWLIIP2] (S. 55)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
The course covers all steps from the Planning of industrial production plants, the estimation of investments and costs for plants and equipment and the factory´s layout planning. Further topics are the determination of the optimal capacity under economic and technical aspects and with regard to the maintenance and control of the plant and the equipment. Ecological aspects are covered throughout the lecture, but especially with regard to the retirement and disposal of plants and equipment. The aim of the course is to give a broad overview on the practical problems encountered in nowadays industrial production planning on a strategic-tactic level. Special emphasis is put on the various interdependencies between the different disciplines and planning objectives. In order to show the practical relevance of the covered topics, a voluntary study trip will be offered.

Media
Media will be provided on the e-learning platform Ilias.

Basic literature
Will be announced in the lecture.

Course: Strategical Aspects of Energy   **Course key: [25958]**

Lecturers: Armin Ardone
Credit points (CP): 3.5   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Industrial Production II [TVWL4BWLIIP2] (S. 55), Energy Industry and Technology [TVWL4IIP5] (S. 59)

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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 II [TVWL4BWLIIP2] (S. 55), Basics of Liberalised Energy Markets [TVWL4IIP4] (S. 58)

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: Exhaust Emissions (VWL), Emissions into the Environment (ING)   Course key: [25962]

Lecturers: Ute Karl
Credit points (CP): 3.5   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Industrial Production II [TVWL4BWLIIP2] (S. 55)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: The Management of R&D Projects with Case Studies   Course key: [25963]

Lecturers: Helwig Schmied
Credit points (CP): 3.5   **Hours per week:** 2/2
Term: Winter-/Sommersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Industrial Production II [TVWL4BWLIIP2] (S. 55)

Learning Control / Examinations

Prerequisites
None.

Conditions
None

Learning Outcomes

Content
- Problems concerning the measurement of the productivity of the R&D system
- Methods for improving the productivity of the R&D system
- Planning of R&D projects with the help of the Communication Matrix-Methods for controlling R&D projects´ progress
- The marketing of scientific competencies
- The Communication Matrix as tool for the implementation of simultaneous engineering
- The communication between R&D, Production and Marketing
- Case studies

Basic literature
Helwig Schmied. R&D Management in Europe, Productivity, Performance, International Co-operation. Gabler Verlag, Wiesbaden, 1995.
Axel Gerhardt and Helwig Schmied. Externes Simultanes Engineering, Der neue Dialog zwischen Kunden und Lieferant. Springer-Verlag, Berlin, 1996.
Philip A. Rousel and Kamal N. Saad and Tamara J. Erickson. Third Generation R&D. Managing the Link to Corporate Strategy. Harvard Business School Press, Boston, Mass., 1991.

Course: Ergonomics I   **Course key: [25964]**

Lecturers: Peter Knauth
Credit points (CP): 3   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Industrial Ergonomics [TVWL4BWLIIP1] (S. 56)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Ergonomics I   **Course key: [25964]**

Course: Ergonomics II

Course key: [25965]

Lecturers: Dorothee Karl
Credit points (CP): 3 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Industrial Ergonomics [TVWL4BWLIIP1] (S. 56)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Industrial Studies of Time and Motion   Course key: [25967]

Lecturers: Simone Dürrschnabel
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Industrial Ergonomics [TVWL4BWLIIP1] (S. 56)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Social Relationships in Organisations   Course key: [25968]

Lecturers: Georg Kraus
Credit points (CP): 3   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Leadership / Change Management [TVWL4BWLUO3] (S. 57)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Development of Personnal and Organisation   Course key: [25969]

Lecturers: Jürgen Weisheit
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Leadership / Change Management [TVWL4BWLUO3] (S. 57)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Human Resource Management I   Course key: [25972]

Lecturers: Artur Wollert
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Leadership / Change Management [TVWL4BWLUO3] (S. 57)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Human Resource Management II   Course key: [25973]

Lecturers: Artur Wollert
Credit points (CP): 3   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Leadership / Change Management [TVWL4BWLUO3] (S. 57)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Changes in th Working World   Course key: [25988]

Lecturers: Sonia Hornberger
Credit points (CP): 3   **Hours per week:** 2
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Industrial Ergonomics [TVWL4BWLIIP1] (S. 56)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Material flow analysis and life cycle assessment　　　Course key: [25995]

Lecturers: Liselotte Schebek
Credit points (CP): 3.5　**Hours per week:** 2/0
Term: Wintersemester　**Level:** 3
Teaching language: Deutsch
Part of the modules: Industrial Production II [TVWL4BWLIIP2] (S. 55)

Learning Control / Examinations
individual examen at the end of term and part of the final examen

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Materials – in the sense of raw materials taken from nature – represent the physical basis of the economy and the human society in general. At the same time, global environmental problems, e. g., the greenhouse effect, as well as economic problems, e.g., the availability and the price development of raw materials, are directly linked to the increasing use of specific materials like fossil carbon resources or metals. Hence, for the development of solution strategies, the understanding of material flow systems of the techno-sphere, i. e. the environment made by humans, is essential. The lecture is an introduction into basic system theory and modelling techniques of material flow analysis. On this basis, the methodology of the Life Cycle Assessment (LCA) is then presented, which comprises material flows and their environmental effects throughout the entire life cycle of production, use and disposal of products. For decision-makers in economy and policy, LCA serves as an instrument of analysis in order to compare the different possibilities of the design of products, technologies and services. In this lecture, the structure and particular modules of the Life Cycle Assessment are presented in detail. Furthermore, the applications of the Life Cycle Assessment in the context of decision support are explained, in particular within the context of development of innovative technologies. Recent developments of the Life Cycle Costing and the Social LCA will also be considered.

Course: Basics of Liberalised Energy Markets   Course key: [25998]

Lecturers: Wolf Fichtner
Credit points (CP): 3.5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Basics of Liberalised Energy Markets [TVWL4IIP4] (S. 58)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Technological Change in Energy Industry   **Course key: [26000]**

Lecturers: Martin Wietschel
Credit points (CP): 3   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Energy Industry and Technology [TVWL4IIP5] (S. 59)

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
Keine.

Conditions
Keine.

Learning Outcomes

Content

Course: Heat Economy   Course key: [26001]

Lecturers: Wolf Fichtner
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Energy Industry and Technology [TVWL4IIP5] (S. 59)

Learning Control / **Examinations**
The assessment consists of a wirtten exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Energy Systems Analysis   **Course key: [26002]**

Lecturers: Dominik Möst
Credit points (CP): 3   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Energy Industry and Technology [TVWL4IIP5] (S. 59)

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Energy and Environment

Course key: [26003]

Lecturers: Ute Karl, n.n.
Credit points (CP): 5 **Hours per week:** 2/1
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Environmental Economics [TVWL4VWL5] (S. 23), Energy Industry and Technology [TVWL4IIP5] (S. 59)

Learning Control / **Examinations**
The assessment consists of a written exam.

Prerequisites
Keine.

Conditions
None.

Learning Outcomes

Content

Course: Energy Trade and Risk Management   Course key: [26020]

Lecturers: Kai Hufendiek
Credit points (CP): 3.5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Basics of Liberalised Energy Markets [TVWL4IIP4] (S. 58)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Gas-Markets   Course key: [26022]

Lecturers: Wolf Fichtner
Credit points (CP): 3   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Basics of Liberalised Energy Markets [TVWL4IIP4] (S. 58)

Learning Control / **Examinations**
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Simulation Game in Energy Economics   Course key: [26025]

Lecturers: Wolf Fichtner
Credit points (CP): 3   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Basics of Liberalised Energy Markets [TVWL4IIP4] (S. 58)

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Monetary Theory   Course key: [26100]

Lecturers: Malte Krüger
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Money and Payment [TVWL4VWL3] (S. 21)

Learning Control / **Examinations**

Prerequisites
None.

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 [TVWL4SEM] (S. 94)

Learning Control / **Examinations**

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Regulation   Course key: [26206]

Lecturers: Andreas Kopp
Credit points (CP): 4   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Network Economics [TVWL4VWL4] (S. 22)

Learning Control / **Examinations**

Prerequisites
It is recommended to have attended the courses *Economics I: Microeconomics* [25012] and *Economic Policy* [26280] beforehand.

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: Network Economics [TVWL4VWL4] (S. 22)

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: Money and Payment [TVWL4VWL3] (S. 21)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Economic integration in Europe   **Course key: [26257]**

Lecturers: Jan Kowalski
Credit points (CP): 4   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Economic Policy [TVWL4VWL6] (S. 24)

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 [TVWL4SEM] (S. 94)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content

Course: Economics of Innovation   Course key: [26272]

Lecturers: Hariolf Grupp
Credit points (CP): 6   **Hours per week:** 2/2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Innovation and Technical Change [TVWL4VWL1] (S. 19), Economic Policy [TVWL4VWL6] (S. 24)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course *Innovation* [26274] of the Bachelor programme beforehand.

Conditions
None.

Learning Outcomes

Content

Course: Economic Policy   Course key: [26280]

Lecturers: Axel Schaffer
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Economic Policy [TVWL4VWL6] (S. 24)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Managing New Technologies   Course key: [26291]

Lecturers: Thomas Reiß
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Innovation and Technical Change [TVWL4VWL1] (S. 19)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
New technologies can contribute substantially to the international competitiveness of different industrial sectors. This course provides the necessary knowledge for understanding how industrial enterprises and policy-makers are dealing with the challenge to realise in time the potentials of new technologies and to use them most efficiently. Key tasks of the management of new technologies will be practised.

