Module Handbook
Business Engineering (M.Sc.)

Summer term 2009
Long version
13.03.2009
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### 6.2 General Modules

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- WI4SEM: Seminar Module
- WI4JURA1: Labor and Tax Law
- WI4JURA2: IT-Law
- WI4JURA3: Civil Law
- WI4SOZ1: Sociology

### 6.3 Law

- WI4JURA1: Labor and Tax Law
- WI4JURA2: IT-Law
- WI4JURA3: Civil Law

### 5.9 General Modules

- WI4INGAPL: Unscheduled Engineering Module
- WI4THESIS: Master Thesis
- WI4SEM: Seminar Module

### 5.8 Sociology

- WI4SOZ1: Sociology

### 5.7 Law

- WI4JURA1: Labor and Tax Law
- WI4JURA2: IT-Law
- WI4JURA3: Civil Law

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<td>Saving Societies</td>
<td>464</td>
</tr>
<tr>
<td>26350</td>
<td>Current Issues in the Insurance Industry</td>
<td>465</td>
</tr>
<tr>
<td>26353</td>
<td>International Risk Transfer</td>
<td>466</td>
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<td>26354</td>
<td>Risk Management of Microfinance and Private Households</td>
<td>467</td>
</tr>
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<td>26355</td>
<td>Public Sector Risk Management</td>
<td>468</td>
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<td>26360</td>
<td>Insurance Contract Law</td>
<td>469</td>
</tr>
<tr>
<td>26393</td>
<td>Project Work in Risk Research</td>
<td>470</td>
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<td>26395</td>
<td>Risk Communication</td>
<td>471</td>
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<tr>
<td>26420</td>
<td>Topics of Sustainable Management of Housing and Real Estate</td>
<td>472</td>
</tr>
<tr>
<td>26450</td>
<td>Principles of Information Engineering and Management</td>
<td>473</td>
</tr>
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<td>26452</td>
<td>Management of Business Networks</td>
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</tr>
<tr>
<td>26454</td>
<td>eFinance: Information Engineering and Management for Securities Trading</td>
<td>475</td>
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<td>26456</td>
<td>Business Models in the Internet: Planning and Implementation</td>
<td>476</td>
</tr>
<tr>
<td>26460</td>
<td>Market Engineering: Information in Institutions</td>
<td>477</td>
</tr>
<tr>
<td>26462</td>
<td>Communications Economics</td>
<td>478</td>
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<td>26466</td>
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<td>26468</td>
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</tr>
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<td>26470</td>
<td>Seminar Service Science, Management &amp; Engineering</td>
<td>481</td>
</tr>
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<td>26484</td>
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<td>482</td>
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<td>26502</td>
<td>Electronic Markets (Principles)</td>
<td>483</td>
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<td>26504</td>
<td>Electronic Markets: Institutions and Market Mechanisms</td>
<td>485</td>
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<td>26506</td>
<td>Personalization and Recommender Systems</td>
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<td>Customer Relationship Management</td>
<td>489</td>
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<td>26510</td>
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<td>26518</td>
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<td>26560</td>
<td>Fixed Income Securities</td>
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<td>Credit Risk</td>
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<td>International Finance</td>
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<tr>
<td>4070p</td>
<td>Geophysical Field Training Course</td>
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</tr>
<tr>
<td>CC</td>
<td>Cloud Computing</td>
<td>499</td>
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<tr>
<td>HoC1</td>
<td>Elective “Culture - Policy - Science - Technology”</td>
<td>500</td>
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<td>HoC2</td>
<td>Elective “Workshops for Competence and Creativity”</td>
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<td>HoC3</td>
<td>Elective Foreign Languages</td>
<td>502</td>
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<tr>
<td>HoC4</td>
<td>Elective “Tutor Programmes”</td>
<td>503</td>
</tr>
<tr>
<td>HoC5</td>
<td>Elective “Personal Fitness &amp; Emotional Competence”</td>
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<td>KompManp</td>
<td>Exercices in Complexity Management</td>
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<tr>
<td>KompMansp</td>
<td>Special Topics of Complexity Management</td>
<td>506</td>
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<tr>
<td>PraBI</td>
<td>Computing Lab Information Systems</td>
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<td>SB1</td>
<td>Special Topics of Enterprise Information Systems</td>
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<td>SSEsp</td>
<td>Special Topics of Software- and Systemsengineering</td>
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<tr>
<td>SemAlFB1</td>
<td>Seminar in Enterprise Information Systems</td>
<td>510</td>
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<td>SemAlFB2</td>
<td>Seminar Efficient Algorithms</td>
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<td>SemAlFB3</td>
<td>Seminar Complexity Management</td>
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<td>SemAlFB4</td>
<td>Seminar Knowledge Management</td>
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</tr>
<tr>
<td>SemFBV1</td>
<td>Seminar in Insurance Management</td>
<td>514</td>
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<td>SemFBV2</td>
<td>Seminar in Operational Risk Management</td>
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<td>SemFBV3</td>
<td>Seminar in Risk Theory and Actuarial Science</td>
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<td>SemiIP</td>
<td>Seminar in Ergonomics</td>
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<td>SemiIP2</td>
<td>Seminar in Industrial Production</td>
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<td>SemiIW</td>
<td>Seminar Information Engineering and Management</td>
<td>519</td>
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<td>SemiIWW</td>
<td>Seminar in System Dynamics and Innovation</td>
<td>520</td>
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<tr>
<td>SemWIOR1</td>
<td>Seminar Stochastic Models</td>
<td>521</td>
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<tr>
<td>SemWIOR2</td>
<td>Seminar Economic Theory</td>
<td>522</td>
</tr>
<tr>
<td>SemWIOR3</td>
<td>Seminar in Experimental Economics</td>
<td>523</td>
</tr>
<tr>
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<td>Course Title</td>
<td>Page</td>
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<tr>
<td>SemWIOR4</td>
<td>Seminar in Game and Decision Theory</td>
<td>524</td>
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<td>VLBGU</td>
<td>Laws concerning Traffic and Roads</td>
<td>526</td>
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<td>spezSoz</td>
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<tr>
<td>thSoz</td>
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<td>Appendix</td>
<td>Study- and Examination Regulation (06/03/2007, in German)</td>
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<td>Index</td>
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<td>545</td>
</tr>
</tbody>
</table>
1 Structure of the Master Programme in Business Engineering (M.Sc.)

The master programme in Business 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.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Pflichtprogramm</th>
<th>Wahlpflichtprogramm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BWL</td>
<td>Seminar + SQ</td>
</tr>
<tr>
<td>2</td>
<td>9 LP</td>
<td>6 + 3 LP</td>
</tr>
<tr>
<td>3</td>
<td>9 LP</td>
<td>9 LP</td>
</tr>
<tr>
<td>4</td>
<td>Masterarbeit 30 LP</td>
<td></td>
</tr>
</tbody>
</table>

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 two elective modules of the following disciplines: Business science, economics, informatics, operations research, engineering science, statistics, law and sociology. Thereby it is 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 Business 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 program 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.
<table>
<thead>
<tr>
<th>Art der Schlüsselqualifikation</th>
<th>Masterstudium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BWL</td>
</tr>
<tr>
<td>Basiskompetenzen (soft skills)</td>
<td></td>
</tr>
<tr>
<td>Teamarbeit, soziale Kommunikation und Kreativitätstechniken</td>
<td></td>
</tr>
<tr>
<td>Präsentationserstellung und -techniken</td>
<td></td>
</tr>
<tr>
<td>Logisches und systematisches Argumentieren und Schreiben</td>
<td></td>
</tr>
<tr>
<td>Strukturierte Problemlösung und Kommunikation</td>
<td></td>
</tr>
<tr>
<td>Praxisorientierung (enabling skills)</td>
<td></td>
</tr>
<tr>
<td>Handlungskompetenz im beruflichen Kontext</td>
<td></td>
</tr>
<tr>
<td>Kompetenzen im Projektmanagement</td>
<td></td>
</tr>
<tr>
<td>Betriebswirtschaftliche Grundkenntnisse</td>
<td></td>
</tr>
<tr>
<td>Englisch als Fachsprache</td>
<td></td>
</tr>
<tr>
<td>Orientierungswissen</td>
<td></td>
</tr>
<tr>
<td>Interdisziplinäres Wissen</td>
<td></td>
</tr>
<tr>
<td>Institutionelles Wissen über Wirtschafts- und Rechtssysteme</td>
<td></td>
</tr>
<tr>
<td>Wissen über internationale Organisationen</td>
<td></td>
</tr>
<tr>
<td>Medien, Technik und Innovation</td>
<td></td>
</tr>
</tbody>
</table>

(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**

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2 (Finance) [WI4BWLFBV2] (S. 24)</td>
<td>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.</td>
</tr>
<tr>
<td>F2&amp;F3 (Finance) [WI4BWLFBV3] (S. 25)</td>
<td>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.</td>
</tr>
<tr>
<td>Applications of Actuarial Sciences I (BWL) [WI4BWLFBV4] (S. 35)</td>
<td>The lecture Saving Societies [26340] is currently not offered.</td>
</tr>
<tr>
<td>Applications of Actuarial Sciences II (BWL) [WI4BWLFBV5] (S. 36)</td>
<td>The lecture Saving Societies [26340] will not be offered in the summer term 2009.</td>
</tr>
<tr>
<td>Advanced CRM [WI4BWLISM1] (S. 42)</td>
<td>The module is offered in the summer term 2009 for the first time.</td>
</tr>
<tr>
<td>Electronic Markets [WI4BWLISM2] (S. 43)</td>
<td>The module is offered in the summer term 2009 for the first time.</td>
</tr>
<tr>
<td>Market Engineering [WI4BWLISM3] (S. 44)</td>
<td>The module is offered in the summer term 2009 for the first time.</td>
</tr>
<tr>
<td>Business &amp; Service Engineering [WI4BWLISM4] (S. 45)</td>
<td>The module is offered in the summer term 2009 for the first time.</td>
</tr>
<tr>
<td>Information &amp; Markets [WI4BWLISM5] (S. 46)</td>
<td>The module is offered in the summer term 2009 for the first time.</td>
</tr>
<tr>
<td>Service Management [WI4BWLISM6] (S. 47)</td>
<td>The key of the module has be renamed and ended formerly in BWLIW3.</td>
</tr>
<tr>
<td>Information Engineering [WI4BWLISM7] (S. 48)</td>
<td>The module is offered in the summer term 2009 for the first time.</td>
</tr>
</tbody>
</table>
4.1 Changes regarding modules

Information and Market Engineering [WI4BWL1W1] (S. 49)

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 [WI4BWL1W2] (S. 50)

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).

Applied Strategic Decisions [WI4VLW2] (S. 58)

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 Theory I* can be chosen.

Informatics [WI4INFO1] (S. 66)

Remarks
The lectures *Computational 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 [WI4INFO2] (S. 68)

Remarks
The lectures *Computational 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 [WI4INFO3] (S. 70)

Remarks
The lectures *Computational 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.

Mathematical and Empirical Finance [WI4STAT1] (S. 77)

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

Statistical Methods in Risk Management [WI4STAT2] (S. 78)

Remarks
The module is newly offered in summer 2009.

Control Engineering I [WI4INGETIT1] (S. 106)

Remarks
The lecture *Knowledge based Systems in Automation* [23164] won’t be offered in summer 2009.

Fuels, Environment and Global Development I [WI4INGCV1] (S. 111)

Remarks
The module won’t be offered since summer term 2009.
<table>
<thead>
<tr>
<th>Module/Subject</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving Societies [26340] (S. 464)</td>
<td>This lecture is irregularly not offered in summer 2009.</td>
</tr>
</tbody>
</table>

4.2 Changes regarding courses
5 Modules

5.1 Business Administration

Module: F1 (Finance)  
Module key: [WI4BWLFBV1]

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) [WI4BWLFBV1]

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
<th>CP</th>
<th>Responsible Lecturer(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26550</td>
<td>Derivatives (S. 493)</td>
<td>2/1</td>
<td>S</td>
<td>4.5</td>
<td>Uhrig-Homburg</td>
</tr>
<tr>
<td>25212</td>
<td>Valuation (S. 337)</td>
<td>2/1</td>
<td>W</td>
<td>4.5</td>
<td>Ruckes</td>
</tr>
<tr>
<td>26555</td>
<td>Asset Pricing (S. 494)</td>
<td>2/1</td>
<td>S</td>
<td>4.5</td>
<td>Uhrig-Homburg, Ruckes</td>
</tr>
</tbody>
</table>
Module: F2 (Finance)  
Module key: [WI4BWLFBV2]

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) [WI4BWLFBV3].

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) [WI4BWLFBV1] already.

Learning Outcomes

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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: [WI4BWLFBV3]

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) [WI4BWLFBV3].
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) [WI4BWLFBV1] already.

Learning Outcomes

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Courses in module F2&F3 (Finance) [WI4BWLFBV3]

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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

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

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Module: Marketing Planning

Module key: [WI4BWLMAR1]

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

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Courses in module Marketing Planning [WI4BWLMAR1]

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Module: Market Research

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

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Module: Strategy, Innovation and Data Analysis

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 [WI4BWLMAR3]

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</table>
Module: Behavioral Approaches in Marketing and Data Analysis

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 comprehensive 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 [WI4BWLMAR4]

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Module: Successful Market Orientation

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 Research [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 [WI4BWLMar5]

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Module: Strategic Corporate Management and Organization  
Module key: [WI4BWL01]

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

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<th>Responsible Lecturer(s)</th>
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<tr>
<td>25904</td>
<td>Organization Theory (S. 412)</td>
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<tr>
<td>25902</td>
<td>Managing Organizations (S. 411)</td>
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<tr>
<td>25908</td>
<td>Modeling Strategic Decision Making (S. 414)</td>
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<tr>
<td>25912</td>
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<td>25900</td>
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Remarks
This module was formerly named Corporate Management.
Module: Strategic Management and Organization  
Module key: [WI4BWL02]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

<table>
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<th>Term</th>
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Module: Strategic Decision Making and Organization Theory  Module key: [WI4BWLXO3]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

<table>
<thead>
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<td>4</td>
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</table>
Module: Applications of Actuarial Sciences I (BWL)  
Module key: [WI4BWLFBV4]

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) [WI4BWLFBV4]

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<td>26316</td>
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<tr>
<td>26310</td>
<td>Life and Pensions (S. 453)</td>
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</table>

Remarks
The lecture Saving Societies [26340] is currently not offered.
Module: Applications of Actuarial Sciences II (BWL)

Module key: [WI4BWLFBV5]

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) [WI4BWLFBV5]

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<td>26316</td>
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<td>Hipp</td>
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</table>

Remarks
The lecture Saving Societies [26340] will not be offered in the summer term 2009.
Module: Insurance Statistics

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 [WI4BWLFBV8]

<table>
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</table>
Module: Operational Risk Management I

Module key: [WI4BWLFBV9]

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

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
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<td>26353</td>
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<td>26355</td>
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</table>

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

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

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<tr>
<th>ID</th>
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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

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

Learning Control / Examinations

Prerequisites
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 [WI4BWLFBV6]

<table>
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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

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

Learning Control / Examinations

Prerequisites
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 [WI4BWLFBV7]

<table>
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<tr>
<th>ID</th>
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<td>26335</td>
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</table>
Module: Advanced CRM

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 calculation 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 [WI4BWLISM1]

<table>
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<tr>
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Remarks
The module is offered in the summer term 2009 for the first time.
Module: Electronic Markets

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 like bounded rationality and information asymmetries (private information and moral hazard), as well as the development of incentive schemes, are presented.

Regarding the market design, especially the interdependencies of market organization, market mechanisms, institutions and products are described and theoretical foundations are lectured.
- 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 [WI4BWLISM2]

<table>
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<tr>
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</table>

Remarks
The module is offered in the summer term 2009 for the first time.
Module: Market Engineering

Module key: [WI4BWLISM3]

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 of 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 [WI4BWLISM3]

<table>
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<tr>
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<td>2/1</td>
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</table>

Remarks
The module is offered in the summer term 2009 for the first time.
Module: Business & Service Engineering  

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 [WI4BWLISM4]  

<table>
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<tr>
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<tr>
<td>26506</td>
<td>Personalization and Recommender Systems (S. 487)</td>
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<td>26468</td>
<td>Service Innovation (S. 480)</td>
<td>2/1</td>
<td>S</td>
<td>5</td>
<td>Satzger, Neus</td>
</tr>
</tbody>
</table>

Remarks  
The module is offered in the summer term 2009 for the first time.
Module: Information & Markets

Module key: [WI4BWLISM5]

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 [WI4BWLISM5]

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
<th>CP</th>
<th>Responsible Lecturer(s)</th>
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<tbody>
<tr>
<td>26462</td>
<td>Communications Economics (S. 478)</td>
<td>2/1</td>
<td>S</td>
<td>4,5</td>
<td>Seifert, Kraemer</td>
</tr>
<tr>
<td>26460</td>
<td>Market Engineering: Information in Institutions (S. 477)</td>
<td>2/1</td>
<td>S</td>
<td>4,5</td>
<td>Weinhardt, Kraemer</td>
</tr>
<tr>
<td>25408</td>
<td>Auction Theory (S. 357)</td>
<td>2/1</td>
<td>W</td>
<td>4,5</td>
<td>Ehrhart, Seifert</td>
</tr>
</tbody>
</table>

Remarks
The module is offered in the summer term 2009 for the first time.
Module: Service Management

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 chosen, 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 [WI4BWLISM6]

<table>
<thead>
<tr>
<th>ID</th>
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<th>Term</th>
<th>CP</th>
<th>Responsible Lecturer(s)</th>
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<tbody>
<tr>
<td>26484</td>
<td>Business and IT Service Management (S. 482)</td>
<td>2/1</td>
<td>W</td>
<td>5</td>
<td>Satzger</td>
</tr>
<tr>
<td>26452</td>
<td>Management of Business Networks (S. 474)</td>
<td>2/1</td>
<td>W</td>
<td>4.5</td>
<td>Weinhardt, Kraemer</td>
</tr>
<tr>
<td>26468</td>
<td>Service Innovation (S. 480)</td>
<td>2/1</td>
<td>S</td>
<td>5</td>
<td>Satzger, Neus</td>
</tr>
<tr>
<td>26466</td>
<td>eServices (S. 479)</td>
<td>2/1</td>
<td>S</td>
<td>5</td>
<td>Weinhardt, Satzger</td>
</tr>
</tbody>
</table>

Remarks
The key of the module has be renamed and ended formerly in BWLIW3.
Module: Information Engineering

Module key: [WI4BWLISM7]

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 [WI4BWLISM7]

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
<th>CP</th>
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<tr>
<td>26450</td>
<td>Principles of Information Engineering and Management (S. 473)</td>
<td>2/1 W</td>
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<td></td>
<td>Weinhardt, Kraemer</td>
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<tr>
<td>26462</td>
<td>Communications Economics (S. 478)</td>
<td>2/1 S</td>
<td>4,5</td>
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<td>Seifert, Kraemer</td>
</tr>
<tr>
<td>26460</td>
<td>Market Engineering: Information in Institutions (S. 477)</td>
<td>2/1 S</td>
<td>4,5</td>
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<td>Weinhardt, Kraemer</td>
</tr>
</tbody>
</table>

Remarks
The module is offered in the summer term 2009 for the first time.
Module: Information and Market Engineering  

Module key: [WI4BWLIW1]

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 chosen, 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 opeato,
• 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 [WI4BWLIW1]

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
<th>CP</th>
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<tbody>
<tr>
<td>26460</td>
<td>Market Engineering: Information in Institutions (S. 477)</td>
<td>2/1</td>
<td>S</td>
<td>4.5</td>
</tr>
<tr>
<td>26454</td>
<td>eFinance: Information Engineering and Management for Securities Trading (S. 475)</td>
<td>2/1</td>
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<tr>
<td>26502</td>
<td>Electronic Markets (Principles) (S. 483)</td>
<td>2/1</td>
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<tr>
<td>26504</td>
<td>Electronic Markets: Institutions and Market Mechanisms (S. 485)</td>
<td>2/1</td>
<td>S</td>
<td>4.5</td>
</tr>
<tr>
<td>26450</td>
<td>Principles of Information Engineering and Management (S. 473)</td>
<td>2/1</td>
<td>W</td>
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</tbody>
</table>

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).
Module: Service Engineering

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 [WI4BWLIW2]

<table>
<thead>
<tr>
<th>ID</th>
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<th>Hours per week</th>
<th>Term</th>
<th>CP</th>
<th>Responsible Lecturer(s)</th>
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<tbody>
<tr>
<td>26450</td>
<td>Principles of Information Engineering and Management (S. 473)</td>
<td>2/1</td>
<td>W</td>
<td>5</td>
<td>Weinhardt, Kraemer</td>
</tr>
<tr>
<td>26460</td>
<td>Market Engineering: Information in Institutions (S. 477)</td>
<td>2/1</td>
<td>S</td>
<td>4,5</td>
<td>Weinhardt, Kraemer</td>
</tr>
<tr>
<td>26456</td>
<td>Business Models in the Internet: Planning and Implementation (S. 476)</td>
<td>2/1</td>
<td>S</td>
<td>4,5</td>
<td>Weinhardt, Holtmann</td>
</tr>
<tr>
<td>26508</td>
<td>Customer Relationship Management (S. 489)</td>
<td>2/1</td>
<td>W</td>
<td>4,5</td>
<td>Geyer-Schulz</td>
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<tr>
<td>26506</td>
<td>Personalization and Recommender Systems (S. 487)</td>
<td>2/1</td>
<td>S</td>
<td>4,5</td>
<td>Geyer-Schulz</td>
</tr>
<tr>
<td>26518</td>
<td>Social Network Analysis in CRM (S. 491)</td>
<td>2/1</td>
<td>W/S</td>
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</table>

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).
Module: Industrial Production II

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

Courses in module Industrial Production II [WI4BWLIP2]

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
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<th>Term</th>
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<tbody>
<tr>
<td>25952</td>
<td>Planning and Management of Industrial Plants (S. 418)</td>
<td>2/2 W</td>
<td>5.5</td>
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<td>Schultmann, n.n.</td>
</tr>
<tr>
<td>25962</td>
<td>Exhaust Emissions (VWL), Emissions into the Environment (ING) (S. 422)</td>
<td>2/0 W</td>
<td>3.5</td>
<td></td>
<td>Karl</td>
</tr>
<tr>
<td>25959</td>
<td>Energy Policy (S. 421)</td>
<td>2/0 S</td>
<td>3.5</td>
<td></td>
<td>Wietschel</td>
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<tr>
<td>25963</td>
<td>The Management of R&amp;D Projects with Case Studies (S. 423)</td>
<td>2/2 W/S</td>
<td>3.5</td>
<td></td>
<td>Schmied</td>
</tr>
<tr>
<td>25958</td>
<td>Strategical Aspects of Energy (S. 420)</td>
<td>2/0 W</td>
<td>3.5</td>
<td></td>
<td>Ardone</td>
</tr>
<tr>
<td>25995</td>
<td>Material flow analysis and life cycle assessment (S. 433)</td>
<td>2/0 W</td>
<td>3.5</td>
<td></td>
<td>Schebek</td>
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</table>
Module: Industrial Production III  Module key: [WI4BWLIP6]

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

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes

Content

Courses in module Industrial Production III [WI4BWLIP6]

<table>
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<tr>
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<th>Responsible Lecturer(s)</th>
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<tr>
<td>25954</td>
<td>Production an Logistics Management (S. 419)</td>
<td>2/2</td>
<td>S</td>
<td>5.5</td>
<td>Fröhling, Schultmann</td>
</tr>
<tr>
<td>25975</td>
<td>Computer-assisted Planning and Control of Production and Simulation of Processes (S. 431)</td>
<td>2/0</td>
<td>S</td>
<td>3.5</td>
<td>Möst, Fröhling</td>
</tr>
<tr>
<td>25963</td>
<td>The Management of R&amp;D Projects with Case Studies (S. 423)</td>
<td>2/2</td>
<td>W/S</td>
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<td>25962</td>
<td>Exhaust Emissions (VWL), Emissions into the Environment (ING) (S. 422)</td>
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<td>W</td>
<td>3.5</td>
<td>Karl</td>
</tr>
<tr>
<td>25995</td>
<td>Material flow analysis and life cycle assessment (S. 433)</td>
<td>2/0</td>
<td>W</td>
<td>3.5</td>
<td>Schebek</td>
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</table>
Module: Basics of Liberalised Energy Markets

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

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes

Content

<table>
<thead>
<tr>
<th>ID</th>
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<td>25998</td>
<td>Basics of Liberalised Energy Markets (S. 434)</td>
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<tr>
<td>26020</td>
<td>Energy Trade and Risk Management (S. 439)</td>
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<td>S</td>
<td>3.5</td>
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<tr>
<td>25959</td>
<td>Energy Policy (S. 421)</td>
<td>2/0</td>
<td>S</td>
<td>3.5</td>
<td>Wietschel</td>
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<tr>
<td>26022</td>
<td>Gas-Markets (S. 440)</td>
<td>2/0</td>
<td>W</td>
<td>3</td>
<td>Fichtner</td>
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<tr>
<td>26025</td>
<td>Simulation Game in Energy Economics (S. 441)</td>
<td>2/0</td>
<td>W</td>
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<td>Fichtner</td>
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</tbody>
</table>
Module: Energy Industry and Technology

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 [WI4BWL1IP5]

<table>
<thead>
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<td>5</td>
</tr>
<tr>
<td>25958</td>
<td>Strategical Aspects of Energy (S. 420)</td>
<td>2/0</td>
<td>W</td>
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<td>26000</td>
<td>Technological Change in Energy Industry (S. 435)</td>
<td>2/0</td>
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<td>26001</td>
<td>Heat Economy (S. 436)</td>
<td>2/0</td>
<td>S</td>
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<td>26002</td>
<td>Energy Systems Analysis (S. 437)</td>
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</table>

Responsible Lecturer(s)

Karl, n.n.
Ardone
Wietschel
Fichtner
Möst
Module: Industrial Ergonomics

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 [WI4BWLIIP1]

<table>
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<tr>
<th>ID</th>
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<tr>
<td>25988</td>
<td>Changes in th Working World (S. 432)</td>
<td>2</td>
<td>W/S</td>
<td>3</td>
<td>Hornberger</td>
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<tr>
<td>25964</td>
<td>Ergonomics I (S. 424)</td>
<td>2/1</td>
<td>W</td>
<td>3</td>
<td>Knauth</td>
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<tr>
<td>25965</td>
<td>Ergonomics II (S. 425)</td>
<td>2/1</td>
<td>S</td>
<td>3</td>
<td>Karl</td>
</tr>
<tr>
<td>25967</td>
<td>Industrial Studies of Time and Motion (S. 426)</td>
<td>2</td>
<td>W</td>
<td>3</td>
<td>Dürrschnabel</td>
</tr>
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</table>
Module: Leadership / Change Management
Module key: [WI4BWLUO3]

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

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
<th>CP</th>
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<tr>
<td>25972</td>
<td>Human Resource Management I (S. 429)</td>
<td>2</td>
<td>W</td>
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<td>Wollert</td>
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<tr>
<td>25973</td>
<td>Human Resource Management II (S. 430)</td>
<td>2</td>
<td>S</td>
<td>3</td>
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<tr>
<td>25968</td>
<td>Social Relationships in Organisations (S. 427)</td>
<td>2</td>
<td>S</td>
<td>3</td>
<td>Kraus</td>
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<tr>
<td>25969</td>
<td>Development of Personnal and Organisation</td>
<td>2</td>
<td>W</td>
<td>3</td>
<td>Weisheit</td>
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</tbody>
</table>
5.2 Economics

Module: Innovation and Technical Change

Module key: [WI4VWL1]

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 [WI4VWL1]

<table>
<thead>
<tr>
<th>ID</th>
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<tr>
<td>26272</td>
<td>Economics of Innovation (S. 449)</td>
<td>2/2</td>
<td>W</td>
<td>6</td>
<td>Grupp</td>
</tr>
<tr>
<td>26291</td>
<td>Managing New Technologies (S. 451)</td>
<td>2/1</td>
<td>S</td>
<td>5</td>
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</table>
Module: Applied Strategic Decisions

Module key: [WI4VWL2]

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 [WI4VWL2]

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
<th>CP</th>
<th>Responsible Lecturer(s)</th>
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<tbody>
<tr>
<td>25369</td>
<td>Game Theory II (S. 353)</td>
<td>2/2</td>
<td>W</td>
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<td>Berninghaus</td>
</tr>
<tr>
<td>25525</td>
<td>Game Theory I (S. 359)</td>
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<td>S</td>
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</table>

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 TheoryI can be chosen.
Module: Money and Payment

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

Learning Control / Examinations

Prerequisites
Knowledge in the area of Macroeconomics is helpful.

Conditions
None.

Learning Outcomes

Content

Courses in module Money and Payment [WI4VWL3]

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</table>
Module: Network Economics

Module key: [WI4VWL4]

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 [WI4VWL4]

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Module: Environmental Economics

**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 [WI4VWL5]**

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Module: Economic Policy

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 [WI4VWL6]

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Remarks
Module: Allocation and Equilibrium

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 [WI4VWL7]

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Module: Macroeconomic Theory

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 [WI4VWL8]

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</table>
Module: Social Choice Theory

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 [WI4VWL9]
5.3 Informatics

Module: Informatics

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
<table>
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<tr>
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**Remarks**
The lectures Computational 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 complete this modul within this lecture.

Module: Emphasis in Informatics

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

Learning Control / Examinations

Prerequisites
The module Informatics [WI4INFO1] 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 [WI4INFO2]

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<td>5</td>
<td>Oberweis, Mevius</td>
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<td>25706</td>
<td>Nature-inspired Optimization (S. 380)</td>
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<td>Mostaghim</td>
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<tr>
<td>25704</td>
<td>Organis Computing (S. 379)</td>
<td>2</td>
<td>S</td>
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<td>Schmeck, Mostaghim</td>
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<tr>
<td>25790</td>
<td>Capability maturity models for software and systems engineering (S. 406)</td>
<td>2</td>
<td>S</td>
<td>4</td>
<td>Kneuper</td>
</tr>
</tbody>
</table>
| 25748  | Semantic Web Technologies I (S. 392)                                  | 2/1            | W    | 5  | Studer, Hitzler, Rudolph,
|        |                                                                        |                |     |                           |
| 25750  | Semantic Web Technologies II (S. 393)                                 | 2/1            | S    | 5  | Hitzler, Agarwal        |
| 25772  | Service-oriented Computing 2 (S. 401)                                 | 2/1            | S    | 5  | Tai, Studer              |
| 25730  | Software Technology: Quality Management (S. 386)                      | 2/1            | S    | 5  | Oberweis                 |
| SBI    | Special Topics of Enterprise Information Systems (S. 508)             | 2/1            | W/S  | 5  | Oberweis, Stucky        |
| 25700sp| Special Topics of Efficient Algorithms (S. 377)                       | 2/1            | W/S  | 5  | Schmeck                  |
| KompMansp| Special Topics of Complexity Management (S. 506)                     | 2/1            | W/S  | 5  | Seese                    |
| SSEsp  | Special Topics of Software- and Systemsengineering (S. 509)          | 2/1            | W/S  | 5  | Oberweis, Seese         |
| 25860sem| Special Topics of Knowledge Management (S. 409)                      | 2/1            | W/S  | 5  | Studer                   |
| 25788  | Strategic Management of Information Technology (S. 405)               | 2/1            | S    | 5  | Wolf                     |
| 25722  | Distributed Database Systems: Basic Technology for e-Business (S. 382) | 2/1            | S    | 5  | Oberweis                 |
| 25774  | Web Service Engineering (S. 402)                                     | 2/1            | S    | 5  | Zirpins                  |
| 25726  | Workflow-Management (S. 384)                                         | 2/1            | S    | 5  | Oberweis                 |
| PraBl  | Computing Lab Information Systems (S. 507)                            | 2/1            | S    | 5  | Oberweis, Seese, Stucky, Studer |
| 25700p | Advanced Lab in Efficient Algorithms (S. 376)                         | 3              | W/S  | 4  | Schmeck                  |
| 25762p | Exercises in Intelligent Systems in Finance (S. 398)                  | 3              | W/S  | 4  | Seese                    |
| KompManp| Exercises in Complexity Management (S. 505)                           | 3              | W/S  | 4  | Seese                    |
| 25810  | Practical Seminar Knowledge Discovery (S. 407)                        | 2/1            | S    | 4  | Studer                   |
| 25820  | Lab Class Web Services (S. 408)                                      | 2/1            | W    | 4  | Tai, Studer, Satzger, Zirpins |
| 25740p | Exercises in Knowledge Management (S. 390)                           | 3              | W/S  | 4  | Studer                   |
| CC     | Cloud Computing (S. 499)                                             | 2/1            | W    | 5  | Tai, Juling, Kunze       |

### Remarks

The lectures Computational 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 complete 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 Informatics

Module key: [WI4INFO3]

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 [WI4INFO1] has to be completed successfully. Knowledge of the content of the module Emphasis in Informatics [WI4INFO2] 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
<table>
<thead>
<tr>
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<td>25720</td>
<td>Datenbanksysteme (S. 381)</td>
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</table>

**Remarks**

The lectures *Computational 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 complete this modul within this lecture.

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

Module: Quantitative Marketing and OR

Module key: [WI4OR1]

Subject: Operations Research

Module coordination: Wolfgang Gaul

Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module Quantitative Marketing and OR [WI4OR1]

<table>
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<th>ID</th>
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<th>Term</th>
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<td>S</td>
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<tr>
<td>25156</td>
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<td>25158</td>
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<td>25171</td>
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<td>25194</td>
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</table>
Module: Optimization in Practice

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 [WI4OR2]

<table>
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<td>25134</td>
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<td>W</td>
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<td>Stein</td>
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<td>S</td>
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<td>Stein</td>
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<td>25128</td>
<td>Combinatorial Optimization (S. 316)</td>
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<td>S</td>
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Remarks

The lectures will be offered this way:

- SS 2009 und SS 2011: Mixed-integer Optimization,
- SS 2010 und SS 2012: Nonlinear Optimization,
Module: Stochastic Methods in Economy and Engineering/ Management of Operations
Module key: [WI4OR3]

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 [WI4OR3]

<table>
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<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
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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: [WI4OR4]

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 [WI4OR4]

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</table>

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.
### 5.5 Statistics

**Module: Econometrics and Risk Management in Finance**

**Module key:** [WI4STAT]

- **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

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</table>
Module: Mathematical and Empirical Finance

Module key: [WI4STAT1]

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

Courses in module Mathematical and Empirical Finance [WI4STAT1]

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Remarks
The module is newly-offered in summer 2009 first time.
Module: Statistical Methods in Risk Management  
Module key: [WI4STAT2]

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

Learning Outcomes

Content

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Remarks
The module is newly offered in summer 2009.
5.6 Engineering Sciences

Module: Analysing and Simulation Methods for Mechanical Systems

Module key: [WI4INGMB19]

Subject: Engineering Science

Module coordination: Carsten Proppe

Credit points (CP): 9

Learning Control / Examinations

Prerequisites
The courses *Engineering Mechanics I* [21208] and *Engineering Mechanics II* [22642] have to be completed successfully.

Conditions
None.

Learning Outcomes

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Module: Selected Topics in Production Technology I

Module key: [WI4INGMB1]

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 [WI3INGMB4], 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 [WI4INGMB1]

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Module: Selected Topics in Production Technology II  
Module key: [WI4INGMB2]

**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 [WI3INGMB4], 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**

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Courses in module Selected Topics in Production Technology II [WI4INGMB2]
Module: Selected Topics in Production Technology III

Module key: [WI4INGMB3]

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

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 [WI3INGMB4], 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 III [WI4INGMB3]

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Module: Introduction to Logistics

Module key: [WI4INGMB20]

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 [WI4INGMB20]

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Module: Technical Logistics and Logistic Systems

Module key: [WI4INGMB11]

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 [WI4INGMB11]

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Module: Handling Characteristics of Motor Vehicles

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

Learning Control / Examinations

Prerequisites

Conditions
None.