Content
The course provides an overview of the international development of a selected number of key technologies such as biotechnology, nanotechnology, neurotechnologies, converging technologies. Methods for monitoring new technologies including foresight approaches will be presented and the economic and social impacts of new technologies will be discussed.

Media
Slides.

Basic literature
  • Hausschildt/Salomo: Innovationsmanagement; Borchert et al.: Innovations- und Technologiemanagement;
  • Specht/Möhrle; Gabler Lexikon Technologiemanagement

Course: Insurance Statistics   Course key: [26303]

Lecturers: Christian Hipp
Credit points (CP): 9   **Hours per week:** 4/2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Insurance Statistics [TVWL4BWLFBV8] (S. 41)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Life and Pensions   Course key: [26310]

Lecturers: Christian Hipp, Vogt, Besserer
Credit points (CP): 4.5   **Hours per week:** 3
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Applications of Actuarial Sciences I (BWL) [TVWL4BWLFBV4] (S. 39), Applications of Actuarial Sciences II (BWL) [TVWL4BWLFBV5] (S. 40)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Reinsurance   Course key: [26312]

Lecturers: Christian Hipp, Stöckbauer
Credit points (CP): 4.5   **Hours per week:** 4
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Applications of Actuarial Sciences I (BWL) [TVWL4BWLFBV4] (S. 39), Applications of Actuarial Sciences II (BWL) [TVWL4BWLFBV5] (S. 40)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Insurance Optimisation   Course key: [26316]

Lecturers: Christian Hipp
Credit points (CP): 4.5   **Hours per week:** 3
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Applications of Actuarial Sciences I (BWL) [TVWL4BWLFBV4] (S. 39), Applications of Actuarial Sciences II (BWL) [TVWL4BWLFBV5] (S. 40)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Insurance Accounting   Course key: [26320]

Lecturers: Ute Werner, Ludwig
Credit points (CP): 4,5   **Hours per week:** 3
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Insurance Management I [TVWL4BWLFBV6] (S. 44)

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 I [TVWL4BWLFBV6] (S. 44)

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: Insurance Production   Course key: [26324]

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 I [TVWL4BWLFBV6] (S. 44)

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: Operational Risk Management I [TVWL4BWLFBV9] (S. 42)

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: Service Management   Course key: [26327]

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 I [TVWL4BWLFBV6] (S. 44)

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: Multidisciplinary Risk Research   Course key: [26328]

Lecturers: Ute Werner
Credit points (CP): 4,5   **Hours per week:** 3/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Operational Risk Management II [TVWL4BWLFBV10] (S. 43)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
Getting an overview of the various theoretical, empirical and methodological approaches used in risk research. Learning to assess disciplinary perspectives and approaches. Detailed examination of at least one theoretical and one methodological approach by the analysis of case studies.

Content
The course consists of two chapters:
In the theoretical part risk concepts of various disciplines will be discussed as well as categorisations of risk (e.g. technical or natural origin) and of risk carriers. Based on empirical research, processes of risk perception, risk assessment, and risk taking – at the individual, institutional, and global level - are described and explained.
The methodological part of the course deals with the hazard research, approaches for identification and mapping of risks and their accumulations, as well as with safety culture research. Using empirical studies, survey methods regarding risk perception and risk assessment will be discussed. Specific problems in the context of intercultural research will be considered too.

Basic literature

- U. Werner, C. Lechtenbörger. Risikoanalyse & Risikomanagement: Ein aktueller Sachstand der Risikoforschung. Arbeitspapier 2004
- Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen (WBGU). Welt im Wandel: Strategien zur Bewältigung globaler Umweltrisiken. Jahresgutachten 1998, http://www.wbgu_jg1998.html.
- R. Löfstedt, L. Frewer. Risk and Modern Society, London.
- http://www.bevoelkerungsschutz.ch
- M. Nippa. Risikoverhalten von Managern bei strategischen Unternehmensentscheidungen – eine erste Annäherung. 1999.

Course: Insurance Risk Management   Course key: [26335]

Lecturers: Ute Werner, Maser
Credit points (CP): 2,5   **Hours per week:** 2
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Insurance Management II [TVWL4BWLFBV7] (S. 45)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Risk Controlling in Insurance Groups   Course key: [26336]

Lecturers: Ute Werner, Müller
Credit points (CP): 2   **Hours per week:** 1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Insurance Management II [TVWL4BWLFBV7] (S. 45)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Saving Societies   Course key: [26340]

Lecturers: Christian Hipp, N.N.
Credit points (CP): 4,5 **Hours per week:** 3/0
Term: Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Applications of Actuarial Sciences I (BWL) [TVWL4BWLFBV4] (S. 39), Applications of Actuarial Sciences II (BWL) [TVWL4BWLFBV5] (S. 40)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Remarks
This lecture is irregularly not offered in summer 2009.

Course: Current Issues in the Insurance Industry   **Course key: [26350]**

Lecturers: Ute Werner, Heilmann
Credit points (CP): 2.5   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Insurance Management II [TVWL4BWLFBV7] (S. 45)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: International Risk Transfer   Course key: [26353]

Lecturers: Wolfgang Schwehr
Credit points (CP): 2,5   **Hours per week:** 2/0
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Operational Risk Management I [TVWL4BWLFBV9] (S.)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes
Becoming acquainted with the various possibilities of international risk transfer.

Content
How are the costs of potential major damages financed and covered on a global scale? Traditionally, direct insurers and, especially, reinsurers are conducting a global business, Lloyd´s of London is a turntable for international risks, and global industrial enterprises are establishing captives for self insurance. In addition to this, capital markets and insurance markets are developing innovative approaches to cover risks, which were hard to insure in the past (e.g. weather risk). The lecture will elucidate the functioning and the background of these different possibilities of international risk transfer.

Basic literature
- K. Geratewohl. Rückversicherung: Grundlagen und Praxis Band 1-2.
- Brühwiler/ Stahlmann/ Gottschling. Innovative Risikofinanzierung - Neue Wege im Risk Management.
- Becker/ Bracht. Katastrophen- und Wetterderivate.

Course: Risk Management of Microfinance and Private Households   Course key: [26354]

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: Operational Risk Management II [TVWL4BWLFBV10] (S. 43)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
Becoming acquainted with starting points for analysing the special risk situation of private households and micro enterprises; learning to synchonize various risk coping instruments, identifying risks of microfinance products and learning to design innovative microfinance products.

Content
The course consists of two interlocking parts:
In the first part the socio-economic framework as well as the goals and strategies of private-sector risk management are discussed, with an emphasis on insurance decisions. In the second part the issue of small enterpreneural entities and their specific risk related problems in covering their financial requirements is addressed. Typically their size and other specific characteristics lead to high risks for financial services institutions. After an introduction to the economic principles of microfinance, the institutions working in this sector are presented as well as innovative credit-, savings-, and insurance products (which are often combined), and we´ll discuss approaches for performance measurement from the perspectives of customers, suppliers, and investors.

Basic literature

- H.-U. Vollenweider. *Risikobewältigung in Familie und Haushalt - eine sicherheitsökonomische Studie.* 1986.
- P. Zweifel, R. Eisen. Versicherungsökonomie. 2003
- J. Ledgerwood, I. Johnson, J.M. Severino. *Microfinance Handbook: An Institutional and Financial Perspective.* 2001.
- B.M. de Aghion, J. Morduch. *The* Economics of Microfinance.2005.

Complementary literature
This course is offered irregularly. For further information, see: http://insurance.fbv.uni-karlsruhe.de

Course: Public Sector Risk Management   Course key: [26355]

Lecturers: Reinhard Mechler
Credit points (CP): 2,5   **Hours per week:** 2/0
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Operational Risk Management I [TVWL4BWLFBV9] (S. 42), Operational Risk Management II [TV-WL4BWLFBV10] (S. 43)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
In additin to theoretical and methodological principles of risk research, operative risk management by various institutions and the corresponding characteristics of risk transfer are discussed in this course. As public households often act as "risk carriers of last resort", i.e. carry risks that other institutions don´t prepare for, their risk management becomes increasingly important on an economic, social und political level.

Content
1. Risk concepts, risk management and the role of the public sector
2. Quantitative and qualitative methods of risk management
3. Problem areas of public sector risk management
· Natural catastrophes
· Climate change
· Aging and social insurance
· Large-scale projects
· Terrorism

Basic literature
P. Bernstein. Against the Gods. Wiley, New York.
M. Fone / P. Young. Public Sector Risk Management, Butterworth Heinemann, Oxford
B. Flyvbjerg / N. Bruzelius / W. Rothengatter. Megaprojects and Risk: An Anatomy of Ambition. Cambridge University Press, Cambridge 2003.
A. Schick / H. Polackova Brixi. Government at Risk. World Bank and Oxford University Press, Washington DC 2004

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 I [TVWL4BWLFBV6] (S. 44), Insurance Management II [TVWL4BWLFBV7] (S. 45)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Project Work in Risk Research   **Course key: [26393]**

Lecturers: Ute Werner
Credit points (CP): 4.5   **Hours per week:** 3
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Operational Risk Management II [TVWL4BWLFBV10] (S. 43)

Learning Control / **Examinations**

Prerequisites
Willingness to work through literature beforehand in order to understand the topic better.

Conditions
None.

Learning Outcomes

Content

Course: Risk Communication   Course key: [26395]

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: Operational Risk Management I [TVWL4BWLFBV9] (S.)

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: 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 [TVWL4SEM] (S. 94)

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: Principles of Information Engineering and Management   Course key: [26450]

Lecturers: Christof Weinhardt, Jan Kraemer
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Information Engineering [TVWL4BWLISM7] (S. 52), Information and Market Engineering [TVWL4BWLIW1] (S. 53), Service Engineering [TVWL4BWLIW2] (S. 54)

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
The students should be able to understand and analyze the central role of information as an economic good, a production factor, and a competitive factor in today´s societies. Students are supposed to be able to identify, evaluate, price, and market information goods with the help of the concepts and methods taught in the lecture. Furthermore, students learn basic aspects about information systems and information flows within and between organizations, as well as their design parameters.

Content
Information plays a central role in today´s society. The resulting structures and processes cannot be explained intuitively with traditional approaches of economic theory. Formerly, information has only been implicitly treated as a production factor; its role as a competitive factor used to be neglected. In order to deal with the central role of information we developed the concept of the "information lifecycle" that systematizes all phases from information generation to information distribution. The state of the art of economic theory is presented across this information lifecycle within the lectures.
The content of the lecture is deepened in accompanying lecture courses.

Media
   • PowerPoint slides
   • eLearning Platform Ilias

Basic literature
   1. Shapiro, C., Varian, H., Information Rules: A Strategic Guide to the Network Economy. Harvard Business School Press 1999.
   2. Stahlknecht, P., Hasenkamp, U., Einführung in die Wirtschaftsinformatik. Springer Verlag 7. Auflage, 1999.
   3. Wirth, H., Electronic Business. Gabler Verlag 2001.

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: Service Management [TVWL4BWLISM6] (S. 51)

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: Market Engineering [TVWL4BWLISM3] (S. 48), Information and Market Engineering [TVWL4BWLIW1] (S. 53)

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: Business Models in the Internet: Planning and Implementation   Course key: [26456]

Lecturers: Christof Weinhardt, Carsten Holtmann
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Business & Service Engineering [TVWL4BWLISM4] (S. 49), Service Engineering [TVWL4BWLIW2] (S. 54)

Learning Control / Examinations
50% of the mark is based on the written mid term examination, 10% is based on assignments during the exercises, and 40% of the mark is based on a project work, which includes a term paper and a presentation.

Prerequisites
None.

Conditions
None

Learning Outcomes
This lecture aims at providing the students with knowledge about the lifecycles of web applications starting from economic concepts to the commercialization within the WWW. Students will learn, on the one hand, to analyze, design and to implement web applications and, on the other hand, to develop sustaining business models. This involves the analysis of the online users´ requirements and expectations, the assessment of the potential innovative web applications have, the study of web technologies allowing students to gauge their applicability.

Content
The emergence of internet economy has resulted in an accelerated evolution of commerce models in eBusiness. Early adopters have experimented with a variety of new business models, technologies and application designs. At the same time, there has been a growing demand for new standards to facilitate the exchange of information, catalogue content and transactions between buyers and sellers. But the true understanding of how to bring buyers and sellers together is still widely missing, leading to multiple cases of costly missed investments. This course focuses on the design and implementation of successful business models for eBusiness applications for the World Wide Web (WWW), imparting the basic knowledge for building successful eBusiness applications. We consider not only technical foundations of eBusiness applications but also economical aspects. In small groups, students develop and implement an eBusiness model that is eventually discussed with a representative from the venture capitalist industry.

Media
Powerpoint presentations, recorded lecture available on the internet, (if circumstances allow videoconferencing)

Basic literature
Will be announced within the course.

Course: Market Engineering: Information in Institutions   Course key: [26460]

Lecturers: Christof Weinhardt, Jan Kraemer
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Applied Strategic Decisions [TVWL4VWL2] (S. 20), Electronic Markets [TVWL4BWLISM2] (S. 47), Market Engineering [TVWL4BWLISM3] (S. 48), Information & Markets [TVWL4BWLISM5] (S. 50), Information Engineering [TVWL4BWLISM7] (S. 52), Information and Market Engineering [TVWL4BWLIW1] (S. 53), Service Engineering [TVWL4BWLIW2] (S. 54)

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
The students

  • understand the role of an economist as an engineer to design markets
  • compare different markets and market mechanisms to evaluate their efficiency
  • apply game theoretic modelling and mechanism design as well as auction theory for interdisciplinary evaluation.

Content
The ongoing advancements in information technology have revolutionized traditional business processes and given rise to electronic marketplaces. In contrast to physical marketplaces, electronic markets do not just evolve, but must be carefully designed, implemented and monitored and evaluated. Moreover electronic markets demand open and flexible platforms as well as adequate standards and information services. Future Market Engineers must therefore be able to consider the economic, legal and technological dimension of markets simultaneously. The lecture focuses on the discussion of (1) Microstructure, (2) IT infrastructure, and (3) Business Structure of electronic markets. Hence, students will be taught the economic incentives that a market can impose on market participants, development models for implementing markets, and business models for the application of markets.

Media

  • Powerpoint,
  • eLearning Platform Ilias

Basic literature

  1. Roth, A., The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics. Econometrica 70(4): 1341-1378, 2002.
  2. Weinhardt, C. ,Holtmann, C., Neumann, D., Market Engineering. Wirtschaftsinformatik, 2003.
  3. Wolfstetter, E., Topics in Microeconomics - Industrial Organization, Auctions, and Incentives. Cambridge, Cambridge University Press, 1999.
  4. Smith, V. „Theory, Experiments and Economics", The Journal of Economic Perspectives,Vol. 3, No. 1, 151-69 1989

Course: Communications Economics   Course key: [26462]

Lecturers: Stefan Seifert, Jan Kraemer
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Information & Markets [TVWL4BWLISM5] (S. 50), Information Engineering [TVWL4BWLISM7] (S. 52)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
The lecture builds upon basic knowledge in game theory and particularly Industrial Organization. Students will be taught basic economic principles of the communications industry, in particular the economics of networks and digital goods. Moreover, provided with the toolsets of game-theory and industrial economics, students are taught how to formalize and then assess complex aspects of current regulatory and economic issues. Furthermore, students will be introduced to scientific work by reading and discussing supplementary research articles.

Content
The communications industry has become one of the key drivers for economic development and, following the liberalization of the sector in the late twentieth century, it has undergone a tremendous transformation. The lecture "Communications Economics" will not only provide students with a basic economic understanding of the communications sector by laying out the economic principles of network industries and digital goods, but also seeks to investigate business strategies, such as handset subsidies, flat rate tariffs or bundle pricing and regulatory challenges, such as Digital Convergence, call termination fees, separation of network infrastructure and services and efficient distribution of spectrum licenses.

Media
- Powerpoint,
- eLearning Platform Ilias

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: Service Management [TVWL4BWLISM6] (S. 51)

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: Service Innovation   Course key: [26468]

Lecturers: Gerhard Satzger, Andreas Neus
Credit points (CP): 5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Business & Service Engineering [TVWL4BWLISM4] (S. 49), Service Management [TVWL4BWLISM6] (S. 51)

Learning Control / Examinations
The assessment consists of an 1h written exam following §4(2), 3 SPO and of assignments during the course as an "Erfolgskontrolle anderer Art" following §4(2), 3 SPO.

Prerequisites
None.

Conditions
None.

Learning Outcomes
Understand the difference between innovation and invention, and that disruptive effects can be fast and wide-reaching.
Know examples for innovation via processes, organization, business models; see how service and product innovation differ
Understand the link between risk and innovation; be aware of obstacles to innovation and know how to address them

Content
While innovation in manufacturing or agriculture can leverage a considerable body of research, experience and best practice, innovation in services has not reached the same level of maturity. In practice, while many organizations have a well-understood process for innovating in the product business, innovating in services is often still a fuzzy and complex undertaking. In this lecture we will discuss the state of research, compare product and service innovation, understand how innovation diffusion works, examine case studies of service innovation, open vs. closed innovation, how to leverage user communities to drive innovation and understand obstacles, and enablersand how to manage, incentivize and foster service innovation.

Basic literature
- Barras, Richard (1986) Towards a theory of innovation in services. Research Policy 15, 161-173
- Hauschildt, Jürgen und Salomo, Sören (2007) Innovationsmanagement. 4. Auflage, München: Vahlen.
- von Hippel, Erich (2007) Horizontal innovation networks - by and for users. Industrial and Corporate Change, 16:2
- Sundbo, Jon (1997) Management of Innovation in Services. The Service Industries Journal, Vo. 17, No. 3, pp. 432-455

Complementary literature
- Benkler, Yochai (2006) The Wealth of Networks: How Social Production Transforms Markets and Freedom. Yale University Press. (Online: http://www.benkler.org)
- Christensen, Clayton M. (2003) The Innovator's Dilemma, Harper Collins.
- Kanerva, M.; Hollanders, H. & Arundel, A. (2006) TrendChart Report: Can we Measure and Compare Innovation in Services?
- von Hippel, Erich (2005) Democratizing Innovation. The MIT Press, Cambridge, MA. (Online: http://web.mit.edu/evhippel/www/books
- Howells, Jeremy & Tether, Bruce (2004) Innovation in Services: Issues at Stake and Trends. Commission of the European Communities, Brussels/Luxembourg. (Online: http://www.isi.fhg.de/publ/downloads/isi04b25/inno-3.pdf)
- Miles, I. (2008) Patterns of innovation in service industries. IBM Systems Journal, Vol. 47, No 1
- Morison, Eltling E. (1966) Gunfire at Sea: A Case Study of Innovation. In: Men, Machines and Modern Times. The MIT Press, pp. 17-44.