Learning Outcomes

Content

Courses in module Handling Characteristics of Motor Vehicles [WI4INGMB6]

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</table>
Module: Automotive Engineering

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

Learning Control / Examinations

Prerequisites

Conditions
None.

Learning Outcomes

Content

Courses in module Automotive Engineering [WI4INGMB14]

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<td>21198</td>
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<td>21843</td>
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<tr>
<td>21095</td>
<td>Simulation of coupled systems (S. 203)</td>
<td>2</td>
<td>S</td>
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</table>
Module: Automotive Engineering

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

Learning Control / Examinations

Prerequisites

Conditions
None.

Learning Outcomes

Content

Courses in module Automotive Engineering [WI4INGMB5]

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<td>21092</td>
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<td>2</td>
<td>S</td>
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</table>
Module: Mobile Machines

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module Mobile Machines [WI4INGMB15]

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</table>
Module: Engine Development

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 [WI4INGMB17]

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<td>Combustion Engines A (S. 204)</td>
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<td>Combustion Engines B (S. 209)</td>
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<td>Supercharging of Internal Combustion Engines (S. 206)</td>
<td>2 S</td>
<td>3</td>
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<td>Golloch</td>
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<tr>
<td>21114</td>
<td>Simulation of Spray and Mixture Formation in Internal Combustion Engines (S. 207)</td>
<td>2 W</td>
<td>3</td>
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<td>21134</td>
<td>Methods in Analyzing Internal Combustion (S. 208)</td>
<td>2 S</td>
<td>3</td>
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<tr>
<td>21109</td>
<td>Motor Fuels for Combustion Engines and their Verifications (S. 205)</td>
<td>2 W</td>
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<td>21138</td>
<td>Internal Combustion Engines and Exhaust Gas Aftertreatment Technology (S. 211)</td>
<td>2 S</td>
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<td>21137</td>
<td>Engine Measurement Technologies (S. 210)</td>
<td>2 S</td>
<td>3</td>
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</tbody>
</table>
Module: Specific Topics in Material Science

Module key: [WI4INGMB18]

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

Learning Control / Examinations

Prerequisites
Knowledge, comparable to the content of the module Emphasis Material Science [WI3INGMB9], is highly recommended.
Natural science basic knowledge is assumed.

Conditions
It is only possible to choose either the course Physical Basics of Laser Technology [21612] or the course Laser Application in Automotive Engineering [21642].

Learning Outcomes

Content

Courses in module Specific Topics in Material Science [WI4INGMB18]

<table>
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<td>21562s</td>
<td>Failure Analysis (S. 227)</td>
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<td>Reliability of Constructions (S. 243)</td>
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<td>Principles of Ceramic and Powder Metallurgy Processing</td>
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<td>W</td>
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<td>Structural and Functional Ceramics (S. 246)</td>
<td>2</td>
<td>S</td>
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<tr>
<td>21627</td>
<td>Surface Technology for Functional Applications (S. 232)</td>
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<td>S</td>
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<td>21565/21570</td>
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<td>Experimental Lab Class in Welding Technology (S. 225)</td>
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</table>
Module: Combustion Engines

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

<table>
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<tr>
<th>ID</th>
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<th>Term</th>
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<td>Combustion Engines B (S. 209)</td>
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<td>21137</td>
<td>Engine Measurement Technologies (S. 210)</td>
<td>2 S</td>
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<tr>
<td>21112</td>
<td>Supercharging of Internal Combustion Engines (S. 206)</td>
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<tr>
<td>21114</td>
<td>Simulation of Spray and Mixture Formation in Internal Combustion Engines (S. 207)</td>
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<td>Methods in Analyzing Internal Combustion (S. 208)</td>
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<td>2 W</td>
<td>3</td>
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</table>
Module: Virtual Engineering

Module coordination: Jivka Ovtcharova
Credit points (CP): 18

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module Virtual Engineering [WI4INGMB22]

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<td>21378</td>
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<td>Simulation Methods in the Product Creation Process (S. 218)</td>
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<td>21387</td>
<td>Computer Integrated Planning of New Products (S. 224)</td>
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</table>
Module: Public Transportation Operations

Module key: [WI4INGBGU4]

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

Learning Control / Examinations

Prerequisites

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 [WI4INGBGU6] is attended at the same time.

Learning Outcomes

Content

Courses in module Public Transportation Operations [WI4INGBGU4]

<table>
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<td>Railway Logistics, Management and Operating - Part II (S. 177)</td>
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<td>19327w</td>
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<td>19325</td>
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</table>
Module: Design, Construction, Operation and Maintenance Highways [WI4INGBGU1]

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

Learning Control / Examinations

Prerequisites
None.

Conditions
The participation in the project Integrated Planning within the branch Highway Engineering or writing a student research paper is obligatory.
The course Design Basics in Highway Engineering [19026] is a prerequisite for all other courses of this module.

Learning Outcomes

Content

<table>
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<tr>
<td>19065</td>
<td>Design and Construction Highways (S. 145)</td>
<td>1/1</td>
<td>S</td>
<td>3</td>
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<tr>
<td>19301s</td>
<td>Operation and Maintenance Highways (S. 161)</td>
<td>2</td>
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</table>
Module: Logistics and Management of Guided Systems

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

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<tr>
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<td>Station and Rail Transport Facilities (S. 168)</td>
<td>2/1</td>
<td>W</td>
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</table>
Module: Safety, Computing and Law in Highway Engineering  Module key: [WI4INGBGU3]

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

Learning Control / Examinations

Prerequisites
The successful completion of the course Design Basics in Highway Engineering [19026] is assumed.

Conditions
None.

Learning Outcomes

Content

<table>
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<tr>
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<tr>
<td>19315</td>
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<td>W</td>
<td>2</td>
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<td>19314</td>
<td>Seminar in Highway Engineering - Mitigation of an accident black spot (S. 172)</td>
<td>2</td>
<td>S</td>
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<td>VLBGU</td>
<td>Laws concerning Traffic and Roads (S. 526)</td>
<td>2</td>
<td>S</td>
<td>3</td>
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</table>
Module: Highway Engineering

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

Learning Control / Examinations
Prerequisites
The successful completion of the course Design Basics in Highway Engineering [19026] is assumed.

Conditions
The participation in the project Integrated Planning within the branch Highway Engineering or writing a student research paper is obligatory.

Learning Outcomes
Content

Courses in module Highway Engineering [WI4INGBGU2]

<table>
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<td>19302</td>
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</table>
Module: Guided Systems Engineering

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

Learning Control / Examinations

Prerequisites

Conditions
The course Station and Rail Transport Facilities [19307w] is not eligible if the module Logistics and Management of Guided Systems [WI4INGBGU7] is attended at the same time.

The course Electrical Rail Vehicles [23346], Mechanical Models in Railway Engineering [19322] and Development and Aspects of Guided Systems [19326] are obligatory and have to be attended.

Learning Outcomes

Content

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<td>Construction and Maintenance of Railway Infrastructure (S. 167)</td>
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<td>19326</td>
<td>Entwicklungen und Aspekte spurgeführter Systeme (S. 183)</td>
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</table>
Module: Environmental Management

Subject: Engineering Science
Module coordination: Erhard Hoffmann
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Basic knowledge of biology, physics and chemistry taught at the upper secondary level is helpful.

Conditions
The course Urban Water Ressource Management and Ecological Engineering [19057/19058] is a prerequisite for the Seminar in Freshwater Ecology [19057/19058].
The Seminar in Freshwater Ecology [19057/19058] is a prerequisite for the Field Course in Freshwater Ecology [19243].
The course Foundations of Bioengineering [19058] is a prerequisite for the course Reaction Mechanism in Different Ecosystems [19241].

Learning Outcomes

Content

Courses in module Environmental Management [WI4INGBGU12]

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<td>Analysing and Managing Material Currents in Water Resources Management (S. 156)</td>
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<td>19058</td>
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<td>Reaction Mechanism in Different Ecosystems (S. 153)</td>
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<td>Seminar in Freshwater Ecology (S. 140)</td>
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</table>
Module: Project in Public Transportation

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

Learning Control / Examinations

Prerequisites

Conditions
The courses Project in Public Transportation I [19323] and Project in Public Transportation II [19324] are obligatory and have to be attended.

Learning Outcomes

Content

<table>
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<th>Term</th>
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<td>Transport Policy (S. 173)</td>
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<td>Planning and Operation of Public Transport Systems (S. 171)</td>
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</table>
Module: Transport Systems

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

Learning Control / Examinations

Prerequisites
None.

Conditions
The lecture Basics in Transport Planning and Traffic Engineering [19027] has to be chosen in the module.
If the Module Fundamentals of Spatial and Infrastructural Development [WW3INGBGU1] was already chosen in the Bachelor programme, the course Transport Planning Methods [19301] has to be chosen.

Learning Outcomes

Content

Courses in module Transport Systems [WI4INGBGU8]

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<td>Basics in Transport Planning and Traffic Engineering (S. 135)</td>
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<tr>
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<td>Transport Planning Methods (S. 162)</td>
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<td>W</td>
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<td>19062</td>
<td>Transport System Planning (S. 144)</td>
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<td>S</td>
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</table>
Module: Transport Ia

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 [WI4INGBGU10] has to be chosen.

Learning Outcomes

Content

Courses in module Transport Ia [WI4INGBGU9]

<table>
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<tr>
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<th>Term</th>
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</table>
Module: Transport Ib

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 [WI4INGBGU9].

Conditions
None.

Learning Outcomes

Content

<table>
<thead>
<tr>
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<th>Hours per week</th>
<th>Term</th>
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<td>19303w</td>
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</table>
Module: Transport II

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

Learning Control / Examinations

Prerequisites
The choice of either the module Transport Ia [WI4INGBGU9] or Transport Ib [WI4INGBGU10] is a prerequisite.
For the course Planning and Operation of Public Transport Systems [19313] the course Transport [19027] is assumed.

Conditions
Courses has to be chosen in consultation with the institute so that they match a certain profile (e.g. transport planner, transport engineer, specialist in public transport systems) but have not been part of other modules.
Besides the courses of the Institute of Transport Studies other courses of useful and direct or fact-related disciplines (e.g. urban construction and spatial planning, highway or railroad engineering) may be chosen.
Therefor the examination schedule has to be composed in accord with the Institut für Verkehrswesen.

Learning Outcomes

Content

<table>
<thead>
<tr>
<th>ID</th>
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<tr>
<td>19062</td>
<td>Transport System Planning (S. 144)</td>
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<td>19313</td>
<td>Planning and Operation of Public Transport Systems</td>
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<td>Weißkopf</td>
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<tr>
<td>19305</td>
<td>Simulation Methods for Transport Modelling (S. 166)</td>
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<td>Application of Simulation Tools (S. 170)</td>
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</table>
Module: Water Supply and Sanitation

Subject: Engineering Science
Module coordination: Erhard Hoffmann
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Basic knowledge of physics and chemistry taught at the upper secondary level is helpful.

Conditions
None.

Learning Outcomes

Content

Courses in module Water Supply and Sanitation [WI4INGBGU13]

<table>
<thead>
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<tr>
<td>19057/58</td>
<td>Urban Water Resource Management and Ecological Engineering (S. 139)</td>
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<td>19054</td>
<td>Process Engineering in Water Quality Management (S. 136)</td>
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<td>19243/44</td>
<td>Design of Wastewater Treatment Plants and Biosolids Reclaiming Systems (Design of Urban Water and Wastewater Management Systems) (S. 155)</td>
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<tr>
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<td>Semi- and Decentral Systems (S. 159)</td>
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<td>Laboratory - Process Engineering in Water Quality Management (S. 137)</td>
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</table>
Module: Control Engineering I

Module key: [WI4INGETIT1]

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

Learning Control / Examinations

Prerequisites
Knowledge about integral transformations is assumed. This knowledge can be acquired in the course Complex Analysis and Integral Transformations or via private study (see references of the course System Dynamics and Control Engineering [23155]). A proof of performance about this is not necessary.

Conditions
This module cannot be chosen if the module Control Engineering [WI3INGETIT2] has been chosen in the Bachelor programme. The course System Dynamics and Control Engineering [23155] has to be attended before the course Knowledge based Systems in Automation [23164].

Learning Outcomes

Courses in module Control Engineering I [WI4INGETIT1]

<table>
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<tr>
<td>23155</td>
<td>System Dynamics and Control Engineering (S. 283)</td>
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<td>23164</td>
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</table>

Remarks
The lecture Knowledge based Systems in Automation [23164] won’t be offered in summer 2009.
Module: Control Engineering II  

Module key: [WI4INGETIT2]

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

Learning Control / Examinations

Prerequisites
It is only possible to choose this module, if the module Control Engineering I [WI4INGETIT1] is attended as well or the module Control Engineering [WI3INGETIT2] was chosen in the Bachelor programme. The course System Dynamics and Control Engineering [23155] has to be completed successfully beforehand.

Conditions
None.

Learning Outcomes

Content

Courses in module Control Engineering II [WI4INGETIT2]

<table>
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<td>23177</td>
<td>Control of Linear Multivariable Systems (S. 286)</td>
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<tr>
<td>23160</td>
<td>Automation of Discrete Event and Hybrid Systems (S. 284)</td>
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<td>S</td>
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</table>
Module: Sensor Technology I

Subject: Engineering Science
Module coordination: Wolfgang Menesklou
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
Successful completion of the courses Electrical Engineering II [23224].
It is recommended to have attended the course Material Science II [21553] beforehand.

Conditions
The course Sensor Technology [23231] is obligatory and has to be attended. The elected courses must not be credited in the module Sensorik II [WI4INGETIT5] or other modules.
Before Experimental Laboratories in Sensors and Actuators [23232] the course Sensor Technology [23231] has to be completed successfully.

Learning Outcomes

Content

Courses in module Sensor Technology I [WI4INGETIT3]

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<tr>
<td>23232</td>
<td>Experimental Laboratories in Sensors and Actuators (S. 289)</td>
<td>4</td>
<td>S</td>
<td>6</td>
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<tr>
<td>23209</td>
<td>Systematic Product Development in Sensor Technology (S. 287)</td>
<td>1/1</td>
<td>W</td>
<td>3</td>
<td>Ivers-Tiffée, Riegel</td>
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<tr>
<td>23240</td>
<td>Integrated Sensor Actuator Systems (S. 291)</td>
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<td>S</td>
<td>3</td>
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<tr>
<td>23233/23234</td>
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<td>3</td>
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<tr>
<td>21881</td>
<td>Micro-Actuators (S. 260)</td>
<td>2</td>
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</table>
Module: Sensor Technology II

Subject: Engineering Science
Module coordination: Wolfgang Menesklou
Credit points (CP): 9

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module Sensor Technology II [WI4INGETIT5]

<table>
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<td>23209</td>
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<tr>
<td>21881</td>
<td>Micro-Actuators (S. 260)</td>
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</table>
Module: Electrical Power Engineering

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 [WI4INGETIT4]

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<td>Benefits of Power Electronics/Understanding HV-CD and FACTS (S. 298)</td>
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</table>
Module: Fuels, Environment and Global Development I

Module key: [WI4INGCV1]

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 [WI4INGCV1]

<table>
<thead>
<tr>
<th>ID</th>
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<tbody>
<tr>
<td>22305</td>
<td>Fuels I: Fundamentals, Liquid Fuels, Petroleum Processing, Bio Fuels (S. 269)</td>
<td>2/1</td>
<td>W</td>
<td>6</td>
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<tr>
<td>22303</td>
<td>Fuels II: Gases and Solids (S. 268)</td>
<td>2/1</td>
<td>S</td>
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Remarks
The module won’t be offered since summer term 2009.
Module: Fuels, Environment and Global Development

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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<td>Fuels I: Fundamentals, Liquid Fuels, Petroleum Processing, Bio Fuels (S. 269)</td>
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</table>
Module: Principles of Food Process Engineering

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 [WI4INGCV3]

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<td>S</td>
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<tr>
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</table>
Module: Specialization in Food Process Engineering  

Module key: [WI4INGCV4]

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 [WI4INGCV3].

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

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</table>
Module: Water Chemistry

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 [WI4INGCV5]

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Module: Understanding and Prediction of Disasters I

Module key: [WI4INGINTER1]

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

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes
Content

Courses in module Understanding and Prediction of Disasters I [WI4INGINTER1]

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Module: Understanding and Prediction of Disasters II

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

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Module: Understanding and Prediction of Disasters III

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Module key: [WI4INGINTER3]

Subject: Engineering Science
Module coordination: Ute Werner
Credit points (CP): 27

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Module: Safety Science I

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

Learning Control / Examinations

Prerequisites
None.
Conditions
None.

Learning Outcomes

Content

Courses in module Safety Science I [WI4INGINTER4]

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Module: Safety Science II

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Courses in module Safety Science II [WI4INGINTER5]

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Module: Unscheduled Engineering Module

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

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Remarks
The module is newly-offered in summer 2009.
5.7 Law

Module: Labor and Tax Law  

Module key: [WI4JURA1]

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 four courses have to be chosen.

Learning Outcomes

Content

Courses in module Labor and Tax Law [WI4JURA1]

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<td>24668</td>
<td>Employment Law II (S. 311)</td>
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<td>24168</td>
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<td>24646</td>
<td>Tax Law II (S. 310)</td>
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</table>
Module: IT-Law

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 four courses have to be chosen.

Learning Outcomes

Content

Courses in module IT-Law [WI4JURA2]

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
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<th>Responsible Lecturer(s)</th>
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<tbody>
<tr>
<td>24121</td>
<td>Copyright (S. 302)</td>
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<tr>
<td>24018</td>
<td>Data Protection Law (S. 301)</td>
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<td>24612</td>
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<td>24501</td>
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</table>
Module: Civil Law

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.

Learning Outcomes

Content

Courses in module Civil Law [WI4JURA3]

<table>
<thead>
<tr>
<th>ID</th>
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<td>Advanced Civil Law (S. 307)</td>
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<td>24011</td>
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<td>2/0</td>
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<td>Sester</td>
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<tr>
<td>24506/24017</td>
<td>Exercises in Civil Law (S. 308)</td>
<td>2/0</td>
<td>W/S</td>
<td>3</td>
<td>Sester, Dreier</td>
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</table>
5.8 Sociology

Module: Sociology

**Subject:** Sociology

**Module coordination:** Gerd Nollmann

**Credit points (CP):** 9

---

### Prerequisites

None.

---

### Conditions

None.

---

### Learning Outcomes

---

### Content

**Courses in module Sociology [WI4SOZ1]**

<table>
<thead>
<tr>
<th>ID</th>
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<td>Theoretical Sociology (S. 528)</td>
<td>2 W/S</td>
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<td>spezSoz</td>
<td>Special Sociology (S. 527)</td>
<td>2 W/S</td>
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<td>SozSem</td>
<td>Projectseminar (S. 525)</td>
<td>2 W/S</td>
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**Responsible Lecturer(s):** Nollmann, Pfadenhauer, Pfaff, Haupt, Grenz, Eisewicht
5.9 General Modules

Module: Seminar Module

Module key: [WI4SEM]

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

<table>
<thead>
<tr>
<th>ID</th>
<th>Course</th>
<th>Hours per week</th>
<th>Term</th>
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<td>SemAIFB1</td>
<td>Seminar in Enterprise Information Systems (S. 510)</td>
<td>2 W/S 3</td>
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<td>Studer, Oberweis, Stucky, Wolf, Kneuper</td>
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<td>SemAIFB2</td>
<td>Seminar Efficient Algorithms (S. 511)</td>
<td>2 W/S 3</td>
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<td>SemAIFB3</td>
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<td>25131</td>
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<td>25293</td>
<td>Seminar in Finance (S. 341)</td>
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<td>26510</td>
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<td>26470</td>
<td>Seminar Service Science, Management &amp; Engineering (S. 481)</td>
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<td>26420</td>
<td>Topics of Sustainable Management of Housing and Real Estate (S. 472)</td>
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Module: Master Thesis

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: Meteorological Measurements  
Course key: [03003]

Lecturers: Kottmeier  
Credit points (CP): 3.5  
Hours per week: 2  
Term: Wintersemester  
Level: 4  
Teaching language: Deutsch  

Learning Control / Examinations

Prerequisites

None.

Conditions

None.

Learning Outcomes

Content
Course: Engineering Seismology

Lecturers: Wenzel/Sokolov
Credit points (CP): 5  Hours per week: 3/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Introduction to Applied Geophysics

Lecturers: Wenzel

Credit points (CP): 3.5  Hours per week: 2

Term: Sommersemester  Level: 4

Teaching language: Deutsch


Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Engineering Geology II: Mass Movements  

Course key: [09023]

Lecturers: Fecker
Credit points (CP): 4  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch


Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Design and Construction of Landfills for Municipal and Special Waste

Course key: [09031]

Lecturers: Egloffstein

Credit points (CP): 4  Hours per week: 2

Term: Wintersemester  Level: 4

Teaching language: Deutsch


Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Design Basics in Highway Engineering

Course key: [19026]

Lecturers: Ralf Roos
Credit points (CP): 3  Hours per week: 1/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Design, Construction, Operation and Maintenance Highways [WI4INGBGU1] (S. 94)

Learning Control / Examinations

Prerequisites
None.

Conditions
See corresponding module information.

Learning Outcomes
Content
Course: Basics in Transport Planning and Traffic Engineering  

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 Systems [WI4INGBGU8] (S. 101), Transport Ia [WI4INGBGU9] (S. 102)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Process Engineering in Water Quality Management  
Course key: [19054]

**Lecturers:** Hahn  
**Credit points (CP):** 3  
**Hours per week:** 2  
**Term:** Sommersemester  
**Level:** 4  
**Teaching language:** Deutsch  
**Part of the modules:** Water Supply and Sanitation [WI4INGBGU13] (S. 105)

### Learning Control / Examinations

**Prerequisites**  
The prior attendance of the course *Urban Water Resource Management and Ecological Engineering* [19057/19058] is assumed.

**Conditions**  
None.

### Learning Outcomes

Content
Course: Laboratory - Process Engineering in Water Quality Management [19054]

Lecturers: Erhard Hoffmann
Credit points (CP): 1.5  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Water Supply and Sanitation [WI4INGBGU13] (S. 105)

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Hydraulic Engineering and Water Resource Management I  Course key: [19055]

Lecturers: Nestmann, Bernhart, Lehmann
Credit points (CP): 6  Hours per week: 2/2
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Urban Water Resource Management and Ecological Engineering
[19057/58]

**Lecturers:** Hahn, Winter

**Credit points (CP):** 4.5  **Hours per week:** 2/1  
**Term:** Wintersemester  **Level:** 4  
**Teaching language:** Deutsch  
**Part of the modules:** Water Supply and Sanitation [WI4INGBGU13] (S. 105)

**Learning Control / Examinations**

**Prerequisites**  
It is recommended to attend the course *Foundations of Bioengineering* [19058] beforehand.

**Conditions**  
None.

**Learning Outcomes**

**Content**
Course: Seminar in Freshwater Ecology

Lecturers: Fuchs
Credit points (CP): 1.5  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules:  Environmental Management [WI4INGBGU12] (S. 99)

Learning Control / Examinations

Prerequisites
The prior attendance of the course Urban Water Resource Management and Ecological Engineering [19057/19058] is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Fundamentals of Food Chemistry

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 [WI4INGCV4] (S. 114)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Foundations of Bioengineering  

Lecturers: Winter  
Credit points (CP): 3  
Hours per week: 1/1  
Term: Sommersemester  
Level: 4  
Teaching language: Deutsch  
Part of the modules: Environmental Management [WI4INGBGU12] (S. 99)  

Learning Control / Examinations  

Prerequisites  
Good biology knowledge acquired in the secondary school is assumed.  

Conditions  
None.  

Learning Outcomes  

Content
Course: Process Engineering in Waste Management

Lecturers: Winter
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Water Supply and Sanitation [WI4INGBGU13] (S. 105)

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

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: Design and Construction Highways

Lecturers: Ralf Roos
Credit points (CP): 3  Hours per week: 1/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Design, Construction, Operation and Maintenance Highways [WI4INGBGU1] (S. 94), Highway Engineering [WI4INGBGU2] (S. 97)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: basic of ground born guided systems

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 [WI4INGBGU7] (S. 95)

Learning Control / Examinations
See module description.

Prerequisites
See module description.

Conditions
Siehe Modulbeschreibung.

Learning Outcomes

Content
Course: Foundations of Hydrological Planning

Lecturers: Ihringer
Credit points (CP): 6  Hours per week: 3/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Morphodynamics of Rivers and Streams

Course key: [19203]

 Lecturers: Nestmann/Lehmann
 Credit points (CP): 3   Hours per week: 1/1
 Term: Wintersemester   Level: 4
 Teaching language: Deutsch


Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: River- and Landscape Ecology

Lecturers: Kämpf
Credit points (CP): 3  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: River Engineering and Ecology I                  Course key: [19207]

Lecturers: Bernhardt/Dister
Credit points (CP): 3  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: River Engineering and Ecology II  

Course key: [19213]

Lecturers: Dister  
Credit points (CP): 3  
Hours per week: 1/1  
Term: Sommersemester  
Level: 4  
Teaching language: Deutsch  

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Soil Erosion and Soil Conservation

Course key: [19216]

Lecturers: Prinz
Credit points (CP): 3  Hours per week: 1/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Reaction Mechanism in Different Ecosystems

Lecturers: Winter
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Environmental Management [WI4INGBGU12] (S. 99)

Learning Control / Examinations
Prerequisites
It is recommended to attend the course Foundations of Bioengineering [19058] beforehand. Basic knowledge of microbiology is assumed.

Conditions
None.

Learning Outcomes
Content
Course: Field Course in Freshwater Ecology

Lecturers: Fuchs
Credit points (CP): 1.5  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Environmental Management [WI4INGBGU12] (S. 99)

Learning Control / Examinations

Prerequisites
It is recommended to attend the course Foundations of Bioengineering [19058] beforehand.
Basic knowledge of microbiology is assumed.
It is recommended to attend the Seminar in Freshwater Ecology [19057/19058].
The prior attendance of the course Urban Water Resource Management and Ecological Engineering [19057/19058] is recommended.

Conditions
None.

Learning Outcomes

Content
Course: Design of Wastewater Treatment Plants and Biosolids Reclaiming Systems (Design of Urban Water and Wastewater Management Systems)

Course key: [19243/44]

Lecturers: Erhard Hoffmann, Hahn
Credit points (CP): 3  Hours per week: 1/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Water Supply and Sanitation [WI4INGBGU13] (S. 105)

Learning Control / Examinations

Prerequisites
The prior attendance of the course Urban Water Ressource Management and Ecological Engineering [19057/19058] is assumed. It is recommended to attend the course Process Engineerung in Water Quality Management [19054] beforehand.

Conditions
None.

Learning Outcomes

Content
Course: Analysing and Managing Material Currents in Water Resources ManagementCourse key: [19245]

Lecturers: Fuchs
Credit points (CP): 3  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Environmental Management [WI4INGBGU12] (S. 99)

Learning Control / Examinations

Prerequisites
The prior attendance of the course Urban Water Resource Management and Ecological Engineering [19057/19058] is recommended.

Conditions
None.

Learning Outcomes

Content
Course: Environment and Hygiene

Lecturers: Würdemann
Credit points (CP): 1.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Environmental Management [WI4INGBGU12] (S. 99)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Design and Planning of Urban Drainage Systems

Lecturers: Fuchs
Credit points (CP): 1.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Water Supply and Sanitation [WI4INGBGU13] (S. 105)

Learning Control / Examinations

Prerequisites
The prior attendance of the course Urban Water Ressource Management and Ecological Engineering [19057/19058] is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Semi- and Decentral Systems

Lecturers: Erhard Hoffmann, Fuchs
Credit points (CP): 1.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Water Supply and Sanitation [WI4INGBGU13] (S. 105)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Right of Water, Soil and Wastage

Course key: [19260]

Lecturers: Wolf
Credit points (CP): 3   Hours per week: 2
Term: Sommersemester   Level: 4
Teaching language: Deutsch
Part of the modules: Environmental Management [WI4INGBGU12] (S. 99)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Operation and Maintenance Highways

Lecturers: Ralf Roos
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Design, Construction, Operation and Maintenance Highways [WI4INGBGU1] (S. 94), Highway Engineering [WI4INGBGU2] (S. 97)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

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

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: Environmental Impact of Roads

Lecturers: Ralf Roos
Credit points (CP): 1.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Highway Engineering [WI4INGBGU2] (S. 97)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: Special Topics in Highway Engineering

Lecturers: Ralf Roos
Credit points (CP): 1.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Highway Engineering [WI4INGGU2] (S. 97)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: Traffic Engineering and Traffic Telematics

Lecturers: Chlond
Credit points (CP): 3  Hours per week: 1/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules:  Transport Ia [W14INGBGU9] (S. 102), Transport Ib [W14INGBGU10] (S. 103)

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: Simulation Methods for Transport Modelling

- **Lecturers**: Schnittger
- **Credit points (CP)**: 1.5
- **Hours per week**: 1
- **Term**: Wintersemester
- **Level**: 4
- **Teaching language**: Deutsch
- **Part of the modules**: Transport II [WI4INGBGU11] (S. 104)

**Learning Control / Examinations**

- **Prerequisites**: None.
- **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

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  

Learning Control / Examinations

Prerequisites  
See module description.

Conditions  
See module description.

Learning Outcomes

Content
Course: Freight Transport

Lecturers: Chlond
Credit points (CP): 1.5  Hours per week: 1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations
See module description.

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content
Course: Application of Simulation Tools

Lecturers: Hilbertz
Credit points (CP): 1.5  Hours per week: 0/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Transport II [WI4INGBGU11] (S. 104)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Planning and Operation of Public Transport Systems

Lecturers: Weißkopf
Credit points (CP): 2  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Project in Public Transportation [WI4INGBGU5] (S. 100), Transport II [WI4INGBGU11] (S. 104)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content
Course: Seminar in Highway Engineering - Mitigation of an accident black spot  

Course key: [19314]

Lecturers: Zimmermann
Credit points (CP): 1.5  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Safety, Computing and Law in Highway Engineering [WI4INGBGU3] (S. 96)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: Transport Policy

Lecturers: Zemlin
Credit points (CP): 2  Hours per week: 2
Term: Winter-/Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Project in Public Transportation [WI4INGBGU5] (S. 100)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

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

Lecturers: Zimmermann  
Credit points (CP): 2  
Hours per week: 1  
Term: Wintersemester  
Level: 3  
Teaching language: Deutsch  
Part of the modules: Safety, Computing and Law in Highway Engineering [WI4INGBGU3] (S. 96)  

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: EDV in Highway Engineering

Course key: [19316]

Lecturers: Zimmermann
Credit points (CP): 3  Hours per week: 1/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Safety, Computing and Law in Highway Engineering [WI4INGBGU3] (S. 96)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

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 [WI4INGBGU4] (S. 93)

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 [WI4INGBGU4] (S. 93)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content
Course: Mechanical Models in Railway Engineering

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 [WI4INBGU6] (S. 98)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content
Course: Project in Public Transportation I

Lecturers: Hohnecker
Credit points (CP): 4  Hours per week: 4
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Project in Public Transportation [WI4INGBGU5] (S. 100)

Learning Control / Examinations
Prerequisites
See module description.

Conditions
The lecture is obligatory in the module Project in Public Transportation [WI4INGBGU5].

Learning Outcomes

Content
Course: Project in Public Transportation II

Lecturers: Hohnecker
Credit points (CP): 2  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Project in Public Transportation [WI4INGBGU5] (S. 100)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
The lecture is oligator in the module Project in Public Transportation [WI4INGBGU5].

Learning Outcomes

Content
Course: Economics in Public Transport

Lecturers: Hohnecker
Credit points (CP): 1  Hours per week: 1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Project in Public Transportation [WI4INGBGU5] (S. 100)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

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 [WI4INGBGU4] (S. 93)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content
Course: Entwicklungen und Aspekte spurgeführter Systeme

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 [WI4INGBGU6] (S. 98)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content
Course: Public Transit in Cities and Regions

Lecturers: Hohnecker
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Public Transportation Operations [WI4INGBGU4] (S. 93)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content
Course: Operating Models in Railway Engineering

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 [WI4INGBGU4] (S. 93)

Learning Control / Examinations
Prerequisites
See module description.
Conditions
None.
Learning Outcomes
Content
Course: Safety in Construction

Lecturers: Rieder, Hirschberger
Credit points (CP): 1.5  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Contaminated Land Investigation, Evaluation and Remediation [19523]

Lecturers: Bieberstein, Röhl, Würdemann  
Credit points (CP): 4  Hours per week: 2  
Term: Wintersemester  Level: 4  
Teaching language: Deutsch  

Learning Control / Examinations  
Prerequisites None.

Conditions None.

Learning Outcomes

Content
Course: Materialflow

Lecturers: Kai Furmans
Credit points (CP): 6  Hours per week: 3/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Airport Logistics

Lecturers: Brendlin
Credit points (CP): 3   Hours per week: 2
Term: Wintersemester   Level: 4
Teaching language: Deutsch

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 [WI4INGMB11] (S. 84)

Learning Control / Examinations

Prerequisites
The content of the course “stochastics” is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Safety Engineering

Lecturers: Kany
Credit points (CP): 4 Hours per week: 2
Term: Wintersemester Level: 3
Teaching language: Deutsch

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes
Content
Course: Supply Chain Management  

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 [WI4INGMB11] (S. 84)  

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Mobile Machines

Lecturers: Marcus Geimer
Credit points (CP): 6  Hours per week: 4
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Mobile Machines [WI4INGMB15] (S. 88)

Learning Control / Examinations
See modul description.

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

Conditions
None.

Learning Outcomes

Content
Course: Logistics

Lecturers: Kai Furmans
Credit points (CP): 6  Hours per week: 3/1
Term: Sommersemester   Level: 3
Teaching language: Deutsch

Learning Control / Examinations
Assessment will consist of a written exam following §4, Abs. 2, 1 of the examination 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 Management
- 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
- Tempelmeier. Bestandsmanagement in Supply Chains, Books on Demand 2006
Course: Fundamentals of Technical Logistics

Lecturers: Mittwoollen
Credit points (CP): 6  Hours per week: 3/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
Technical understanding is recommended.

Conditions
None.

Learning Outcomes

Content
Course: IT for Intralogistics Systems

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 [WI4INGMB11] (S. 84)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes

Content
Course: Autotmative Logistics

Lecturers: Kai Furmans
Credit points (CP): 3   Hours per week: 2
Term: Sommersemester   Level: 4
Teaching language: Deutsch

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  

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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: CAN-Bus Release Control

Lecturers: Marcus Geimer
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI4INGMB5] (S. 87), Mobile Machines [WI4INGMB15] (S. 88)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Fluid Power Systems

Lecturers: Marcus Geimer
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI4INGMB5] (S. 87), Mobile Machines [WI4INGMB15] (S. 88)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Simulation of coupled systems

Lecturers: Marcus Geimer
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI4INGMB14] (S. 86), Mobile Machines [WI4INGMB15] (S. 88)

Learning Control / Examinations

Prerequisites
It is recommended to have:
- Knowledge of ProE (ideally Wildfire 2.0)
- Basic knowledge of Matlab/Simulink
- Basic knowledge of dynamics of machines
- Basic knowledge of hydraulics

Conditions
None.