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 [TVWL4SEM] (S. 94)

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: Business and IT Service Management

Course key: [26484]

Lecturers: Gerhard Satzger
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Englisch
Part of the modules: Service Management [TVWL4BWLISM6] (S. 51)

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).

Prerequisites

None.

Conditions

None.

Learning Outcomes

Students understand the importance of "servitization" for organizations, the challenges for the management of service-oriented enterprises and the interdependence of business and IT services.
Students learn standard concepts and methods of service-oriented management and are able to apply them in practical case studies.
Student get familiar with current research and tools and are able to critically evaluate them.
Students practice to communicate in English and to work on solutions in teams.

Content

The rapid development of information and communication technology transforms many enterprises towards service-oriented structures: with new digital services, new business models and SOA-based process structures within larger service networks. Thus, strategic and operative management of service-oriented enterprises increasingly gains importance. In this course, we want to systematically acquire relevant know-how and apply this to real word examples. Particular focus will be on the interdependence of business, IT and legal aspects.
The course will be taught in English. It should provide ample opportunity for active participation of students. The course will integrate presentations of experts from business practice as well as a comprehensive case study ("en bloc" for 1.5 days) in which students will actively work on the strategic service-oriented shift of an enterprise.

Basic literature

Fitzsimmons J./Fitzsimmons, M., Service Management, Operations, Strategy and Information Technology, 6. ed., 2007
Maister, David H., Managing The Professional Service Firm, 1997
Teboul, J. , Service is Front Stage: Positioning services for value advantage, 2006

Course: Electronic Markets (Principles)   Course key: [26502]

Lecturers: Andreas Geyer-Schulz
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electronic Markets [TVWL4BWLISM2] (S. 47), Information and Market Engineering [TVWL4BWLIW1] (S. 53)

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
None.

Learning Outcomes
The student

- has an overview about the different organizational form and their efficiency,
- names coodination methods and motivation methods and evaluates them regarding their efficiency,
- knows, in the context of markets as a coordination form, the conditions under which markets are not efficient (market failure),
- knows phenomena like adverse selections and moral hazard,
- names reasons for these phenomena and develops methods to encounter them.

Content
What are the conditions that make electronic markets develop? The first part of the lecture treats the selection of the type of organization as an optimization of transaction costs. The second part includes the efficiency of electronic markets (price, information and allocation efficiency) as well as reasons for market failure.

Besides a centralistic approach, markets can be used for decentral coordination of plans and activities. Hereby, optimality can be garuanteed, if the coordination problem has no design or innovation characteristics. Viewed from a bottom-up perspective, given the coordination problem, it is possible to answer questions regarding the centralization or decentralization, the design of coordination mechanisms, and the coherence of business strategies. The last part of the lecture consists of motivation problems, like bounded rationality and information assymetries (private information and moral hazard) and the development of incentive systems.

Basic literature
Kapitel "Management Control Systems, Dezentralisierung, interne Märkte und Transferpreise" (S. 745-773) in Charles T. Horngren, Srikant M. Datar, and George Foster. Cost Accounting: A Managerial Emphasis. Prentice Hall, Upper Saddle River, 11 edition, 2003.
Paul Milgrom and John Roberts. Economics, Organisation and Management. Prentice Hall, 1 edition, 1992.

Complementary literature
Michael Dell and Catherine Fredman. Direct from DELL: Strategies that Revollutionized an Industry. Harper Collins Publisher, London, 1999.

Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. Educational and scientific recommender systems: Designing the information channels of the virtual university. International Journal of Engineering Education, 17(2):153 – 163, 2001.

Friedrich A. Hayek. The use of knowledge in society. The American Economic Review, 35(4):519 – 530, Sep 1945.

Norbert Hochheimer. Das kleine QM-Lexikon. Wiley-UCH, Weinheim, 2002.

Adam Smith. An Inquiry into the Nature and Causes of the Wealth of Nations, volume II. 1976.

Course: Electronic Markets: Institutions and Market Mechanisms   Course key: [26504]

Lecturers: Andreas Geyer-Schulz
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Electronic Markets [TVWL4BWLISM2] (S. 47), Information and Market Engineering [TVWL4BWLIW1] (S. 53)

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
None.

Learning Outcomes
See german version.

Content
The lecture treats the design of electronic markets. Therefore, interdependencies of market organization, market mechanisms, institutions and products are described and theoretical foundations are lectured.
The topics include:

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

Basic literature
Thomas Copeland and Fred Weston. Financial Theory and Corporate Policy. Addison-Wesley, Reading, 3 edition, 1988.
Philip Kotler. Marketing Management – analysis, planning, and control, Fourth Edition. Prentice Hall, 1980.
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Complementary literature
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Roger B. Myerson. Optimal auction design. Mathematics of Operations Research, 6(1):58–73, Feb 1981.

Noam Nisan. Bidding and allocation in combinatorial auctions. In Proceedings of the 2nd ACM conference on Electronic commerce, pages 1–12. ACM, 2000.

Maureen O´Hara and George S. Oldfield. The microeconomics of market making. The Journal of Financial and Quantitative Analysis, 21(4):361–376, Dec 1986.

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Michael H. Rothkopf, Aleksandar Pekec, and Ronald M. Harstad. Computationally Manageable Combinational Auctions. Management Science, 44(8):1131 – 1147, 1998.

Thomas Sandholm. An algorithm for optimal winner determination in combinatorial auctions. In Thomas Dean, editor, Proceedings of the Sixteenth International Joint Conference on Artificial Intelligence, pages 542–547, San Francisco, CA, USA, 1999. Morgan Kaufmann Publishers Inc.

Julia Schindler. Auctions with interdependent valuations : theoretical and empirical analysis, in particular of internet auctions. PhD thesis, WU-Wien, Augasse 2–6, A-1090 Wien, 2003.

Martin Shubik. Market Structure and Behavior. Harvard University Press, Cambridge, 1980.

Christoph Schlueter and Michael J. Shaw. A strategic framework for developing electronic commerce. IEEE Internet Computing, 1(6):20–28, 11/ 1997.

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Andrew B. Whinston, Dale O. Stahl, and Soon-Yong Choi. The Economics of Electronic Commerce. MacMillan Publishing Company, Indianapolis, 1997.

Fredrik Ygge. Improving the computational efficiency of combinatorial auction algorithms. Technical report, Enersearch AB, Gothenburg, Schweden, 1999.

Course: Personalization and Recommender Systems   Course key: [26506]

Lecturers: Andreas Geyer-Schulz
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Advanced CRM [TVWL4BWLISM1] (S. 46), Business & Service Engineering [TVWL4BWLISM4] (S. 49), Service Engineering [TVWL4BWLIW2] (S. 54)

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
Keine

Learning Outcomes
Ziel der Vorlesung ist es, den Studenten einen vertieften Einblick in die Möglichkeiten der Personalisierung insbesondere von Internet-basierten Anwendungen zu geben. Ein Schwerpunkt liegt auf Empfehlungsdiensten. Es werden konkrete Verfahrung aus den Bereichen der Statistik, des Data Mining und der Spieltheorie vorgestellt, die zur Berechnung von Empfehlungen basierend auf verschiedenen Datengrundlagen dienen. Hierbei geht es sowohl um den Umgang mit expliziten Empfehlungen von Nutzern einer Internet-basierten Anwendung als auch um die Erfassung und Auswertung impliziter Daten wie Kaufhistorien. Weiterhin behandelt werden die Evaluation von Recommender Systemen und der Vergleich mit anderen Systemen in diesem sehr forschungsnahen Gebiet.

Content
Vorlesung: Die Vorlesung gibt zunächst einen Überblick über allgemeine Aspekte und Konzepte der Personalisierung und deren Bedeutung und Möglichkeiten für Dienstleister wie für Kunden. Danach werden verschiedene Kategorien von Empfehlungssystemen vorgestellt, sowohl aus dem Bereich expliziter Empfehlungsdienste wie Rezensionen als auch im Bereich impliziter Dienste, die Empfehlungen basierend auf gesammelten Daten über Produkte und/oder Kunden berechnen. Die Vorlesung gewährt ebenfalls einen detaillierten Einblick in die aktuell in der Abteilung laufende Forschung im Bereich der Recommendersysteme.

Media
Folien, Aufzeichnung der Vorlesung im Internet.

Basic literature
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Rakesh Agrawal and Ramakrishnan Srikant. Fast algorithms for mining association rules. In Proceedings of the 20th Very Large Databases Conference, Santiago, Chile, pages 487 – 499, Sep 1994.
Asim Ansari, Skander Essegaier, and Rajeev Kohli. Internet recommendation systems. Journal of Marketing Research, 37:363 – 375, Aug 2000.
Christopher Avery, Paul Resnick, and Richard Zweckhauser. The market for evaluations. American Economic Review, 89(3):564 – 584, 1999.

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Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. A customer purchase incidence model applied to recommender services. In R. Kohavi et al., editor, Proceedings of the WebKDD 2001 – Mining log data across all customer touchpoints, volume 2356 of Lecture Notes in Artificial Intelligence LNAI, pages 25–47, Berlin, 2002. ACM, Springer-Verlag.