Learning Outcomes

Content
Course: Combustion Engines A

Lecturers: Spicher
Credit points (CP): 6  Hours per week: 4/2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI4INGMB17] (S. 89), Combustion Engines [WI4INGMB16] (S. 91)

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 [WI4INGMB17] (S. 89), Combustion Engines [WI4INGMB16] (S. 91)

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 [WI4INGMB17] (S. 89), Combustion Engines [WI4INGMB16] (S. 91)

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 Engines

Course 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 [WI4INGMB17] (S. 89), Combustion Engines [WI4INGMB16] (S. 91)

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 [WI4INGMB17] (S. 89), Combustion Engines [WI4INGMB16] (S. 91)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Combustion Engines B

Lecturers: Spicher
Credit points (CP): 3  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI4INGMB17] (S. 89), Combustion Engines [WI4INGMB16] (S. 91)

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

Lecturers: Bernhardt
Credit points (CP): 3   Hours per week: 2
Term: Sommersemester   Level: 4
Teaching language: Deutsch
Part of the modules: Engine Development [WI4INGMB17] (S. 89), Combustion Engines [WI4INGMB16] (S. 91)

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 Technology

Course 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 [WI4INGMB17] (S. 89)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

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

Lecturers: Zürn
Credit points (CP): 1.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI4INGMB14] (S. 86), Mobile Machines [WI4INGMB15] (S. 88)

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

Conditions
None.

Learning Outcomes
Content
Course: Introduction to Multibody System Dynamics

Lecturers: Seemann
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Analysing and Simulation Methods for Mechanical Systems [WI4INGMB19] (S. 79)

Learning Control / Examinations

Prerequisites
The courses Engineering Mechanics I [21208] and Engineering Mechanics II [22642] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content
Course: Simulation of Dynamical Systems                  Course key: [21236]

Lecturers: Carsten Proppe
Credit points (CP): 6     Hours per week: 2/2
Term: Sommersemester    Level: 4
Teaching language: Deutsch
Part of the modules: Analysing and Simulation Methods for Mechanical Systems [WI4INGMB19] (S. 79)

Learning Control / Examinations

Prerequisites
The courses Engineering Mechanics I [21208] and Engineering Mechanics II [22642] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content
Course: Mathematical Practices in Vibrations

Lecturers: Wauer
Credit points (CP): 4.5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Analysing and Simulation Methods for Mechanical Systems [WI4INGMB19] (S. 79)

Learning Control / Examinations

Prerequisites
The courses Engineering Mechanics I [21208] and Engineering Mechanics II [22642] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content
Course: Practical Training in Measurement of Vibrations

Lecturers: Wauer
Credit points (CP): 3   Hours per week: 2
Term: Winter-/Sommersemester   Level: 4
Teaching language: Deutsch
Part of the modules: Analysing and Simulation Methods for Mechanical Systems [WI4INGMB19] (S. 79)

Learning Control / Examinations

Prerequisites
The courses *Engineering Mechanics I* [21208] and *Engineering Mechanics II* [22642] have to be completed successfully.
It is recommended to attend more courses in the area of dynamics.

Conditions
None.

Learning Outcomes

Content
Course: Mathematical Methods in Strength of Materials

Course key: [21254]

Lecturers: Böhlke
Credit points (CP): 4.5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Analysing and Simulation Methods for Mechanical Systems [WI4INGMB19] (S. 79)

Learning Control / Examinations

Prerequisites
The courses Engineering Mechanics I [21208] and Engineering Mechanics II [22642] have to be completed successfully.

Conditions
None.

Learning Outcomes

Content
Course: Simulation Methods in the Product Creation Process  

Lecturers: Jivka Ovtcharova, Albert Albers, Thomas Böhle
Credit points (CP): 4.5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Virtual Engineering [WI4INGMB22] (S. 92)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Introduction to the Finite-Element-Method

Lecturers: Böhlke
Credit points (CP): 6  Hours per week: 3/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Analysing and Simulation Methods for Mechanical Systems [WI4INGMB19] (S. 79)

Learning Control / Examinations

Prerequisites
The courses Engineering Mechanics I [21208] and Engineering Mechanics II [22642] have to be completed successfully. It is recommended to attend the courses Advanced Course on strength of materials [21252] and Mathematical Methods in Strength of Materials [21254].

Conditions
None.

Learning Outcomes
Content
Course: Virtual Engineering I

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 [WI4INGMB22] (S. 92)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Virtual Engineering for Mechatronic Products

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 [WI4INGMB22] (S. 92)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Product, Process and Resource 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 [WI4INGMB22] (S. 92)

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Virtual Engineering II

Lecturers:

Credit points (CP): 4.5  Hours per week: 2/1
Term: Sommersemester Level: 4
Teaching language: Deutsch
Part of the modules: Virtual Engineering [WI4INGMB22] (S. 92)

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 [WI4INGMB22] (S. 92)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Experimental Lab Class in Welding Technology

Lecturers: Volker Schulze
Credit points (CP): 0  Hours per week: 3
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The participation in the course Welding Technology I/II [21565/21570] is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Failure Analysis in Mechanical Engineering

Lecturers: Kerscher
Credit points (CP): 4  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Failure Analysis  

Lecturers: Kerscher  
Credit points (CP): 3  
Hours per week: 2/2  
Term: Wintersemester  
Level: 4  
Teaching language: Deutsch  
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations
Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully.

Conditions
None.

Learning Outcomes

Content
**Course: Welding Technology I/II**

**Course key:** [21565/21570]

**Lecturers:** Spies

**Credit points (CP):** 3  **Hours per week:** 2

**Term:** Winter-/Sommersemester  **Level:** 4

**Teaching language:** Deutsch

**Part of the modules:** Specific Topics in Material Science [WI4INGMB18] (S. 90)

### Learning Control / Examinations

#### Prerequisites

The module *Emphasis Material Science* [WI3INGMB9] has to be completed successfully beforehand.

#### Conditions

None.

#### Learning Outcomes

**Content**
Course: Casting Technology

Lecturers: Wilhelm
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand.

Conditions
None.

Learning Outcomes

Content
Course: Physical Basics of Laser Technology

Course key: [21612]

Lecturers: Schneider
Credit points (CP): 3  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand. Basic knowledge of physics, chemistry and material science is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Superhard Thin Film Materials

Lecturers: Ulrich
Credit points (CP): 3  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand. Basic knowledge of physics, chemistry and material science is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Surface Technology for Functional Applications  
Course key: [21627]

Lecturers: Zum Gahr
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand. Basic knowledge of physics, chemistry and material science is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Laser Application in Automotive Engineering

Lecturers: Schneider
Credit points (CP): 3   Hours per week: 2
Term: Sommersemester   Level: 4
Teaching language: Deutsch
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand.
Basic knowledge of physics, chemistry and material science is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Machine Tools

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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Manufacturing Technology  

**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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82)

**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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes
Content
Course: Global Business Strategies

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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Quality Management

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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82)

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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82)

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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Seminar Industrial Engineering

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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: International Production and Logistics  

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 [WI4INGMB1] (S. 80), Selected Topics in Production Technology II [WI4INGMB2] (S. 81), Selected Topics in Production Technology III [WI4INGMB3] (S. 82), Introduction to Logistics [WI4INGMB20] (S. 83), Technical Logistics and Logistic Systems [WI4INGMB11] (S. 84)  

Learning Control / Examinations  

Prerequisites  
None.  

Conditions  
None.  

Learning Outcomes  
Content
Course: Reliability of Constructions

Lecturers: Kraft
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand. Good basic knowledge of mathematics is recommended.

Conditions
None.

Learning Outcomes

Content
Course: Practical Course in Engineering Ceramics  

Course key: [21751]

Lecturers: Porz  
Credit points (CP): 0  
Hours per week: 2  
Term: Wintersemester  
Level: 4  
Teaching language: Deutsch  
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand. Attendance of one course in the area of ceramics is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Principles of Ceramic and Powder Metallurgy Processing  
Course key: [21754]

Lecturers: Oberacker  
Credit points (CP): 3  
Hours per week: 2  
Term: Wintersemester  
Level: 4  
Teaching language: Deutsch  
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand. Basic knowledge of experimental physics and chemistry is recommended.

Conditions
None.

Learning Outcomes

Content
Course: Structural and Functional Ceramics

Lecturers: M. J. Hoffmann
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Specific Topics in Material Science [WI4INGMB18] (S. 90)

Learning Control / Examinations

Prerequisites
The module Emphasis Material Science [WI3INGMB9] has to be completed successfully beforehand.
Basic knowledge of experimental physics and chemistry is recommended.
It is recommended to attend the course Introduction in Ceramics [21755].

Conditions
None.

Learning Outcomes

Content
Course: Basics of Automotive Engineering I

**Course key:** [21805]

**Lecturers:** Frank Gauterin, Unrau

**Credit points (CP):** 6  **Hours per week:** 4

**Term:** Wintersemester  **Level:** 4

**Teaching language:** Deutsch

**Part of the modules:** Automotive Engineering [WI4INGMB5] (S. 87)

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**Learning Control / Examinations**

**Prerequisites**

None.

**Conditions**

None.

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**Learning Outcomes**

**Content**
Course: Vehicle Comfort and Acoustics I

Course key: [21806]

Lecturers: Frank Gauterin
Credit points (CP): 3  
Hours per week: 2
Term: Wintersemester  
Level: 4
Teaching language: Deutsch
Part of the modules: Handling Characteristics of Motor Vehicles [WI4INGMB6] (S. 85)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Handling Characteristics of Motor Vehicles I

**Lecturers:** Unrau

**Credit points (CP):** 3  **Hours per week:** 2

**Term:** Wintersemester  **Level:** 4

**Teaching language:** Deutsch

**Part of the modules:** Handling Characteristics of Motor Vehicles [WI4INGMB6] (S. 85)

### Learning Control / Examinations

**Prerequisites**
None.

**Conditions**
None.

**Learning Outcomes**

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

Lecturers: Frech  
Credit points (CP): 1.5  Hours per week: 1  
Term: Wintersemester  Level: 4  
Teaching language: Deutsch  
Part of the modules: Automative Engineering [WI4INGMB14] (S. 86)

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes

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

Lecturers: Zürn
Credit points (CP): 1.5  Hours per week: 1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI4INGMB14] (S. 86), Mobile Machines [WI4INGMB15] (S. 88)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Fundamentals for Design of Motor-Vehicle Bodies I

Course key: [21814]

Lecturers: Harloff
Credit points (CP): 1.5  Hours per week: 1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI4INGMB5] (S. 87)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Vehicle Mechatronics I

Lecturers: Ammon
Credit points (CP): 3  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Handling Characteristics of Motor Vehicles [WI4INGMB6] (S. 85), Automotive Engineering [WI4INGMB14] (S. 86)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Basics of Automotive Engineering II

Lecturers: Frank Gauterin, Unrau
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI4INGMB5] (S. 87)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Handling Characteristics of Motor Vehicles II

Course key: [21838]

Lecturers: Unrau
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Handling Characteristics of Motor Vehicles [WI4INGMB6] (S. 85)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Fundamentals for Design of Motor-Vehicle Bodies II

Course key: [21840]

Lecturers: Harloff
Credit points (CP): 1.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI4INGMB5] (S. 87)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Fundamentals in the Development of Passenger Vehicles II  

Course key: [21842]

Lecturers: Frech
Credit points (CP): 1.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Automative Engineering [WI4INGMB14] (S. 86)

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

Conditions
None.

Learning Outcomes

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

Lecturers: Leister  
Credit points (CP): 3  
Hours per week: 2  
Term: Sommersemester  
Level: 4  
Teaching language: Deutsch
Part of the modules: Automotive Engineering [WI4INGMB14] (S. 86)

Learning Control / Examinations

Prerequisites
Knowledge of automobile technology is recommended.

Conditions
None.

Learning Outcomes

Content
Course: Project Workshop-Automotive Engineering

Lecturers: Frank Gauterin

Credit points (CP): 4.5  Hours per week: 3

Term: Winter-/Sommersemester  Level: 4

Teaching language: Deutsch


Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Micro-Actuators

**Lecturers:** Kohl  
**Credit points (CP):** 3  
**Hours per week:** 2  
**Term:** Sommersemester  
**Level:** 4  
**Teaching language:** Deutsch  
**Part of the modules:** Sensor Technology I [WI4INGETIT3] (S. 108), Sensor Technology II [WI4INGETIT5] (S. 109)

### 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: 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 [WI4INGCV3] (S. 113), Specialization in Food Process Engineering [WI4INGCV4] (S. 114)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Food Science and Functionality

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 [WI4INGCV3] (S. 113), Specialization in Food Process Engineering [WI4INGCV4] (S. 114)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Microbiology of Food

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 [WI4INGCV4] (S. 114)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Principles of Process Engineering referring to Food I

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 [WI4INGCV3] (S. 113)

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

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 [WI4INGCV3] (S. 113)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes
Content
Course: Product Design

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 [WI4INGCV4] (S. 114)

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 [WI4INGCV4] (S. 114)

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


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

Lecturers: Georg Schaub
Credit points (CP): 6  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Introduction to Process Safety in the Chemical Industry  

Lecturers: Schmidt  
Credit points (CP): 4  
Hours per week: 2  
Term: Sommersemester  
Level: 4  
Teaching language: Deutsch  

Learning Control / Examinations  
Prerequisites  
None.

Conditions  
None.

Learning Outcomes  
Content
Course: Cycles and Global Development  

Lecturers: Georg Schaub  
Credit points (CP): 4  
Hours per week: 2  
Term: Wintersemester  
Level: 4  
Teaching language: Deutsch  

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 [WI4INGCV4] (S. 114)

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

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

Lecturers: Bockhorn
Credit points (CP): 4  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch

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

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 [WI4INGCV5] (S. 115)

Learning Control / Examinations
Prerequisites
None.
Conditions
See corresponding module information.
Learning Outcomes
Content
Course: Exercises in Aqueous Chemical Engineering

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 [WI4INGCV5] (S. 115)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Natural Scientific Basics for Analysis 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 [WI4INGCV5] (S. 115)

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Water Treatment with Membrane Technology

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 [WI4INGCV5] (S. 115)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Sorption-Processes in Water Disinfection

Lecturers: Höll
Credit points (CP): 4  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Water Chemistry [WI4INGCV5] (S. 115)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Oxidative Drinking Water Treatment

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 [WI4INGCV5] (S. 115)

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 [WI4INGCV5] (S. 115)

### Learning Control / Examinations

**Prerequisites**  
None.

**Conditions**  
None.

### Learning Outcomes

**Content**

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*Modulhandbuch: Stand 13.03.2009 Business Engineering (M.Sc.)*
Course: Exercises in Water Chemistry  

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 [WI4INGCV5] (S. 115)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: System Dynamics and Control Engineering

Lecturers: Kluwe
Credit points (CP): 6  Hours per week: 3/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Control Engineering I [WI4INGETIT1] (S. 106)

Learning Control / Examinations

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

Conditions
None.

Learning Outcomes

Content
Course: Automation of Discrete Event and Hybrid Systems  
Course key: [23160]

Lecturers: Kluwe  
Credit points (CP): 3  
Term: Sommersemester  
Level: 4  
Teaching language: Deutsch  
Part of the modules: Control Engineering II [WI4INGETIT2] (S. 107)

Learning Control / Examinations

Prerequisites
The prior attendance of the course System Dynamics and Control Engineering [23155] is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Knowledge based Systems in Automation

Lecturers: N.N.
Credit points (CP): 4.5  Hours per week: 3
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Control Engineering I [WI4INGETIT1] (S. 106)

Learning Control / Examinations
Prerequisites
The prior attendance of the course System Dynamics and Control Engineering [23155] is assumed.

Conditions
None.

Learning Outcomes

Content

Remarks
The lecture won’t be offered in summer 2009.
Course: Control of Linear Multivariable Systems

Lecturers: Mathias Kluwe
Credit points (CP): 6  Hours per week: 3/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Control Engineering II [WI4INGETIT2] (S. 107)

Learning Control / Examinations

Prerequisites
The prior attendance of the course System Dynamics and Control Engineering [23155] is assumed.

Conditions
None.

Learning Outcomes

Content
Course: Systematic Product Development in Sensor Technology      Course key: [23209]

Lecturers: Ivers-Tiffée, Riegel
Credit points (CP): 3   Hours per week: 1/1
Term: Wintersemester   Level: 4
Teaching language: Deutsch

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: Sensors

Lecturers: Wolfgang Menesklou
Credit points (CP): 3  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules:  Sensor Technology I [WI4INGETIT3] (S. 108)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content
Course: Experimental Laboratories in Sensors and Actuators  
Course key: [23232]

Lecturers: Wolfgang Menesklou
Credit points (CP): 6  
Hours per week: 4
Term: Sommersemester  
Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
Siehe Modulbeschreibung.

Conditions
None.

Learning Outcomes

Content
Course: Seminar: Selected Chapters of Passive Components  Course key: [23233/23234]

Lecturers: Wolfgang Menesklou
Credit points (CP): 3  Hours per week: 2
Term: Winter-/Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Integrated Sensor Actuator Systems

Lecturers: Wersing
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch

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: Electrical Rail Vehicles

Lecturers: Clos
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Guided Systems Engineering [WI4INGBGU6] (S. 98)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
See module description.

Learning Outcomes

Content
Course: High-Voltage Engineering

**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 [WI4INGEIT4] (S. 110)

Learning Control / Examinations

**Prerequisites**
None.

**Conditions**
None.

**Learning Outcomes**

**Content**
Course: High-Voltage Technology II

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 [WI4INGETIT4] (S. 110)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Electric Power System Engineering II  

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 [WI4INGETI4] (S. 110)

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

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 [WI4INGETIT4] (S. 110)

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Ecologically Generation of Electricity / Windmills

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 [WI4INGETIT4] (S. 110)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

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

Lecturers: Retzmann
Credit points (CP): 3  Hours per week: 2/0
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Hochspannungsprüftechnik

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 [WI4INGETIT4] (S. 110)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Commercial and Corporate Law

Lecturers: Peter Sester
Credit points (CP): 3  Hours per week: 2/0
Term: Wintersemester  Level: 3
Teaching language: Deutsch
Part of the modules: Civil Law [WI3JURA3] (S. 124)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Media
Folien

Basic literature
Klunzinger, Eugen

Complementary literature
tba in Vorlesungsfolien
Course: Data Protection Law

Lecturers: Indra Spiecker genannt Döhmann
Credit points (CP): 3  Hours per week: 2/0
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: IT-Law [WI4JURA2] (S. 123)

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

Prerequisites
Keine.

Conditions
None.