Jon M. Kleinberg. Authoritative sources in a hyperlinked environment. JACM, 46(5):604–632, sep 1999.

Joseph Konstan, Bradley Miller, David Maltz, Jonathan Herlocker, Lee Gordon, and John Riedl. Grouplens: Applying Collaborative Filtering to Usernet News. Communications of the ACM, 40(3):77 – 87, Mar 1997.

Paul Resnick, Neophytos Iacovou, Peter Bergstrom, and John Riedl. Grouplens: An open architecture for collaborative filtering of netnews. In Proceedings of the conference on Computer supported cooperative work, pages 175 – 186. ACM Press, 1994.

Complementary literature

Antoinette Alexander. The return of hardware: A necessary evil? Accounting Technology, 15(8):46 – 49, Sep 1999.

Christopher Avery and Richard Zeckhauser. Recommender systems for evaluating computer messages. Communications of the ACM, 40(3):88 – 89, Mar 1997.

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Hans Hermann Bock. Automatische Klassifikation. Vandenhoeck und Ruprecht, Göttingen, 1974.

Andrew S.C. Ehrenberg. Repeat-Buying: Facts, Theory and Applications. Charles Griffin & Company Ltd, London, 2 edition, 1988.

Wolfgang Gaul, Andreas Geyer-Schulz, Michael Hahsler, and Lars Schmidt-Thieme. eMarketing mittels Recommendersystemen. Marketing ZFP, 24:47 – 55, 2002.

Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. myvu: a next generation recommender system based on observed consumer behavior and interactive evolutionary algorithms. In W. Gaul, O. Opitz, and M. Schader, editors, Data Analysis – Scientific Modeling and Practical Applications, volume 18 of Studies in Classification, Data Analysis and Knowledge Organization, pages 447 – 457, Heidelberg, Germany, 2000. Springer.

Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. Educational and scientific recommender systems: Designing the information channels of the virtual university. International Journal of Engineering Education, 17(2):153 – 163, 2001.

Mark-Edward Grey. Recommendersysteme auf Basis linearer Regression, 2004.

John A. Hartigan. Clustering Algorithms. John Wiley and Sons, New York, 1975.

Kevin Kelly. New Rules for the New Economy: 10 Radical Strategies for a Connected World. Viking, 1998.

Taek-Hun Kim, Young-Suk Ryu, Seok-In Park, and Sung-Bong Yang. An improved recommendation algorithm in collaborative filtering. In K. Bauknecht, A. Min Tjoa, and G. Quirchmayr, editors, E-Commerce and Web Technologies, Third International Conference, Aix-en-Provence, France, volume 2455 of Lecture Notes in Computer Science, pages 254–261, Berlin, Sep 2002. Springer-Verlag.

Ron Kohavi, Brij Masand, Myra Spiliopoulou, and Jaideep Srivastava. Web mining. Data Mining and Knowledge Discovery, 6:5 – 8, 2002.

G. S. Maddala. Introduction to Econometrics. John Wiley, Chichester, 3 edition, 2001.

Andreas Mild and Martin Natter. Collaborative filtering or regression models for Internet recommendation systems? Journal of Targeting, Measurement and Analysis for Marketing, 10(4):304 – 313, Jan 2002.

Andreas Mild and Thomas Reutterer. An improved collaborative filtering approach for predicting cross-category purchases based on binary market basket data. Journal of Retailing & Consumer Services, 10(3):123–133, may 2003.

Paul Resnick and Hal R. Varian. Recommender Systems. Communications of the ACM, 40(3):56 – 58, Mar 1997.

Badrul M. Sarwar, Joseph A. Konstan, Al Borchers, Jon Herlocker, Brad Miller, and John Riedl. Using filtering agents to improve prediction quality in the grouplens research collaborative filtering system. In Proceedings of ACM Conference on Computer-Supported Cooperative Work, Social Filtering, Social Influences, pages 345 – 354, New York, 1998. ACM Press.

J. Ben Schafer, Joseph Konstan, and Jon Riedl. Recommender Systems in E-commerce. In Proceedings of the 1st ACM conference on Electronic commerce, pages 158 – 166, Denver, Colorado, USA, Nov 1999. ACM.

Upendra Shardanand and Patti Maes. Social information filtering: Algorithms for automating "word of mouth". In Proceedings of ACM SIGCHI, volume 1 of Papers: Using the Information of Others, pages 210 – 217. ACM, 1995.

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: Advanced CRM [TVWL4BWLISM1] (S. 46), Service Engineering [TVWL4BWLIW2] (S. 54)

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: Master Seminar in Information Engineering and Management Course key: [26510]

Lecturers: Andreas Geyer-Schulz
Credit points (CP): 3   **Hours per week:** 2
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Seminar Module [TVWL4SEM] (S. 94)

Learning Control / Examinations

Prerequisites
None.

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 of 15-20 pages in a structured scientific manner.
- to communicate his results in a presentation with discussion afterwards.

Content
The seminar servers on one hand to improve the scientific working skills. On the other hand, the student should work intensively on a given topic and develop a scientific work, that is based on a profound literature research.

Course: Social Network Analysis in CRM   Course key: [26518]

Lecturers: Bettina Hoser
Credit points (CP): 4,5   **Hours per week:** 2/1
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Advanced CRM [TVWL4BWLISM1] (S. 46), Service Engineering [TVWL4BWLIW2] (S. 54)

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

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Learning Outcomes

The objectives of this course are to give students an introduction to and overview of social network analysis as a methodological approach for analysis in different areas of business administration, especially customer relationship management. Theory as well as application of social network analysis will be discussed. Students will learn how to perform and interpret analysis results.

Content

The trend to view economic and social structures as networks allows to anlysze these networks by well established and new methods from mathematics, business administration, sociology and phyiscs. The goal of these analyses are to understand different aspects of these networks: In organizations (internal Marketing): Here networks analysis kann help to detect whether hierarchies and official structures are 'alive' or if so called 'hidden organizations' have evolved. In addition such results can reveal ineffient procedures or structures within an organization. In CRM: Within analytical CRM the concept of customer value can be enriched by enclosing the network value that customer offers to the company (Customer Network Value). In Marketing: To successfully implement a virale marketing strategy the knowledge of the structure of customer networks is essential. The dynamics on these networks are relevant if one wants to use these networks for marketing purposes. Internetstructure: For information services, such as e.g. search engines, ithe identification of relevant nodes and clusters is a the major service profided and thus relevant for business success.

The analysis should identify the relevant (central) nodes in a network, find cliques, describe their connections and, if relevant, describe alos the direction of information flow within the network. To achieve this different methods will be discussed during the course.

Media

Folien

Basic literature

Mark Chignell Behnak Yaltaghian. Re-ranking search results using network analysis: A case study with google. In IBM Centre for Advanced Studies Conference, editor, Proceedings of the 2002 conference of the Centre for Advanced Studies on Collaborative research, page 14, 2002.

J.R. Hanson D. Krackhardt. Informal networks: The company behind the chart. Harvard Business Review, 71(4):104–110, Jul 1993.

Pedro Domingos and Matt Richardson. Mining the network value of customers. In ACM Press, editor, Proceedings of the seventh ACM SIGKDD international conference on Knowledge discovery and data mining, pages 57–66, 2001.

M.G. Everett and S.P. Borgatti. The centrality of groups and classes. Journal of Mathematical Sociology, 23(3):181–201, 1999.

Christian Grönroos. Service Management and Marketing : A Customer Relationship Management Approach. Wiley, Chicester, 2 edition, 2000.

Sabrina Helm. Viral marketing: Establishing customer relationships by word-of-mouse. Electronic Markets, 10(3):158–161, Jul 2000.

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Leo Katz. A new status index derived from sociometric analysis. Psychometrika, 18(1):39–43, Mar 1953.

Jon M. Kleinberg. Authoritative sources in a hyperlinked environment. JACM, 46(5):604–632, sep 1999.

Barry Wellman Laura Garton. Social impacts of electronic mail in organizations: A review of research literature. Communication Yearbook, 18:434–453, 1995.

Carl D. Meyer. Matrix Analysis and Applied Linear Algebra. Society for Industrial and Applied Mathematics, Philadelphia, 2000.

Andrew Richards, William ; Seary. Eigen analysis of networks. Journal of Social Structure, 1(2), Feb 2000.

Pacey C. Foster Stepehen P. Borgatti. The network paradigm in organizational research: A review and typology. Journal of Management, 29(6):991–1013, 2003.

Mani R. Subramani and Balaji Rajagopalan. Knowledge-sharing and influence in online social networks via viral marketing. Communications of the ACM, 46(12):300–307, Dec 2003.

Stanley Wasserman and Katherine Faust. Social Network Analysis: Methods and Applications, volume 8 of Structural Analysis in the Social Sciences. Cambridge University Press, Cambridge, 1 edition, 1999.

Barry Wellman. Computer networks as social networks. Science, 293:2031–2034, Sep 2001.

Complementary literature

Bruce Bower. Scientists hope to download some insight into online interactions. ScienceNews Online, 161(18):http://www.sciencenews.org/20020 30.04.2003, May 2002.

N. Dunford and J.T. Schwartz. Linear Operators, Spectral Theory, Self Adjoint Operators in Hilbert Space (Wiley Classics Library). Wiley, 1988.

Kurt Endl. Analytische Geometrie und Lineare Algebra. VDI Verlag, 1985.

Daniel Gross. It´s who you know. really. The New York Times, 22nd Aug. 2004, Aug 2004.

R Guimera, L Danon, A Diaz-Guilera, F Giralt, and A Arenas. Self-similar community structure in organisations. oai:arXiv.org:cond-mat/0211498 (2003–04–29), Nov 2002.

Robert A. Hanneman. Free introductory textbook on social network analysis. online.

Daniel Hoppe. Customer lifetime value. Master´s thesis, Universität Karlsruhe (TH), Informationsdienste und Elektronische Märkte, Universität Karlsruhe (TH), D-76128 Karlsruhe, Feb 2003.

Simone Kimpeler, Castulus Kolo, and Anke Matuschewski. Erfolgsfaktoren wissensbasierter Unternehmensnetzwerke. Wissens-management, (2):52 – 55, 2001.

Ned Kock. Benefits for virtual organizations from distributed groups. Communications of the ACM, 43(11):107–112, Nov 2000.

Kathleen M. Carley Manju K. Ahuja, Dennis F. Galletta. Individual centrality and performance in virtual r&d groups: An empirical study. Management Science, 49(1):21–38, Jan 2003.

Andrew Parker Rob Cross. The Hidden Power of Social Networks: Understanding How Work Really Gets Done in Organizations. Harvard Business School Press, Jun 2004.

R. Smith. Instant Messaging as a Scale-free Network. e-publication: www.arXiv.org, cond-mat(0206378), 19 2002.

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: F1 (Finance) [TVWL4BWLFBV1] (S. 28), F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

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: Asset Pricing   Course key: [26555]

Lecturers: Marliese Uhrig-Homburg, Martin E. Ruckes
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: F1 (Finance) [TVWL4BWLFBV1] (S. 28), F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Fixed Income Securities

Course key: [26560]

Lecturers: Marliese Uhrig-Homburg
Credit points (CP): 4,5 **Hours per week:** 2/1
Term: Wintersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / **Examinations**
The assessment consists of a written exam following §4, Abs. 2, 1.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The Student should ...

Content

Basic literature
- Bühler, W., Uhrig-Homburg, M., Rendite und Renditestruktur am Rentenmarkt, in Obst/Hintner, Geld-, Bank- und Börsenwesen - Handbuch des Finanzsystems, (2000), S.298-337.
- Sundaresan, S., Fixed Income Markets and Their Derivatives, South-Western College Publising, (1997).

Complementary literature
- Hull, J., Options, Futures, & Other Derivatives, Prentice Hall, Sixth Edition, (2005).

Course: Credit Risk   Course key: [26565]

Lecturers: Marliese Uhrig-Homburg
Credit points (CP): 4.5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / Examinations
The assessment consists of a written exam following §4, Abs. 2, 1.

Prerequisites
None.

Conditions
None.

Learning Outcomes
The Student should ...

Content

Basic literature
- Lando, D., Credit risk modeling: Theory and Applications, Princeton Univ. Press, (2004).
- Uhrig-Homburg, M., Fremdkapitalkosten, Bonitätsrisiken und optimale Kapitalstruktur, Beiträge zur betriebswirtschaftlichen Forschung 92, Gabler Verlag, (2001).

Complementary literature
- Bluhm, C., Overbeck, L., Wagner, C. , Introduction to Credit Risk Modelling, Chapman & Hall, CRC Financial Mathematics Series, (2002).
- Duffie, D., Singleton, K.J., Credit Risk: Pricing, Measurement and Management, Princeton Series of Finance, Prentice Hall, (2003).

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: F2 (Finance) [TVWL4BWLFBV2] (S. 29), F2&F3 (Finance) [TVWL4BWLFBV3] (S. 30)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Cloud Computing   Course key: [CC]

Lecturers: Stefan Tai, Wilfried Juling, Kunze
Credit points (CP): 5   **Hours per week:** 2/1
Term: Wintersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Remarks
This course will be offered from winter term 2009/2010 on.

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
Keine.

Learning Outcomes

Content

Course: Excercises in Complexity Management   Course key: [KompManp]

Lecturers: Detlef Seese
Credit points (CP): 4   **Hours per week:** 3
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Special Topics of Complexity Management   Course key: [KompMansp]

Lecturers: Detlef Seese
Credit points (CP): 5   **Hours per week:** 2/1
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / **Examinations**
see German part

Prerequisites
see German part

Conditions
None.

Learning Outcomes
see German part

Content
see German part

Remarks
see German part

Course: Computing Lab Information Systems   Course key: [PraBI]

Lecturers: Andreas Oberweis, Detlef Seese, Wolffried Stucky, Rudi Studer
Credit points (CP): 4   **Hours per week:** 2
Term: Winter-/Sommersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations
The assessment of this course are practical work, presentations and a written thesis according to §4(2), 3 of the examination regulation. Practical work, presentations and a written thesis are weighted according to the course.

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students are able to

- implement a prototype at the computer based on the given topic.
- write the thesis 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 learn during the course.
- present results of the research in written form generally found in scientific publications.

Content
The lab intensifies and extends specific topis which are discussed within corresponding lectures. Knowledge of these lecture topics is an advantage but not a precondition.

Media
Slides, Access to internet resources

Basic literature
Literature will be given individually.

Remarks
The title of this course is a generic one. Specific titles and the topics of offered seminars will be announced before the start of a semester in the internet at http://www.aifb.uni-karlsruhe.de/Lehre

Course: Special Topics of Enterprise Information Systems   Course key: [SBI]

Lecturers: Andreas Oberweis, Wolffried Stucky
Credit points (CP): 5   **Hours per week:** 2/1
Term: Winter-/Sommersemester   **Level:** ???
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

Learning Control / Examinations
The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students are able to handle methods and instruments in a subarea of "Enterprise Information Systems" and to show the capability to be innovative with regard to applied methods.

The course will impart knowledge of basics and methods in the context of their application in practice. Based on the understanding of the imparted concepts and methods students will be able to choose the appropriate methods and apply them in the right way for problems they will face in their professional life.

Students will be enabled to find arguments for solution approaches and to argue for them.

Content
This course is a placeholder for special courses that are offered in an irregular sequence and cover selected topics in the field of enterprise information systems. These topics include in particular the design and the management of database systems, the computer-support of business processes and strategic planning of information systems and their organization.

Basic literature
Will be announced at the beginning of the course.

Course: Special Topics of Software- and Systemsengineering   Course key: [SSEsp]

Lecturers: Andreas Oberweis, Detlef Seese
Credit points (CP): 5   **Hours per week:** 2/1
Term: Winter-/Sommersemester   **Level:** 4
Teaching language: Deutsch
Part of the modules: Informatics [TVWL4INFO1] (S. 63), Emphasis in Informatics [TVWL4INFO2] (S. 65), Electives in Informatic [TVWL4INFO3] (S. 67)

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

Prerequisites
None.

Conditions
None.

Learning Outcomes
Students are able to handle methods and instruments in a subarea of "Software and Systems Engineering" and to show the capability to be innovative with regard to applied methods.

The course will impart knowledge of basics and methods in the context of their application in practice. Based on the understanding of the imparted concepts and methods students will be able to choose the appropriate methods and apply them in the right way for problems they will face in their professional life.

Students will be enabled to find arguments for solution approaches and to argue for them.

Content
This course is a placeholder for special courses that are offered in an irregular sequence and cover selected topics in the field of software and systems engineering.

Media
Slides, access to internet resources

Complementary literature
Will be announced at the beginning of the course.

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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* [WW3BWLFBV2] and to the Master modules *Applications of Actuarial Sciences I/II* [WW4BWLFBV4/5] and *Insurance Statistics* [TVWL4BWLFBV8]. 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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 in System Dynamics and Innovation   Course key: [SemIWW]

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SEM] (S. 94)

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 [TVWL4SOZ1] (S. 93)

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): 4   **Hours per week:** 2
Term: Winter-/Sommersemester   **Level:** 3
Teaching language: Deutsch
Part of the modules: Sociology [TVWL4SOZ1] (S. 93)

Learning Control / **Examinations**

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Course: Theoretical Sociology

Course key: [thSoz]

Lecturers: Gerd Nollmann, Pfadenhauer, Pfaff, Haupt, Grenz, Eisewicht
Credit points (CP): 2 **Hours per week:** 2
Term: Winter-/Sommersemester **Level:** 4
Teaching language: Deutsch
Part of the modules: Sociology [TVWL4SOZ1] (S. 93)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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Prüfungs- und Studienordnung der Universität Karlsruhe (TH) für den Masterstudiengang Technische Volkswirtschaftslehre

Aufgrund von § 34 Absatz 1 Satz 1 des Landeshochschulgesetzes (LHG) vom 1. Januar 2005 hat der Senat der Universität Karlsruhe (TH) am 26.02.2007 die folgende Studien- und Prüfungsordnung für den Masterstudiengang Technische Volkswirtschaftslehre beschlossen.

Der Rektor hat seine Zustimmung am 06.03.2007 erteilt.

In dieser Satzung ist 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 Masterprüfungsordnung regelt Studienablauf, Prüfungen und den Abschluss des Studiums im Masterstudiengang Technische Volkswirtschaftslehre an der Universität Karlsruhe (TH).