Learning Outcomes
Increasing significance of information technology for data processing and interconnectedness of the society by means of telecommunication does not only enhance the social and economical relevance of data in general, it raises the question about legal rules for the protection of personalised data as well. The problem for those who are responsible for the application of law is that national rules in this area are in constant flux due to technological progress and Europeanisation of law. Additionally there is a vast number of sector-specific regulation (such as labour law). Bearing all this in mind, the lecture’s main focus is the presentation of the basic principles of the German Federal Act on Data Protection (Bundesdatenschutzgesetz). In doing so, new concepts of data protection like self-data protection or system data protection will be analysed. A further focal point is the examination of evolution of sector-specific data protection law, considering as example regulation of data protection in connection with teleservice or mediaservice. Students should learn how to negotiate their ways in the interaction of different levels of legal norms and solve simple problems of data protection law.

Content
After illustrating contents and history of data protection law there will be presented backgrounds with respect to Community law and under constitutional law. Further on, the German Federal Act on Data Protection will be focussed. At this will be set forth basic principles of regulation (such as necessity), personalised data as an object of regulation, rights of those who are affected as well as the legitimacy of different procedures of data processing. Oranisational regulations, particularly data security official will be approached as well. Further on, in a case study current concepts of data protection and the problem of video surveillance will be discussed. Finally, there are three units on sector-specific regulation of telecommunication and teleservice / mediaservice.

Media
abstracts, sketches on blackboard, slides

Basic literature
Will be announced in the course.

Complementary literature
Will be announced in the course.

Remarks
In cooperation with the House of Competence, Students should be rhetorical trained asking and answering questions (short-answer-and-question-technique). Therefor most likely a coach will attend several lessons.
Course: Copyright

Lecturers: Thomas Dreier  
Credit points (CP): 3  Hours per week: 2/0  
Term: Wintersemester  Level: 4  
Teaching language: Deutsch  
Part of the modules: IT-Law [WI4JURA2] (S. 123)

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: 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 [WI4VWL5] (S. 61)

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

Lecturers: Alexander Hoff
Credit points (CP): 3  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Labor and Tax Law [ WI4JURA1 ] (S. 122)

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

Lecturers: Detlef Dietrich
Credit points (CP): 3  Hours per week: 2/0
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Labor and Tax Law [ WI4JURA1 ] (S. 122)

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: Internet Law

Lecturers: Thomas Dreier
Credit points (CP): 3  Hours per week: 2/0
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: IT-Law [WI4JURA2] (S. 123)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
It is the aim of this course to give the students an overview of the legal rules that are touched upon when the Internet is used as a means of communications and for doing business. These legal rules range from the law governing domain names, issues concerning the electronic formation of contracts, distance and electronic commerce contracts, to the issue liability and questions of unfair competition. 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 legal rules that are touched upon when the Internet is used as a means of communications and for doing business. These legal rules range from the law governing domain names, issues concerning the electronic formation of contracts, distance and electronic commerce contracts, to the issue liability and questions of unfair competition. 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
Slides

Basic literature
Script, Internetrecht (Internet Law)

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: Advanced Civil Law

**Lecturers:** Thomas Dreier, Peter Sester  
**Credit points (CP):** 3  
**Hours per week:** 2/0  
**Term:** Sommersemester  
**Level:** 1  
**Teaching language:** Deutsch  
**Part of the modules:** Civil Law [WI4JURA3] (S. 124)

**Learning Control / Examinations**

**Prerequisites**
The course *Civil law for beginners* [24012] is required.

**Conditions**
None.

**Learning Outcomes**
Following what the students have learned in the course *Civil law for beginners* about the basic notions of law and, in particular, the general part of the German Civil Code (Bürgerliches Gesetzbuch, BGB), in this course the students shall acquire knowledge of contract and of property law. They will learn about the statutory regulation of place, time and modalities of the performance of contractual duties, as well as the statutory rules governing defaults of performing contractual promises (impossibility of performance; non-performance; delayed performance, defective performance). In addition the students will be presented with the different types of contracts and with both liability for fault and strict liability. As far as property law is concerned, the students shall understand the different types of transfer of ownership and of securities the German Civil Code provides for.

**Content**
Following what the students have learned in the course *Civil law for beginners* about the basic notions of law and, in particular, the general part of the German Civil Code (Bürgerliches Gesetzbuch, BGB), in this course the students shall acquire knowledge of contract and of property law. On the one hand, this includes the statutory rules on place, time and modalities of performance, and the statutory rules governing defaults of performing contractual promises (impossibility of performance; non-performance; delayed performance, defective performance). On the other hand, the statutory types of contracts will be discussed (in particular, sale, lease, contract for work and contract for services, lending and borrowing) as well as new types of combined contracts (e.g., leasing, factoring, computer contracts). Moreover, legal liability will be discussed both with regard to liability for fault and with regard to strict liability. As regards property law, possession and ownership will be discussed as well as the different forms of transfer of ownership and the most important of the security rights.

**Media**
Transparencies/Slides

**Basic literature**
Tba at the beginning of the course.

**Complementary literature**
tba at the beginning of the course
Course: Exercises in Civil Law

Lecturers: Peter Sester, Thomas Dreier
Credit points (CP): 3  Hours per week: 2/0
Term: Winter-/Sommersemester  Level: 1
Teaching language: Deutsch
Part of the modules: Civil Law [WI4,JURA3] (S. 124)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
It is the aim of this course to enable students to solve legal cases by way of the appropriate legal technique (so-called Subsumtion).
At the same time, the legal knowledge which students have acquired in the courses “Civil Law for Beginners”, “Advanced Civil Law” and “Commercial and Corporation Law” will be repeated and deepened. This shall enable students to solve practical legal problems in a methodologically correct way.

Content
In 5 sessions the substantive law which students have been taught in the courses “Civil Law for Beginners”, “Advanced Civil Law” and “Commercial and Corporation Law” will be repeated and the method for solving legal cases deepend. Moreover, 5 sessions are reserved to written exam problems which cover the totality of what students have learned so far. Additional sessions are reserved for the subsequent in-class discussion of the exam problems.

Media
Slides

Basic literature
Tba in the course.
Course: Computer Contract Law

Lecturers: Michael Bartsch
Credit points (CP): 3  Hours per week: 2/0
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: IT-Law [WI4JURA2] (S. 123)

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: 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:** Labor and Tax Law [ WI4JURA1 ] (S. 122)

**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**

- Spangemacher, Gewerbesteuer, Band 5, Grüne Reihe, Erich Fleischer Verlag
- Falterbaum/Bolk/Reiß/Eberhart, Buchführung und Bilanz, Band 10, Grüne Reihe, Erich Fleischer Verlag
- Töpke, 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: Employment Law II

Lecturers: Alexander Hoff
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Labor and Tax Law [ WI4JURA1 ] (S. 122)

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: 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  

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, assess, 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

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 [WI4BWLFBV7] (S. 41)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Applied Informatics I - Modelling

Lecturers: Andreas Oberweis, Rudi Studer
Credit points (CP): 4  Hours per week: 2/1
Term: Wintersemester  Level: 2
Teaching language: Deutsch

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 aspects, 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 event driven process chains together with their respective analysis techniques will be introduced.

Media
Slides.

Basic literature

Complementary literature
Course: Non-linear Optimization

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 [WI4OR2] (S. 73)

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 than 50% of the exercise points, the grade of the passed examination is improved by a third of a grading step. Upon attaining more than 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 conditions 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

Remarks
The lecture will be offered in SS 2010.
Course: Combinatorial Optimization

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 [WI4OR2] (S. 73)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes

Content
Course: Seminar in Continuous Optimization

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 [WI4SEM] (S. 126)

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

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 [WI4OR2] (S. 73)

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 \( \alpha \)BB 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 be offered in winterterm 2010/11.
Course: Mixed-integer Optimization

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 [WI4OR2] (S. 73)

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

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


Learning Control / Examinations

Prerequisites
Basic knowledge of statistics.

Conditions
None.

Learning Outcomes

Content
Course: Marketing and Operations Research

Lecturers: Wolfgang Gaul
Credit points (CP): 5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
Basics of Operations Research are required.

Conditions
None.

Learning Outcomes

Content
Course: Corporate Planning and Operations Research

Lecturers: Wolfgang Gaul
Credit points (CP): 5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
Basics of operations research are assumed.

Conditions
None.

Learning Outcomes

Content
Course: e-Business & electronic Marketing

Lecturers: Wolfgang Gaul
Credit points (CP): 2.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch


Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes
Content
Course: Information Technology and Business Information

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 [WI4BWLMAR3] (S. 29), Behavioral Approaches in Marketing and Data Analysis [WI4BWLMAR4] (S. 30), Successful Market Orientation [WI4BWLMAR5] (S. 31)

Learning Control / Examinations
Examination performance will consist of a written exam according 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 multimedia 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

Lecturers: Wolfgang Gaul
Credit points (CP): 2.5  Hours per week: 1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

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


Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Strategic and Innovative Decision Making in Marketing

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 [WI4BWLMAR3] (S. 29), Successful Market Orientation [WI4BWLMAR5] (S. 31)

Learning Control / Examinations
Examination performance will consist of a written exam according 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

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 [WI4BWLMAR4] (S. 30), Successful Market Orientation [WI4BWLMAR5] (S. 31)

Learning Control / Examinations
Examination performance will consist of a written exam according 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 towards 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

Lecturers: Wolfgang Gaul
Credit points (CP): 2.5  Hours per week: 1/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

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


Learning Control / Examinations

Prerequisites
Basics of data analysis and operations research are assumed.

Conditions
None.

Learning Outcomes

Content
Course: Master Seminar in Marketing

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 [WI4BWLMAR5] (S. 31)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Master Seminar zu Marktforschung

Lecturers: Wolfgang Gaul
Credit points (CP): 4  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Market Research [WI4BWLMAR2] (S. 28)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Master Seminar in Quantitative Marketing and OR

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 [WI4OR1] (S. 72)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Master-Seminar Marketing Planning

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 [WI4BWLMAR1] (S. 27)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Master Seminar in Entrepreneurship, Innovation and International Marketing
Course 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 [WI4BWLMAR6] (S. 26)

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) [WI4BWLBV2] (S. 24), F2&F3 (Finance) [WI4BWLBV3] (S. 25)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Valuation

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) [WI4BWLFBV1] (S. 23), F2 (Finance) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

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) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Financial Intermediation

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) [WI4BWLFBV2] (S. 24), F2+F3 (Finance) [WI4BWLFBV3] (S. 25)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Market Microstructure

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) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

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 inventory and/or asymmetric information affect market prices and the pricing of securities. Theoretical models are shown to provide predictions which are consistent with empirical 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

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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Exchanges

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) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Business Strategies of Banks

Lecturers: Wolfgang Müller
Credit points (CP): 3  Hours per week: 2
Term: Wintersemester  Level: 3
Teaching language: Deutsch
Part of the modules:  F2 (Finance) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Multivariate Verfahren

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 [WI4STAT2] (S. 78)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Basic literature

- Dobson A.J.: An Introduction to Statistical Modelling, Chapman and Hall
Course: Stochastic Calculus and Finance

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 [WI4STAT] (S. 76), Mathematical and Empirical Finance [WI4STAT1] (S. 77)

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
After successful completion of the course students will be familiar with many common methods of pricing and portfolio models in finance. Emphasis will 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
Course: Stochastic and Econometric Models in Credit Risk Management

Course key:

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 [WI4STAT2] (S. 78)

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
Course: Operational Risk and Extreme Value Theory

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 [WI4STAT2] (S. 78)

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
Marcelo G. Cruz: Modelling, Measuring and Hedging Operational Risk, Wiley, NY, 2001
Course: Finanzmärkte und Banken

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 [W4STAT1] (S. 77)

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.
- 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

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 [WI4STAT] (S. 76), Statistical Methods in Risk Management [WI4STAT2] (S. 78)

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 operational risk in the financial 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 [WI4STAT1] (S. 77)

Learning Control / Examinations

Prerequisites

None.

Conditions

None.

Learning Outcomes

Content

Basic literature

- Bierwag: Duration-Analysis; Managing Interest Rate Risk, 1987
- Andrew Harvey: The Econometric Analysis of Time Series, 2nd. Ed. 1993
- Andrew Harvey: Time Series Models, 2nd. Ed. 1994
- Pindyck, Rubinfeld: Econometric Models and Economic Forecasts, 1998
- B. Rolles: 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 [WI4STAT] (S. 76), Mathematical and Empirical Finance [WI4STAT1] (S. 77), Statistical Methods in Risk Management [WI4STAT2] (S. 78)

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**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, arbitrage pricing 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 [WI4STAT] (S. 76), Mathematical and Empirical Finance [WI4STAT1] (S. 77)

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
Course: Game Theory II

Lecturers: Siegfried Berninghaus
Credit points (CP): 4,5  Hours per week: 2/2
Term: Wintersemester  Level: 4
Teaching language: Deutsch

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 amplifying 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

Complementary literature
Course: Experimental Economics

Lecturers: Siegfried Berninghaus, Bleich
Credit points (CP): 4,5  Hours per week: 2/1
Term: Sommersemester  Level: 3
Teaching language: Deutsch

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 empirical 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.
- 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

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 [WI4STAT2] (S. 78)

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

- 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
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 [WI4STAT] (S. 76), Mathematical and Empirical Finance [WI4STAT1] (S. 77)

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

Media
transparencies, exercises.

Basic literature
Course: Auction Theory

Lecturers: Karl-Martin Ehrhart, Stefan Seifert
Credit points (CP): 4.5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

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 designs,
- 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
● 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

Lecturers: Clemens Puppe
Credit points (CP): 4.5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

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

Lecturers: Siegfried Berninghaus
Credit points (CP): 4,5  Hours per week: 2/2
Term: Sommersemester  Level: 3
Teaching language: Deutsch

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 equilibrium 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

Complementary literature
• Binmore, Fun and Games, DC Heath, Lexington, MA, 1991
Course: Advanced Microeconomic Theory

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 [WI4VWL7] (S. 63)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Decision Theory and Objectives in Applied Politics

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 [WI4VWL9] (S. 65)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Mathematical Theory of Democracy

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 [WI4VWL9] (S. 65)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Theory of Economic Growth

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 [WI4VWL8] (S. 64)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Environmental Economics and Sustainability  

**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 [WI4VWL5] (S. 61)

### 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 Resource Policy

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 [WI4VWL5] (S. 61)

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 [WI4VWL8] (S. 64)

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

Lecturers: Martin Barbie

Credit points (CP): 4.5  Hours per week: 2/1
Term: Sommsemester  Level: 3
Teaching language: Deutsch
Part of the modules: Allocation and Equilibrium [WI4VWL7] (S. 63), Macroeconomic Theory [WI4VWL8] (S. 64)

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  

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 [WI4OR4] (S. 75)

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 acquired 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

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 [WI4OR3] (S. 74)

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
• Montgomery, 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

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 [WI4OR3] (S. 74)

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

Remarks
The lecture is offered irregularly. The curriculum of the next two years is available online.
Course: Simulation I

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 [WI4OR4] (S. 75)

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 often 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 continuous random variables, statistical analysis of simulated data, variance reduction techniques, case studies.

Media
Blackboard, Slides, Flash Animations, Simulation Software

Basic literature
- Lecture Notes

Complementary literature

Remarks
The lecture is offered irregularly. The curriculum of the next two years is available online.
Course: Simulation II

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 [WI4OR4] (S. 75)

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 often 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

Complementary literature

Remarks
The lecture is offered irregularly. The curriculum of the next two years is available online.
Course: Optimization in a Random Environment

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 [WI4OR3] (S. 74)

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

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 [WI4OR4] (S. 75)

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

Lecturers: Hartmut Schmeck
Credit points (CP): 5   Hours per week: 2/1
Term: Sommersemester   Level: 3
Teaching language: Deutsch

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

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

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

Basic literature
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

Lecturers: Hartmut Schmeck
Credit points (CP): 4  Hours per week: 3
Term: Winter-/Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Special Topics of Efficient Algorithms  

Lecturers: Hartmut Schmeck  
Credit points (CP): 5  Hours per week: 2/1  
Term: Winter-/Sommersemester  Level: 4  
Teaching language: Deutsch  

Learning Control / Examinations  
Prerequisites  None.  
Conditions  None.  
Learning Outcomes  
Content
Course: Algorithms for Internet Applications

Lecturers: Hartmut Schmeck

Credit points (CP): 5  Hours per week: 2/1

Term: Wintersemester  Level: 4

Teaching language: Englisch


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


Complementary literature

• Further references will be given in the course.
Course: Organic Computing

Lecturers: Hartmut Schmeck, Sanaz Mostaghim
Credit points (CP): 5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Englisch

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 resources lecture recording (camtasia).

Basic literature

Complementary literature

Further references will be announced in class
Course: Nature-inspired Optimisation

Lecturers: Sanaz Mostaghim
Credit points (CP): 5  
Hours per week: 2/1
Term: Wintersemester  
Level: 4
Teaching language: Deutsch

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes
Content
Course: Datenbanksysteme  

Lecturers: Andreas Oberweis, Dr. D. Sommer
Credit points (CP): 5  Hours per week: 2/1
Term: Sommersemester  Level: 3
Teaching language: Deutsch

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

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

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

Complementary literature
Further literature is given in each lecture.
Course: Database Systems and XML

Lecturers: Andreas Oberweis
Credit points (CP): 5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

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 database 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
- 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

Lecturers: Andreas Oberweis

Credit points (CP): 5  Hours per week: 2/1

Term: Sommersemester  Level: 3

Teaching language: Deutsch


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


Complementary literature

Course: Software Engineering

Lecturers: Andreas Oberweis, Detlef Seese
Credit points (CP): 5  Hours per week: 2/1
Term: Wintersemester  Level: 3
Teaching language: Deutsch

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 controlling 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
• E. Gamma et al.. Design Patterns. Addison Wesley 1995.