(2) Im Masterstudium sollen die im Bachelorstudium erworbenen wissenschaftlichen Qualifikationen weiter vertieft oder ergänzt werden. Der Studierende soll in der Lage sein, die wissenschaftlichen Erkenntnisse und Methoden selbstständig anzuwenden und ihre Bedeutung und Reichweite für die Lösung komplexer wissenschaftlicher und gesellschaftlicher Problemstellungen zu bewerten.

§ 2 Akademischer Grad

Aufgrund der bestandenen Masterprüfung wird der akademische Grad „Master of Science" (abgekürzt: „M.Sc.") für den Masterstudiengang Technische Volkswirtschaftslehre verliehen.

§ 3 Regelstudienzeit, Studienaufbau, Leistungspunkte

(1) Die Regelstudienzeit beträgt vier Semester. Sie umfasst Prüfungen und die Masterarbeit.

(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 § 16 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 120 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 Masterprüfung besteht aus einer Masterarbeit, 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 § 16 Absatz 2 Nr. 1 bis 6) 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 Masterarbeit 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 der Studierende in einem mit Technischer Volkswirtschaftslehre vergleichbaren oder einem verwandten Studiengang bereits eine Diplomvorprüfung, Diplomprüfung, Bachelor- oder Masterprüfung endgültig nicht bestanden hat, sich in einem Prüfungsverfahren befindet oder den Prüfungsanspruch in einem solchen Studiengang verloren hat.

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 § 14 Absatz 2 oder § 14 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 abzu-

nehmen 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 Masterzeugnis 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 Masterarbeit und die Modulteilprüfungen sind zur differenzierten Bewertung nur folgende Noten zugelassen:

1	=	1.0, 1.3	=	sehr gut
2	=	1.7, 2.0, 2.3	=	gut
3	=	2.7, 3.0, 3.3	=	befriedigend
4	=	3.7, 4.0	=	ausreichend
5	=	4.7, 5.0	=	nicht ausreichend

Diese Noten müssen in den Protokollen und in den Anlagen (Transcript of Records und Diploma Supplement) verwendet werden.

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(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 Masterarbeit, 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 § 12 nachträglich geltend gemacht werden.

(12) Die Gesamtnote der Masterprüfung, 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 Masterprüfung 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, Wiederholung von Prüfungen und Erfolgskontrollen

(1) 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.

(2) Studierende können eine nicht bestandene mündliche Prüfung (§ 4 Absatz 2 Nr. 2) einmal wiederholen.

(3) Wiederholungsprüfungen nach Absatz 1 und Absatz 2 müssen in Inhalt, Umfang und Form (mündlich oder schriftlich) der ersten entsprechen. Ausnahmen kann der Prüfungsausschuss auf Antrag zulassen. Fehlversuche an anderen Hochschulen sind anzurechnen.

(4) Die Wiederholung einer Erfolgskontrolle anderer Art (§ 4 Absatz 2 Nr. 3) wird im Modulhandbuch geregelt.

(5) 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 1 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.

(6) Die Wiederholung einer bestandenen Erfolgskontrolle ist nicht zulässig.

(7) Eine Fachprüfung ist nicht bestanden, wenn mindestens ein Modul des Faches nicht bestanden ist.

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(8) Die Masterarbeit kann bei einer Bewertung mit „nicht ausreichend" einmal wiederholt werden. Eine zweite Wiederholung der Masterarbeit ist ausgeschlossen.

(9) Ist gemäß § 34 Absatz 2 Satz 3 LHG die Masterprüfung bis zum Beginn der Vorlesungszeit des achten 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.

(10) Der Prüfungsanspruch erlischt endgültig, wenn mindestens einer der folgenden Gründe vorliegt:

1.   Der Prüfungsausschuss lehnt einen Antrag auf Fristverlängerung nach Absatz 9 ab.

2.   Die Masterarbeit 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 5 genehmigt wird. Dies gilt auch sinngemäß für die Masterarbeit.

§ 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 Masterarbeit 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 Masterarbeit kann nicht durch Elternzeit unterbrochen werden. Die gestellte Arbeit gilt als nicht vergeben. Nach Ablauf der Elternzeit erhält der Studierende ein neues Thema.

§ 11 Masterarbeit

(1) Voraussetzung für die Zulassung zur Masterarbeit ist, dass der Studierende sich in der Regel im 2. Studienjahr befindet und nicht mehr als vier der Fachprüfungen laut § 16 Absatz 2 Nr. 1 bis 6 noch nachzuweisen sind.

Vor Zulassung sind Betreuer, Thema und Anmeldedatum dem Prüfungsausschuss bekannt zu geben und im Falle einer Betreuung außerhalb der Fakultät für Wirtschaftswissenschaften durch den Prüfungsausschuss zu genehmigen.

Auf Antrag des Studierenden sorgt der Vorsitzende des Prüfungsausschusses dafür, dass der Studierende innerhalb von vier Wochen nach Antragstellung von einem Betreuer ein Thema für die Masterarbeit erhält. Die Ausgabe des Themas erfolgt in diesem Fall über den Vorsitzenden des Prüfungsausschusses.

(2) Thema, Aufgabenstellung und Umfang der Masterarbeit sind vom Betreuer so zu begrenzen, dass sie mit dem in Absatz 3 festgelegten Arbeitsaufwand bearbeitet werden kann.

(3) Der Masterarbeit werden 30 Leistungspunkte zugeordnet. Die empfohlene Bearbeitungsdauer beträgt sechs Monate. Die maximale Bearbeitungsdauer beträgt einschließlich einer Verlängerung neun Monate. Die Masterarbeit 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 Masterarbeit kann von jedem Prüfer nach § 14 Absatz 2 vergeben und betreut werden. Soll die Masterarbeit außerhalb der Fakultät angefertigt werden, so bedarf dies der Genehmigung des Prüfungsausschusses gemäß Absatz 1. Dem Studierenden ist Gelegenheit zu geben,

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für das Thema Vorschläge zu machen. Die Masterarbeit 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 Masterarbeit 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 Masterarbeit mit „nicht ausreichend" (5.0) bewertet.

(6) Der Zeitpunkt der Ausgabe des Themas der Masterarbeit und der Zeitpunkt der Abgabe der Masterarbeit 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 drei Monate verlängern. Wird die Masterarbeit 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 Masterarbeit 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 Masterarbeit fest. Der Bewertungszeitraum soll acht Wochen nicht überschreiten.

§ 12 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 Masterzeugnis 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.

§ 13 Prüfungsausschuss

(1) Für den Masterstudiengang Technische Volkswirtschaftslehre wird ein Prüfungsausschuss gebildet. Er besteht aus fünf stimmberechtigten Mitgliedern: vier Professoren, Juniorprofessoren, Hochschul- oder Privatdozenten, einem Vertreter der Gruppe der wissenschaftlichen Mitarbeiter nach § 10 Absatz 1 Satz 2 Nr. 2 LHG und einem Vertreter der Studierenden mit beratender Stimme. Die Amtszeit der nichtstudentischen Mitglieder beträgt zwei Jahre, die des studentischen Mitglieds ein Jahr.

(2) Der Vorsitzende, sein Stellvertreter, die weiteren Mitglieder des Prüfungsausschusses sowie deren Stellvertreter werden vom Fakultätsrat bestellt, die Mitglieder der Gruppe der wissenschaftlichen Mitarbeiter nach § 10 Absatz 1 Satz 2 Nr. 2 LHG und der Vertreter der Studierenden

auf Vorschlag der Mitglieder der jeweiligen Gruppe; Wiederbestellung ist möglich. Der Vorsitzende und dessen Stellvertreter müssen Professor oder Juniorprofessor sein. Der Vorsitzende des Prüfungsausschusses nimmt die laufenden Geschäfte wahr und wird durch ein Prüfungssekretariat unterstützt.

(3) Der Prüfungsausschuss regelt die Auslegung und die Umsetzung der Prüfungsordnung in die Prüfungspraxis der Fakultät. Er achtet darauf, dass die Bestimmungen der Prüfungsordnung eingehalten werden. Er berichtet regelmäßig dem Fakultätsrat über die Entwicklung der Prüfungen und Studienzeiten sowie über die Verteilung der Fach- und Gesamtnoten und gibt Anregungen zur Reform des Studienplans und der Prüfungsordnung.

(4) Der Prüfungsausschuss kann die Erledigung seiner Aufgaben in dringenden Angelegenheiten und für alle Regelfälle auf den Vorsitzenden des Prüfungsausschusses übertragen.

(5) Die Mitglieder des Prüfungsausschusses haben das Recht, an Prüfungen teilzunehmen. Die Mitglieder des Prüfungsausschusses, die Prüfer und die Beisitzenden unterliegen der Amtsverschwiegenheit. Sofern sie nicht im öffentlichen Dienst stehen, sind sie durch den Vorsitzenden zur Verschwiegenheit zu verpflichten.

(6) In Angelegenheiten des Prüfungsausschusses, die eine an einer anderen Fakultät zu absolvierende Prüfungsleistung betreffen, ist auf Antrag eines Mitgliedes des Prüfungsausschusses ein fachlich zuständiger und von der betroffenen Fakultät zu nennender Professor, Juniorprofessor, Hochschul- oder Privatdozent hinzuzuziehen. Er hat in diesem Punkt Stimmrecht.

(7) Belastende Entscheidungen des Prüfungsausschusses sind schriftlich mitzuteilen. Sie sind zu begründen und mit einer Rechtsbehelfsbelehrung zu versehen. Widersprüche gegen Entscheidungen des Prüfungsausschusses sind innerhalb eines Monats nach Zugang der Entscheidung schriftlich oder zur Niederschrift an den Prüfungsausschuss zu richten. Hilft der Prüfungsausschuss dem Widerspruch nicht ab, ist er zur Entscheidung dem für die Lehre zuständigen Mitglied des Rektorats vorzulegen.

§ 14 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 Masterarbeit 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.

§ 15 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.

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(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 Technische Volkswirtschaftslehre 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 Masterprüfung 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 Masterarbeit 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. Masterprüfung

§ 16 Umfang und Art der Masterprüfung

(1) Die Masterprüfung besteht aus den Fachprüfungen nach Absatz 2, einem Seminarmodul nach Absatz 3 sowie der Masterarbeit nach § 11.

(2) Es sind Fachprüfungen im Umfang von neun Modulen mit je neun Leistungspunkten abzulegen. Die Module verteilen sich wie folgt auf die Fächer:

1. Volkswirtschaftslehre: zwei Module im Umfang von je 9 Leistungspunkten,

2. Betriebswirtschaftslehre: ein Modul im Umfang von 9 Leistungspunkten,

3. Informatik: ein Modul im Umfang von 9 Leistungspunkten,

4. Operations Research: ein Modul im Umfang von 9 Leistungspunkten,

5. Wahlbereich: vier Module im Umfang von je 9 Leistungspunkten aus den Fächern Betriebswirtschaftslehre, Volkswirtschaftslehre, Statistik, Ingenieurwissenschaften/Naturwissenschaften, Recht und Soziologie. Hierbei dürfen pro Fach höchstens zwei Module gewählt werden. Zusätzlich darf auf die Fächer Recht und Soziologie in Summe höchstens ein Modul entfallen.

(3) 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.

(4) Die Module, die ihnen zugeordneten Lehrveranstaltungen und Leistungspunkte sowie die Zuordnung der Module zu Fächern sind im Studienplan oder im Modulhandbuch geregelt.

Studienplan oder Modulhandbuch können auch Mehrfachmodule definieren, die aus 18 Leistungspunkten (Doppelmodul) bzw. 27 Leistungspunkten (Dreifachmodul) bestehen und für Fachprüfungen nach 1. bis 6. 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.

(5) Im Studienplan oder Modulhandbuch können darüber hinaus inhaltliche Schwerpunkte definiert werden, denen Module zugeordnet werden können.

Legen die Studierenden ihre Fachprüfungen nach Absatz 2 und 3 in Modulen ab, die nach Art und Umfang den im Studienplan oder Modulhandbuch definierten Anforderungen an diese inhaltlichen Schwerpunkte entsprechen, und wird darüber hinaus die Masterarbeit diesem inhaltlichen Schwerpunkt zugeordnet, so wird der inhaltliche Schwerpunkt auf Antrag des Studierenden in das Diploma Supplement aufgenommen.

§ 17 Bestehen der Masterprüfung, Bildung der Gesamtnote

(1) Die Masterprüfung ist bestanden, wenn alle in § 16 genannten Prüfungsleistungen mindestens mit „ausreichend" bewertet wurden.

(2) Die Gesamtnote der Masterprüfung errechnet sich als ein mit Leistungspunkten gewichteter Notendurchschnitt. Dabei werden die Fachprüfungen nach § 16 Absatz 2, das Seminarmodul nach § 16 Absatz 3 und die Masterarbeit nach § 11 mit ihren Leistungspunkten gewichtet.

(3) Hat der Studierende die Masterarbeit mit der Note 1.0 und die Masterprüfung mit einem Durchschnitt von 1.1 oder besser abgeschlossen, so wird das Prädikat „mit Auszeichnung" (with distinction) verliehen.

§ 18 Masterzeugnis, Masterurkunde, Transcript of Records und Diploma Supplement

(1) Über die Masterprüfung wird nach Bewertung der letzten Prüfungsleistung eine Masterurkunde und ein Zeugnis erstellt. Die Ausfertigung von Masterurkunde und Zeugnis soll nicht später als sechs Wochen nach der Bewertung der letzten Prüfungsleistung erfolgen. Masterurkunde und Masterzeugnis werden in deutscher und englischer Sprache ausgestellt. Masterurkunde und Masterzeugnis tragen das Datum der letzten nachgewiesenen Prüfungsleistung. Sie werden dem Studierenden gleichzeitig ausgehändigt. In der Masterurkunde wird die Verleihung des akademischen Mastergrades beurkundet. Die Masterurkunde wird vom Rektor und vom Dekan unterzeichnet und mit dem Siegel der Universität versehen.

(2) Das Zeugnis enthält die in den Fachprüfungen, den Modulprüfungen sowie dem Seminarmodul und der Masterarbeit 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) sowie auf Antrag des Studierenden einen möglichen inhaltlichen Schwerpunkt gemäß § 16 Absatz 4.

(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 sowie

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bei entsprechendem Antrag des Studierenden zum möglichen inhaltlichen Schwerpunkt gemäß § 16 Absatz 4 deutlich erkennbar sein. Angerechnete Studienleistungen sind im Transcript of Records aufzunehmen.

(5) Die Masterurkunde, das Masterzeugnis und das Diploma Supplement einschließlich des Transcript of Records werden vom Studienbüro der Universität ausgestellt.

III. Schlussbestimmungen

§ 19 Bescheid über Nicht-Bestehen, Bescheinigung von Prüfungsleistungen

(1) Der Bescheid über die endgültig nicht bestandene Masterprüfung wird dem Studierenden durch den Prüfungsausschuss in schriftlicher Form erteilt. Der Bescheid ist mit einer Rechtsbehelfsbelehrung zu versehen.

(2) Hat der Studierende die Masterprüfung 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.

§ 20 Aberkennung des Mastergrads

(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 Masterprüfung 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 Masterprüfung 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 Masterurkunde einzuziehen, wenn die Masterprüfung 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 Grads richtet sich nach den gesetzlichen Vorschriften.

§ 21 Einsicht in die Prüfungsakten

(1) Nach Abschluss der Masterprüfung wird dem Studierenden auf Antrag innerhalb eines Jahres Einsicht in seine Masterarbeit, 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.

§ 22 In-Kraft-Treten

(1) Diese Studien- und Prüfungsordnung tritt am 1. Oktober 2007 in Kraft.

(2) Gleichzeitig tritt die Prüfungsordnung der Universität Karlsruhe (TH) für den Diplomstudiengang Technische Volkswirtschaftslehre vom 22. Dezember 1995, zuletzt geändert durch Satzung vom 17. September 1999 (Amtliche Bekanntmachung der Universität Karlsruhe (TH), Nr. 4 vom 9. März 2000) außer Kraft, behält jedoch ihre Gültigkeit bis zum 30. September 2013 für Prüflinge, die auf Grundlage der Prüfungsordnung der Universität Karlsruhe (TH) für den Studiengang Technische Volkswirtschaftslehre vom 22. Dezember 1995 ihr Studium an der Universität Karlsruhe (TH) aufgenommen haben. Über eine Fristverlängerung darüber hinaus entscheidet der Prüfungsausschuss auf Antrag des Studierenden.

Über einen Antrag an den Prüfungsausschuss können Studierende, die auf Grundlage der Prüfungsordnung der Universität Karlsruhe (TH) für den Studiengang Technische Volkswirtschaftslehre vom 22. Dezember 1995 ihr Studium an der Universität Karlsruhe (TH) aufgenommen haben, ihr Studium auf Grundlage dieser Prüfungsordnung fortsetzen. Der Prüfungsausschuss stellt dabei fest, ob und wie die bisher erbrachten Prüfungsleistungen in den neuen Studienplan integriert werden können und nach welchen Bedingungen das Studium nach einem Wechsel fortgeführt werden kann.

Karlsruhe, den 06.03.2007

Professor Dr. sc. tech. Horst Hippler
(Rektor)

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Aufbau des Masterstudiengangs Technische Volkswirtschaftslehre

Die Regelstudienzeit im Masterstudiengang Technische Volkswirtschaftslehre beträgt vier Semester. Im Masterstudium sollen die im Bachelorstudium erworbenen wissenschaftlichen Qualifikationen weiter vertieft oder ergänzt werden. Der Studierende soll in die Lage versetzt werden, die wissenschaftlichen Erkenntnisse und Methoden selbstständig anzuwenden und ihre Bedeutung und Reichweite bei der Lösung komplexer wissenschaftlicher und gesellschaftlicher Problemstellungen zu bearbeiten.

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.

Die folgende Abbildung zeigt die Fach- und Modulstruktur und die Zuordnung der Leistungspunkte zu den Fächern. Im Wahlbereich sind aus den angegebenen Fächern vier Module zu wählen, pro Fach maximal zwei Module und in den Fächern Recht und Soziologie in Summe maximal ein Modul.

Master										
	Pflichtmodule					Wahlpflichtmodule (4 aus 6)				
Semester	VWL	VWL	BWL	INFO	OR	Seminar + SQ	STAT	VWL	BWL	Recht oder Soziol	ING/ Naturw.
7.											
8.	9	9	9	9	9	6 + 3	9	9	9	9	9
9.											
10.	Masterarbeit : 30										
	Σ (6 Pflichtmodule + 4 Wahlpflichtmodule) : 90										
	Σ Master : 120										

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