Further literature is given in the course.
Course: Software Technology: Quality Management

Lecturers: Andreas Oberweis
Credit points (CP): 5  Hours per week: 2/1
Term: Sommersemester  Level: 3
Teaching language: Deutsch

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

Lecturers: Stefan Klink
Credit points (CP): 4  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch

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

Complementary literature
Further literature is given in each lecture individually.
Course: Business Process Modelling

Lecturers: Andreas Oberweis, Marco Mevius
Credit points (CP): 5  Hours per week: 2/1
Term: Wintersemester  Level: 3
Teaching language: Deutsch

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 models 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

Lecturers: Rudi Studer
Credit points (CP): 5   Hours per week: 2/1
Term: Wintersemester   Level: 4
Teaching language: Deutsch

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 fulfilling central tasks (amelioration of business processes, increasing innovation, increasing customer satisfaction, strategic planning and the like). Therefore, knowledge management has become a determining factor of success.

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
• C. Beierle, G. Kern-Isberner: Methoden wissensbasierter Systeme, Vieweg, Braunschweig/Wiesbaden, 2. überarb. Auflage, 2005

Complementary literature
Course: Exercises in Knowledge Management

Lecturers: Rudi Studer
Credit points (CP): 4  Hours per week: 3
Term: Winter-/Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Knowledge Discovery

Lecturers: Rudi Studer
Credit points (CP): 5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

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

Complementary literature
None.
Course: Semantic Web Technologies I

Lecturers: Rudi Studer, Pascal Hitzler, Sebastian Rudolph, Rudolph

Credit points (CP): 5  Hours per week: 2/1

Term: Wintersemester  Level: 4

Teaching language: Deutsch


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

Complementary literature
Course: Semantic Web Technologies II

Lecturers: Pascal Hitzler, Sudhir Agarwal
Credit points (CP): 5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

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


Complementary literature

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

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 - 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
- S. Wolfram: A new kind of Science. Wolfram Media Inc. 2002

Complementary literature
- N. Immerman: Descriptive Complexity; Springer-Verlag, New York 1999
- J. A. Bondy, U.S.R. Murty: Graph Theory, Springer 2008
- Christos H. Papadimitriou: Computational Complexity, Addison-Wesley, Reading, Massachusetts, 1994
- G. Frizelle, H. Richards (eds.): Tackling industrial complexity: the ideas that make a difference. University of Cambridge, Institute of Manufacturing 2002
- 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 content and schedule.
Course: Intelligent Systems in Finance

Lecturers: Detlef Seese
Credit points (CP): 5 Hours per week: 2/1
Term: Sommersemester Level: 4
Teaching language: Deutsch

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, Portfolio selection 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. Software agents 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 chosen from the area of finance.

Media
Slides.

Basic literature
There is no text book covering completely the content of the lecture.

Further references will be given in each lecture.
Complementary literature

- 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 [WI4INFO1] (S. 66), Emphasis in Informatics [WI4INFO2] (S. 68), Electives in Informatics [WI4INFO3] (S. 70)

**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

Lecturers: Kreidler
Credit points (CP): 3  Hours per week: 1/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Service-oriented Computing 1

Lecturers: Stefan Tai
Credit points (CP): 5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

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 flexibility 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

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 [WI4INFO1] (S. 66)  
- Emphasis in Informatics [WI4INFO2] (S. 68)  
- Electives in Informatics [WI4INFO3] (S. 70)

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

Lecturers: Christian Zirpins
Credit points (CP): 5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

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  

Lecturers: Roland Schätzle  
Credit points (CP): 5  
Hours per week: 2/1  
Term: Sommersemester  
Level: 4  
Teaching language: Deutsch  

Learning Control / Examinations  
The assessment consists of a 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 appropriate 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 infrastructure  
- 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  

Further literature is given in each lecture individually.
Course: Enterprise Architecture Management

Lecturers: Thomas Wolf
Credit points (CP): 5  Hours per week: 2/1
Term: Wintersemester  Level: 3
Teaching language: Deutsch

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
- Doppler, K., Lauterburg, Ch.: Change Management. Campus Verlag 1997
Course: Strategic Management of Information Technology

Lecturers: Thomas Wolf
Credit points (CP): 5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

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 understand the organization and the content of these functions.

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

Media
Slides, internet resources

Basic literature
• 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  

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 to CMMI  
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

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

Complementary literature
None.
**Course: Lab Class Web Services**

**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 [WI4INFO1] (S. 66), Emphasis in Informatics [WI4INFO2] (S. 68), Electives in Informatics [WI4INFO3] (S. 70)

**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 recommended.

**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:


Specific literature will be announced in the course.
Course: Special Topics of Knowledge Management

Lecturers: Rudi Studer
Credit points (CP): 5  Hours per week: 2/1
Term: Winter-/Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Management and Strategy

Lecturers: Hagen Lindstädt
Credit points (CP): 4 Hours per week: 2/0
Term: Sommersemester Level: 4
Teaching language: Deutsch
Part of the modules: Strategic Corporate Management and Organization [WI4BWLU01] (S. 32), Strategic Management and Organization [WI4BWLU02] (S. 33)

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

The relevant excerpts and additional sources are made known during the course.
Course: Managing Organizations

Lecturers: Hagen Lindstädt
Credit points (CP): 4  Hours per week: 2/0
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Strategic Corporate Management and Organization [WI4BWLUO1] (S. 32), Strategic Management and Organization [WI4BWLUO2] (S. 33)

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

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 [WI4BWLUO1] (S. 32), Strategic Decision Making and Organization Theory [WI4BWLUO3] (S. 34)

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
Foliien.

Basic literature

The relevant excerpts and additional sources are made known during the course.
Course: Special Topics in Management: Management and IT

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 [WI4BWL02] (S. 33)  

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 [WI4BWLUO1] (S. 32), Strategic Decision Making and Organization Theory [WI4BWLUO3] (S. 34)

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
Course: Value-Based Instruments of Corporate Strategy

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 [WI4BWL1] (S. 32), Strategic Decision Making and Organization Theory [WI4BWL3] (S. 34)

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

The relevant excerpts and additional sources are made known during the course.
Course: Seminar: Management and Organization

**Lecturers:** Hagen Lindstädt

**Credit points (CP):** 3  **Hours per week:** 2

**Term:** Sommersemester  **Level:** 4

**Teaching language:** Deutsch

**Part of the modules:** Seminar Module [WI4SEM] (S. 126)

**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 [WI4SEM] (S. 126)

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  

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 [WI4BWLIIP2] (S. 51)

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: Production an Logistics Management

Lecturers: Magnus Fröhling, Frank Schultmann
Credit points (CP): 5.5  Hours per week: 2/2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Industrial Production III [WI4BWLIIP6] (S. 52)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Within this lecture the main topics of operational production and logistics planning are presented. This comprises structure and functions of of production planning and control systems (PPC systems) as well as enterprise resource planning systems (ERP systems) and Advanced Planning Systems (APS). Planning tasks and exemplary methods, e.g. for master production scheduling (MPS), material requirements planning (MRP I) (demand planning, lot sizing), as well as sequencing, scheduling and capacity planning are discussed. Based on the MRP II concept also integrated approaches for PPC are introduced. Finally an overview on PPC and Enterprise Resource Planning and Advanced Planning Systems that are available on the market are given.

Media
Media will be provided on the e-learning plattform Ilias.

Basic literature
Will be announced in the lecture.
Course: Strategical Aspects of Energy

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 [WI4BWLIIP2] (S. 51), Energy Industry and Technology [WI4BWLIIP5] (S. 54)

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Energy Policy

Lecturers: Martin Wietschel
Credit points (CP): 3.5  Hours per week: 2/0
Term: Sommersemester  Level: 3
Teaching language: Deutsch

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 announced 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

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: The Management of R&D Projects with Case Studies

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 [WI4BWLIIP2] (S. 51), Industrial Production III [WI4BWLIIP6] (S. 52)

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
Course: Ergonomics I

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 [WI4BWLIIP1] (S. 55)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Ergonomics II

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 [WI4BWLIIIP1] (S. 55)

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 [WI4BWLIP1] (S. 55)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content

Modulhandbuch: Stand 13.03.2009  
Business Engineering (M.Sc.)
Course: Social Relationships in Organisations

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 [WI4BWL03] (S. 56)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.

Learning Outcomes
Content
Course: Development of Personal and Organisation

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 [WI4BWLuo3] (S. 56)

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 [WI4BWLUO3] (S. 56)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Human Resource Management II

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 [WI4BWLUBO3] (S. 56)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Computer-assisted Planning and Control of Production and Simulation of Processes
[25975]

Lecturers: Dominik Möst, Magnus Fröhling
Credit points (CP): 3.5  Hours per week: 2/0
Term: Sommersemester  Level: 3
Teaching language: Deutsch
Part of the modules: Industrial Production III [WI4BWLIIP6] (S. 52)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
After an introduction into the structure, the history and still existent shortcomings of systems for planning and control of production, this lecture introduces different approaches for computer-assisted planning. The approaches are subdivided into methodologies for the simulation of processes on the one hand and optimising and descriptive planning models on the other hand. Finally, commercial available, industry-specific software tools are described, focussing on the modules for production planning (PP) and materials management (MM) out of the R/3 system from SAP. In this context the lecture is completed by computer-assisted courses in production planning and materials management with the help of the R/3 system from SAP.

Media
Media will be provided on the e-learning platform Ilias.

Basic literature
Course: Changes in the Working World

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 [WI4BWIIP1] (S. 55)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Material flow analysis and life cycle assessment

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 [WI4BWLIIP2] (S. 51), Industrial Production III [WI4BWLIIP6] (S. 52)

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

Lecturers: Wolf Fichtner
Credit points (CP): 3.5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Englisch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Technological Change in Energy Industry

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 [WI4BWLIIIP5] (S. 54)

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
Keine.

Conditions
Keine.

Learning Outcomes

Content
Course: Heat Economy

**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 [WI4BWLIP5] (S. 54)

**Learning Control / Examinations**
The assessment consists of a written exam.

**Prerequisites**
None.

**Conditions**
None.

**Learning Outcomes**

Content
Course: Energy Systems Analysis

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 [WI4BWLIIP5] (S. 54)

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

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
Keine.

Conditions
None.

Learning Outcomes
Content
Course: Energy Trade and Risk Management

Lecturers: Kai Hufendiek
Credit points (CP): 3.5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Gas-Markets

Lecturers: Wolf Fichtner

Credit points (CP): 3  
Hours per week: 2/0

Term: Wintersemester  
Level: 4

Teaching language: Deutsch


Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Simulation Game in Energy Economics

Lecturers: Wolf Fichtner
Credit points (CP): 3  Hours per week: 2/0
Term: Wintersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations
The assessment consists of a written exam.

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Monetary Theory

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 [WI4VWL3] (S. 59)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Seminar Financial Sciences

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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content
Course: Regulation

Lecturers: Andreas Kopp
Credit points (CP): 4  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Network Economics [WI4VWL4] (S. 60)

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

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 [WI4VWL4] (S. 60)

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, principal agent theory, and contract theory.

Conditions
None.

Learning Outcomes
The Student should ...

Content
Course: International Economics  

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 [WI4VWL3] (S. 59)  

Learning Control / Examinations  
Prerequisites  
None.  
Conditions  
None.  
Learning Outcomes  
Content
Course: Economic integration in Europe

Lecturers: Jan Kowalski
Credit points (CP): 4  Hours per week: 2
Term: Wintersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Economic Policy [WI4VWL6] (S. 62)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Seminar on Network Economics

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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
See module description.

Conditions
None.

Learning Outcomes

Content
Course: Economics of Innovation

Lecturers: Hariolf Grupp
Credit points (CP): 6  Hours per week: 2/2
Term: Wintersemester  Level: 4
Teaching language: Deutsch

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

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 [WI4VWL6] (S. 62)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Managing New Technologies

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 [WI4VWL1] (S. 57)

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

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 [WI4BWLFBV8] (S. 37)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Life and Pensions  

Lecturers: Christian Hipp, Vogt, Besserer  
Credit points (CP): 4.5  
Term: Wintersemester  
Level: 4  
Teaching language: Deutsch  
Part of the modules: Applications of Actuarial Sciences I (BWL) [WI4BWLFBV4] (S. 35), Applications of Actuarial Sciences II (BWL) [WI4BWLFBV5] (S. 36)  

Learning Control / Examinations  
Prerequisites  
None.  
Conditions  
None.  
Learning Outcomes  
Content
Course: Reinsurance

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) [WI4BWLFBV4] (S. 35), Applications of Actuarial Sciences II (BWL) [WI4BWLFBV5] (S. 36)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Insurance Optimisation

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) [WI4BWLFBV4] (S. 35), Applications of Actuarial Sciences II (BWL) [WI4BWLFBV5] (S. 36)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Insurance Accounting

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 [WI4BWLBV6] (S. 40)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Insurance Marketing

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 [WI4BWLFBV6] (S. 40)

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

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 [WI4BWLFBV6] (S. 40)

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

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 [WI4BWLFBV9] (S. 38)

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

Remarks
This course is offered irregularly. For further information, see: http://insurance.fbv.uni-karlsruhe.de
Course: Service Management

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 [WI4BWLFBV6] (S. 40)

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

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 [WI4BWLFBV10] (S. 39)

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
• http://www.bevoelkerungsschutz.ch
Course: Insurance Risk Management

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 [WI4BWLFBV7] (S. 41)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Risk Controlling in Insurance Groups

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 [WI4BWLFBV7] (S. 41)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Saving Societies

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) [WI4BWLFBV4] (S. 35), Applications of Actuarial Sciences II (BWL) [WI4BWLFBV5] (S. 36)

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

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 [WI4BWLFBV7] (S. 41)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: International Risk Transfer

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 [WI4BWLFBV9] (S. 38)

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
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 [WI4BWLFBV10] (S. 39)

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 synchronize 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 entrepreneurial 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  
- P. Zweifel, R. Eisen. Versicherungsökonomie. 2003  

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 [WI4BWLFBV9] (S. 38), Operational Risk Management II [WI4BWLFBV10] (S. 39)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes
In addition 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 and 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
M. Fone / P. Young. Public Sector Risk Management, Butterworth Heinemann, Oxford
Course: Insurance Contract Law

Lecturers: Ute Werner, Schwebler
Credit points (CP): 4.5  Hours per week: 3
Term: Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Project Work in Risk Research

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 [WI4BWLFBV10] (S. 39)

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

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 [WI4BWLFBV9] (S. 38)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Remarks
This course is offered irregularly. For further information, see: http://insurance.fbv.uni-karlsruhe.de
Course: Topics of Sustainable Management of Housing and Real Estate  
[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 [WI4SEM] (S. 126)

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, rhetorical 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 [WI4BWLISM7] (S. 48), Information and Market Engineering [WI4BWLW1] (S. 49), Service Engineering [WI4BWLW2] (S. 50)

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
Course: Management of Business Networks

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 [WI4BWLISM6] (S. 47)

Learning Control / Examinations
The total grade for this lecture will consist of 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
Course: eFinance: Information Engineering and Management for Securities Trading

Course 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 [WI4BWLISM3] (S. 44), Information and Market Engineering [WI4BWLW1] (S. 49)

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 made 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


Complementary literature

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 [WI4BWLISM4] (S. 45), Service Engineering [WI4BWLIW2] (S. 50)

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

Lecturers: Christof Weinhardt, Jan Kraemer
Credit points (CP): 4,5
Hours per week: 2/1
Term: Sommersemester
Level: 4
Teaching language: Englisch


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
Course: Communications Economics

Lecturers: Stefan Seifert, Jan Kraemer
Credit points (CP): 4,5  Hours per week: 2/1
Term: Sommersemester  Level: 4
Teaching language: Englisch

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

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 [WI4BWLISM6] (S. 47)

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  

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 enablers and how to manage, incentivize and foster service innovation.

Basic literature
- von Hippel, Erich (2007) Horizontal innovation networks - by and for users. Industrial and Corporate Change, 16:2

Complementary literature
Course: Seminar Service Science, Management & Engineering  

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 [WI4SEM]  

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 [WI4BWLISM6] (S. 47)

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
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 [WI4BWLISM2] (S. 43), Information and Market Engineering [WI4BWLIW1] (S. 49)

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 exercise work will be added to the exam points once 50 points have been achieved:

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Prerequisites
None.

Conditions
None.

Learning Outcomes
The student
- has an overview about the different organizational form and their efficiency,
- names coordination 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 guaranteed, 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 asymmetries (private information and moral hazard) and the development of incentive systems.

Basic literature


Complementary literature
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 [WI4BWLISM2] (S. 43), Information and Market Engineering [WI4BWLIW1] (S. 49)  

### 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 exercise work will be added to the exam points once 50 points have been achieved:

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### 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  


### Complementary literature  


Axel Ockenfels and Alvin E. Roth. Late and Multiple Bidding in Second Price Internet Auctions: Theory and Evidence Concerning Different Rules for Ending an Auction. Technical report, Faculty of Economics and Management, University of Magdeburg, P.O. Box 4120, D-39016 Magdeburg and Harvard University, Department of Economics and Graduate School of Business Administration, Soldiers Field Road, Baker Library 183, Boston, MA 02163, USA, 2001.


Course: Personalization and Recommender Systems

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 [WI4BWLISM1] (S. 42), Business & Service Engineering [WI4BWLISM4] (S. 45), Service Engineering [WI4BWLIW2] (S. 50)

Learning Control / Examinations
Assessment consists of a written exam of 1 hour length following §4, Abs. 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 of 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.

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<td>74</td>
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<td>3.0</td>
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<td>4.7</td>
<td>40</td>
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</tbody>
</table>

Prerequisites
None.

Conditions
Keine

Learning Outcomes

Content

Media
Folien, Aufzeichnung der Vorlesung im Internet.

Basic literature


Complementary literature


Course: Customer Relationship Management

**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 [WI4BWLIISM1] (S. 42), Service Engineering [WI4BWLIW2] (S. 50)

**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 exercise work will be added to the exam points once 50 points have been achieved:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Minimum points</th>
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<tbody>
<tr>
<td>1.0</td>
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<td>1.3</td>
<td>98</td>
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<tr>
<td>1.7</td>
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</tbody>
</table>

**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 aspects 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 successfully. The link between Service Management and CRM is also to be taught 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**


**Complementary literature**


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 [WI4SEM] (S. 126)

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

Lecturers: Bettina Hoser

Course key: [26518]

Credit points (CP): 4,5  Hours per week: 2/1

Term: Winter-/Sommersemester  Level: 4

Teaching language: Deutsch

Part of the modules: Advanced CRM [WI4BWLISM1] (S. 42), Service Engineering [WI4BWLW2] (S. 50)

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 exercise work will be added to the exam points once 50 points have been achieved:

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Prerequisites
None

Conditions
keine

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 analyze these networks by well established and new methods from mathematics, business administration, sociology and physics. The goal of these analyses are to understand different aspects of these networks: In organizations (internal Marketing): Here networks analysis can help to detect whether hierarchies and official structures are ‘alive’ or if so called ‘hidden organizations’ have evolved. In addition such results can reveal inefficient 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 viral 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. Internet structure: For information services, such as e.g. search engines, the identification of relevant nodes and clusters is a 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 also the direction of information flow within the network. To achieve this different methods will be discussed during the course.

Media
Folien

Basic literature


Robert A. Hanneman. Free introductory textbook on social network analysis. online.


Course: Derivatives

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) [WI4BWLFBV1] (S. 23), F2 (Finance) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

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
Course: Asset Pricing

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) [WI4BWLFBV1] (S. 23), F2 (Finance) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

Learning Control / Examinations
Prerequisites
None.

Conditions
None.

Learning Outcomes
Content
Course: Fixed Income Securities

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) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

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

Complementary literature
Course: Credit Risk

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) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

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

Complementary literature
Course: International Finance

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) [WI4BWLFBV2] (S. 24), F2&F3 (Finance) [WI4BWLFBV3] (S. 25)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Geophysical Field Training Course

Lecturers: Wenzel
Credit points (CP): 6  Hours per week: 4
Term: Sommersemester  Level: 4
Teaching language: Deutsch


Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Cloud Computing

Lecturers: Stefan Tai, Wilfried Juling, Kunze
Credit points (CP): 5  Hours per week: 2/1
Term: Wintersemester  Level: 4
Teaching language: Deutsch

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”  

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 [WI4SEM] (S. 126)  

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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Elective Foreign Languages

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 [WI4SEM] (S. 126)

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”

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 [WI4SEM] (S. 126)

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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
None.

Conditions
Keine.

Learning Outcomes

Content
Course: Exercises in Complexity Management

Lecturers: Detlef Seese
Credit points (CP): 4  Hours per week: 3
Term: Winter-/Sommersemester  Level: 4
Teaching language: Deutsch

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Special Topics of Complexity Management  

Lecturers: Detlef Seese  
Credit points (CP): 5  
Hours per week: 2/1  
Term: Winter-/Sommersemester  
Level: 4  
Teaching language: Deutsch  

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

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 topics 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

Lecturers: Andreas Oberweis, Wolffried Stucky

Credit points (CP): 5  Hours per week: 2/1

Term: Winter-/Sommersemester  Level: ???

Teaching language: Deutsch


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 Systems Engineering

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

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

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 [WI4SEM] (S. 126)

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 topics 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

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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: Seminar Complexity Management

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 [WI4SEM] (S. 126)

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 [WI4SEM] (S. 126)

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 Social Computing.

Media  

Slides.

Basic literature  


Complementary literature  

None.
Course: Seminar in Insurance Management

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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: Seminar in Operational Risk Management

**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 [WI4SEM] (S. 126)

**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 [WI4SEM] (S. 126)

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 [WI4BWLFBV8]. However these modules are not a prerequisite for the participation in the seminar.

Learning Outcomes

Content
Course: Seminar in Ergonomics

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 [WI4SEM] (S. 126)

Learning Control / Examinations
Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: Seminar in Industrial Production

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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Seminar Information Engineering and Management

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 [WI4SEM] (S. 126)

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 an 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 [WI4SEM] (S. 126)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
The courses Innovation [26274] and Applying Industrial Organization [26287] should preferably be attended beforehand.

Learning Outcomes

Content
Course: Seminar Stochastic Models

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 [WI4SEM] (S. 126)

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

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 [WI4SEM] (S. 126)

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

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 [WI4SEM] (S. 126)

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 rhetoric 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

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 [WI4SEM] (S. 126)

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 rhetoric 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

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 [WI4SOZ1] (S. 125)

Learning Control / Examinations
Prerequisites
None.
Conditions
None.
Learning Outcomes
Content
Course: Laws concerning Traffic and Roads

Lecturers: Kuder
Credit points (CP): 3  Hours per week: 2
Term: Sommersemester  Level: 4
Teaching language: Deutsch
Part of the modules: Safety, Computing and Law in Highway Engineering [WI4INGBGU3] (S. 96)

Learning Control / Examinations

Prerequisites
See corresponding module information.

Conditions
None.

Learning Outcomes

Content
Course: Special Sociology

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 [WI4SOZ1] (S. 125)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Course: Theoretical Sociology

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 [WI4SOZ1] (S. 125)

Learning Control / Examinations

Prerequisites
None.

Conditions
None.

Learning Outcomes

Content
Prüfungs- und Studienordnung der Universität Karlsruhe (TH) für den Masterstudiengang Wirtschaftsingenieurwesen


Der Rektor hat seine Zustimmung am 06.03.2007 erteilt.

Aus Gründen der Lesbarkeit ist in dieser Satzung nur die männliche Sprachform gewählt worden. Alle personenbezogenen Aussagen gelten jedoch stets für Frauen und Männer gleichermaßen.

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Modulhandbuch: Stand 13.03.2009
Business Engineering (M.Sc.)
I. Allgemeine Bestimmungen

§ 1 Geltungsbereich, Ziele
(1) Diese Masterprüfungsordnung regelt Studienablauf, Prüfungen und den Abschluss des Studiums im Masterstudiengang Wirtschaftsingenieurwesen 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 Wirtschaftsingenieurwesen 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.


(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

(2) Erfolgskontrollen sind:
1. schriftliche Prüfungen,
2. mündliche Prüfungen,
3. Erfolgskontrollen anderer Art.

Erfolgskontrollen anderer Art sind z. B. Vorträge, Marktstudien, Projekte, Fallstudien, Experimente, schriftliche Arbeiten, Berichte, Seminararbeiten und Klausuren, sofern sie nicht als schriftliche oder mündliche Prüfung in der Modul- oder Lehrveranstaltungsbeschreibung im Modulhandbuch ausgewiesen sind.
(3) In den Fachprüfungen (nach § 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 Wirtschaftsingenieurwesen vergleichbaren oder einem verwandten Studiengang bereits eine Diplomvorprüfung, Diplomprüfung, Bachelor- oder Masterprüfung endgültig nicht bestanden hat, sich in einem Prüfungsverfahren befindet oder den Prüfungsanspruch in einem solchen Studiengang verloren hat.

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.


(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.


(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.


(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:

<table>
<thead>
<tr>
<th>1</th>
<th>sehr gut (very good)</th>
<th>= hervorragende Leistung</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>gut (good)</td>
<td>= eine Leistung, die erheblich über den durchschnittlichen Anforderungen liegt</td>
</tr>
<tr>
<td>3</td>
<td>befriedigend (satisfactory)</td>
<td>= eine Leistung, die durchschnittlichen Anforderungen entspricht</td>
</tr>
<tr>
<td>4</td>
<td>ausreichend (sufficient)</td>
<td>= eine Leistung, die trotz ihrer Mängel noch den Anforderungen genügt</td>
</tr>
<tr>
<td>5</td>
<td>nicht ausreichend (failed)</td>
<td>= eine Leistung, die wegen erheblicher Mängel nicht den Anforderungen genügt</td>
</tr>
</tbody>
</table>

Für die Masterarbeit und die Modulteilprüfungen sind zur differenzierten Bewertung nur folgende Noten zugelassen:

<table>
<thead>
<tr>
<th>1</th>
<th>1.0, 1.3</th>
<th>= sehr gut</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1.7, 2.0, 2.3</td>
<td>= gut</td>
</tr>
<tr>
<td>3</td>
<td>2.7, 3.0, 3.3</td>
<td>= befriedigend</td>
</tr>
<tr>
<td>4</td>
<td>3.7, 4.0</td>
<td>= ausreichend</td>
</tr>
<tr>
<td>5</td>
<td>4.7, 5.0</td>
<td>= nicht ausreichend</td>
</tr>
</tbody>
</table>

Diese Noten müssen in den Protokollen und in den Anlagen (Transcript of Records und Diploma Supplement) verwendet werden.
(3) Für Erfolgskontrollen anderer Art kann die Benotung „bestanden“ (passed) oder „nicht bestanden“ (failed) vergeben werden.

(4) Bei der Bildung der gewichteten Durchschnitte der Fachnoten, Modulnoten und der Gesamtnote wird nur die erste Dezimalstelle hinter dem Komma berücksichtigt; alle weiteren Stellen werden ohne Rundung gestrichen.

(5) Jedes Modul, jede Lehrveranstaltung und jede Erfolgskontrolle darf jeweils nur einmal angerechnet werden.

(6) Erfolgskontrollen anderer Art dürfen in Modulteilprüfungen oder Modulprüfungen nur einge- 
rechnet 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.


(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 Zusatztachprüfung nach § 12 nachträglich geltend gemacht werden.

(12) Die Gesamtnote der Masterprüfung, die Fachnoten und die Modulnoten lauten:

<table>
<thead>
<tr>
<th>Note</th>
<th>Deutscher Ausdruck</th>
</tr>
</thead>
<tbody>
<tr>
<td>bis 1,5</td>
<td>sehr gut</td>
</tr>
<tr>
<td>1.6 bis 2.5</td>
<td>gut</td>
</tr>
<tr>
<td>2.6 bis 3.5</td>
<td>befriedigend</td>
</tr>
<tr>
<td>3.6 bis 4.0</td>
<td>ausreichend</td>
</tr>
</tbody>
</table>
(13) Zusätzlich zu den Noten nach Absatz 2 werden ECTS-Noten für Fachprüfungen, Modulprüfungen und für die Masterprüfung nach folgender Skala vergeben:

<table>
<thead>
<tr>
<th>ECTS-Note</th>
<th>Quote</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>gehört zu den besten 10 % der Studierenden, die die Erfolgskontrolle bestanden haben</td>
</tr>
<tr>
<td>B</td>
<td>25</td>
<td>gehört zu den nächsten 25 % der Studierenden, die die Erfolgskontrolle bestanden haben</td>
</tr>
<tr>
<td>C</td>
<td>30</td>
<td>gehört zu den nächsten 30 % der Studierenden, die die Erfolgskontrolle bestanden haben</td>
</tr>
<tr>
<td>D</td>
<td>25</td>
<td>gehört zu den nächsten 25 % der Studierenden, die die Erfolgskontrolle bestanden haben</td>
</tr>
<tr>
<td>E</td>
<td>10</td>
<td>gehört zu den letzten 10 % der Studierenden, die die Erfolgskontrolle bestanden haben</td>
</tr>
<tr>
<td>FX</td>
<td>nicht bestanden (failed) – es sind Verbesserungen erforderlich, bevor die Leistungen anerkannt werden</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>nicht bestanden (failed) – es sind erhebliche Verbesserungen erforderlich</td>
<td></td>
</tr>
</tbody>
</table>

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.


(4) Die Wiederholung einer Erfolgskontrolle anderer Art (§ 4 Absatz 2 Nr. 3) wird im Modulhandbuch geregelt.


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.

(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.

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


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 Prüfungs-ergebnisse 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.


(7) Näheres regelt die Allgemeine Satzung der Universität Karlsruhe (TH) über die Redlichkeit bei Prüfungen und Praktika.

§ 10 Mutterschutz, Elternzeit


§ 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.


(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.


(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,
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.


§ 12 Zusatzmodule, Zusatzleistungen

(1) Der Studierende kann sich weiteren Prüfungen in Modulen unterziehen. § 3, § 4 und § 8 Absatz 10 der Prüfungsordnung bleiben davon unberührt.


(3) Der Studierende hat bereits bei der Anmeldung zu einer Prüfung in einem Modul diese als Zusatzleistung zu deklarieren.

§ 13 Prüfungsausschuss


(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 Vorsitzen-
de und dessen Stellvertreter müssen Professor oder Juniorprofessor sein. Der Vorsitzende des
Prüfungsausschusses nimmt die laufenden Geschäfte wahr und wird durch ein Prüfungssekreta-
riot 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 ein-
gehalten werden. Er berichtet regelmäßig dem Fakultätsrat über die Entwicklung der Prüfungen
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 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 Amts-
verschwiegenheit. Sofern sie nicht im öffentlichen Dienst stehen, sind sie durch den Vorsitzenen
zur Verschwiegenheit zu verpflichten.

(6) In Angelegenheiten des Prüfungsausschusses, die eine an einer anderen Fakultät zu absol-
vierende Prüfungsleistung betreffen, ist auf Antrag eines Mitgliedes des Prüfungsausschusses
ein fachlich zuständiger und von der betroffenen Fakultät zu nennender Professor, Juniorprofes-
sor, Hochschul- oder Privatdozent hinzuziehen. 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 Entschei-
dungen des Prüfungsausschusses sind innerhalb eines Monats nach Zugang der Entscheidung
schriftlich oder zur Niederschrift an den Prüfungsausschuss zu richten. Hilft der Prüfungsaus-
schuss dem Widerspruch nicht ab, ist er zur Entscheidung dem für die Lehre zuständigen Mit-
glied 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 Quali-
fikation erworben hat. Für die Bewertung der Masterarbeit muss ein Prüfer Hochschullehrer sein.

(3) Soweit Lehrveranstaltungen von anderen als den unter Absatz 2 genannten Personen durch-
geführt werden, sollen diese zum Prüfer bestellt werden, wenn die Fakultät ihnen eine diesbe-
zügliche 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 Modul-
prüfungen

(1) Studienzeiten und gleichwertige Studienleistungen und Modulprüfungen, die in gleichen oder
anderen Studiengängen an anderen Hochschulen erbracht wurden, werden auf Antrag ange-
rechnet. Gleichwertigkeit ist festzustellen, wenn Leistungen in Inhalt, Umfang und in den Anfor-
derungen derjenigen des Studiengangs im Wesentlichen entsprechen. Dabei ist kein schemati-
 scher Vergleich, sondern eine Gesamtbetrachtung vorzunehmen. Bezüglich des Umfangs einer
durchgeführten Studienleistung und Modulprüfung werden die Grundsätze des
ECTS herangezogen; die inhaltliche Gleichwertigkeitsprüfung orientiert sich an den Qualifikati-
oszielen des Moduls.
(2) Werden Leistungen angerechnet, so werden die Noten – soweit die Notensysteme vergleichbar sind – übernommen und in die Berechnung der Modulnoten und der Gesamtnote einbezogen. Falls es sich dabei um Leistungen handelt, die im Rahmen eines Auslandsstudiums erbracht werden, während der Studierende an der Universität Karlsruhe (TH) für Wirtschaftsingenieurwesen immatrikuliert ist, kann der Prüfungsausschuss für ausgewählte Sprachen die Dokumentation anerkannter Studienleistungen im Transcript of Records mit ihrer fremdsprachlichen Originalbezeichnung festlegen. Liegen keine Noten vor, wird die Leistung nicht anerkannt. Der Studierende hat die für die Anrechnung erforderlichen Unterlagen vorzulegen.

(3) Bei der Anrechnung von Studienzeiten und der Anerkennung von Studienleistungen und Modulprüfungen, die außerhalb der Bundesrepublik erbracht wurden, sind die von der Kultusministerkonferenz und der Hochschulrektorenkonferenz gebilligten Äquivalenzvereinbarungen sowie Absprachen im Rahmen der Hochschulpartnerschaften zu beachten.

(4) Absatz 1 gilt auch für Studienzeiten, Studienleistungen und Modulprüfungen, die in staatlich anerkannten Fernstudien und an anderen Bildungseinrichtungen, insbesondere an staatlichen oder staatlich anerkannten Berufsakademien erworben wurden.

(5) Die Anerkennung von Teilen der 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. Betriebswirtschaftslehre: zwei Module im Umfang von je 9 Leistungspunkten,
2. Volkswirtschaftslehre: 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. Ingenieurwissenschaften: zwei Module im Umfang von je 9 Leistungspunkten,


(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


(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.


(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
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 Mastergrades
(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.  
(6) Die Aberkennung des akademischen Grades 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.  
(3) Prüfungsunterlagen sind mindestens fünf Jahre aufzubewahren.
§ 22 In-Kraft-Treten


(2) Gleichzeitig tritt die Prüfungsordnung der Universität Karlsruhe (TH) für den Diplomstudien-
gang Wirtschaftsingenieurwesen vom 15. November 2001 (Amtliche Bekanntmachung der Uni-
versität Karlsruhe (TH), Nr. 29 vom 24. November 2001), zuletzt geändert durch Satzung vom
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 Wirt-
schaftsingenieurwesen vom 15. November 2001 (Amtliche Bekanntmachung der Universität
Karlsruhe (TH), Nr. 29 vom 24. November 2001) ihr Studium an der Universität Karlsruhe (TH)
aufgenommen haben. Über eine Fristverlängerung darüber hinaus entscheidet der Prüfungsaus-
schuss auf Antrag des Studierenden.

Über einen Antrag an den Prüfungsausschuss können Studierende, die auf Grundlage der Prü-
fungsordnung der Universität Karlsruhe (TH) für den Studiengang Wirtschaftsingenieurwesen
vom 15. November 2001 (Amtliche Bekanntmachung der Universität Karlsruhe (TH), Nr. 29 vom
24. November 2001) ihr Studium an der Universität Karlsruhe (TH) aufgenommen haben, ihr
Studium auf Grundlage dieser Prüfungsordnung fortsetzen. Der Prüfungsausschuss stellt dabei
fest, ob und wie die bisher erbrachten Prüfungsleistungen in den neuen Studienplan integriert
werden können und nach welchen Bedingungen das Studium nach einem Wechsel fortgeführt
werden kann.

Karlsruhe, den 06.03.2007

Professor Dr. sc. tech. Horst Hippler
(Rektor)
Aufbau des Masterstudiengangs Wirtschaftsingenieurwesen

Die Regelstudienzeit im Masterstudiengang Wirtschaftsingenieurwesen 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.


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