

Module Handbook Information Systems B.Sc.

SPO 2019

Summer term 2020

Date: 30/03/2020

KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT / KIT DEPARTMENT OF INFORMATICS



Table Of Contents

1. Welcome to the new module handbook of your study programme	7
2. About this handbook	8
2.1. Notes and rules	8
2.1.1. Begin and completion of a module	8
2.1.2. Module versions	8
2.1.3. General and partial examinations	8
2.1.4. Types of exams	8
2.1.5. Repeating exams	8
2.1.6. Examiners	9
2.1.7. Allocation of places for courses with a limited number of participants	9
2.1.8. Additional accomplishments	9
2.1.9. Further information	9
3. Why Information Systems?	10
3.1. Special features of the Bachelor's programme	10
4. The course of studies	11
4.1. Qualification goals	11
4.2. Structure according to SPO 2019	11
5. Field of study structure.....	13
5.1. Bachelor Thesis	13
5.2. Orientation Exam	13
5.3. Information Systems	13
5.4. Informatics	14
5.5. Mathematics	15
5.6. Economics and Management	16
5.7. Law	17
5.8. Seminars	17
6. Modules	18
6.1. Algorithmic Methods for Hard Optimization Problems - M-INFO-101237	18
6.2. Algorithms for Planar Graphs - M-INFO-101220	19
6.3. Algorithms I - M-INFO-100030	20
6.4. Algorithms II - M-INFO-101173	21
6.5. Applications of Operations Research - M-WIWI-101413	22
6.6. Applied Informatics - M-WIWI-101430	24
6.7. Applied Microeconomics - M-WIWI-101499	25
6.8. Basic Notions of Computer Science - M-INFO-101170	26
6.9. Basic Practical Course for the ICPC-Programming Contest - M-INFO-101230	27
6.10. Business Administration - M-WIWI-105267	28
6.11. Business Processes and Information Systems - M-WIWI-101476	29
6.12. Cognitive Systems - M-INFO-100819	30
6.13. Commercial Law - M-INFO-101191	31
6.14. Computer Architecture - M-INFO-100818	32
6.15. Computer Graphics - M-INFO-100856	33
6.16. Computer Organization - M-INFO-103179	34
6.17. Constitutional and Administrative Law - M-INFO-105247	35
6.18. Curves in CAD - M-INFO-101248	36
6.19. Database Systems - M-INFO-104921	37
6.20. Design, Construction and Sustainability Assessment of Buildings - M-WIWI-101467	38
6.21. Digital Circuits Design - M-INFO-102978	39
6.22. eBusiness and Service Management - M-WIWI-101434	40
6.23. Economic Policy I - M-WIWI-101668	42
6.24. Economic Theory - M-WIWI-101501	43
6.25. Economics - M-WIWI-101431	44
6.26. eFinance - M-WIWI-101402	45
6.27. Empirical Finance - M-WIWI-105035	46
6.28. Energy Economics - M-WIWI-101464	47
6.29. Essentials of Finance - M-WIWI-101435	48
6.30. Formal Systems - M-INFO-100799	49

6.31. Foundations of Marketing - M-WIWI-101424	50
6.32. Fundamentals of Digital Service Systems - M-WIWI-102752	51
6.33. Geometric Basics for Geometry Processing - M-INFO-100756	52
6.34. Geometric Optimization - M-INFO-100730	53
6.35. Human Computer Interaction - M-INFO-100729	54
6.36. Human Resources and Organizations - M-WIWI-101513	55
6.37. Industrial Production I - M-WIWI-101437	56
6.38. Information Security - M-WIWI-104069	57
6.39. Information Services in Networks - M-WIWI-101440	58
6.40. Information Systems & Digital Business: Interaction - M-WIWI-104911	59
6.41. Information Systems & Digital Business: Platforms - M-WIWI-104912	61
6.42. Information Systems & Digital Business: Servitization - M-WIWI-104913	63
6.43. Information Systems I - M-WIWI-104820	64
6.44. Information Systems II - M-WIWI-104821	65
6.45. Intellectual Property and Data Protection - M-INFO-101253	66
6.46. Introduction in Computer Networks - M-INFO-103455	67
6.47. Introduction to Civil Law - M-INFO-101190	68
6.48. Introduction to Data and Information Management - M-INFO-101235	69
6.49. Introduction to Operations Research - M-WIWI-101418	70
6.50. Introduction to Statistics - M-WIWI-101432	71
6.51. Lab Protocol Engineering - M-INFO-101247	72
6.52. Lab: Working with Database Systems - M-INFO-101865	73
6.53. Lego Mindstorms - Practical Course - M-INFO-102557	74
6.54. MARS-Based Internship - M-INFO-101245	75
6.55. Mathematics I - M-MATH-104914	76
6.56. Mathematics II - M-MATH-104915	77
6.57. Mechano-Informatics and Robotics - M-INFO-100757	78
6.58. Methodical Foundations of OR - M-WIWI-101936	79
6.59. Microprocessors I - M-INFO-101183	80
6.60. Mobile Computing and Internet of Things - M-INFO-101249	81
6.61. Mobile Robots – Practical Course - M-INFO-101184	82
6.62. Module Bachelor Thesis - M-INFO-104875	83
6.63. Optimization under Uncertainty - M-WIWI-103278	84
6.64. Orientation Exam - M-WIWI-104843	85
6.65. Practical Course Computer Engineering: Hardware Design - M-INFO-101219	86
6.66. Practical Course Web Applications and Service-Oriented Architectures (I) - M-INFO-101633	87
6.67. Programming - M-INFO-101174	88
6.68. Public Finance - M-WIWI-101403	89
6.69. Real Estate Management - M-WIWI-101466	90
6.70. Real-Time Systems - M-INFO-100803	91
6.71. Robotics I - Introduction to Robotics - M-INFO-100893	92
6.72. Security - M-INFO-100834	93
6.73. Semantic Knowledge Management - M-WIWI-101438	94
6.74. Seminar Module Economic Sciences - M-WIWI-101826	95
6.75. Seminar Module Informatics - M-INFO-102058	96
6.76. Seminar Module Law - M-INFO-101218	97
6.77. Software Engineering I - M-INFO-101175	98
6.78. Software Engineering II - M-INFO-100833	99
6.79. Statistics and Econometrics - M-WIWI-101599	100
6.80. Strategy and Organization - M-WIWI-101425	101
6.81. Supply Chain Management - M-WIWI-101421	102
6.82. Surfaces for Computer Aided Design - M-INFO-101254	103
6.83. Team Project Software Development - M-INFO-104809	104
6.84. Telematics - M-INFO-100801	105
6.85. Theoretical Informatics - M-INFO-101189	106
6.86. Topics in Finance I - M-WIWI-101465	107
6.87. Topics in Finance II - M-WIWI-101423	108
6.88. Web Applications and Service-Oriented Architectures (I) - M-INFO-101636	109
7. Courses.....	110
7.1. Advanced Lab Informatics (Master) - T-WIWI-110541	110

7.2. Advanced Lab Security - T-WIWI-109786	114
7.3. Advanced Lab Security, Usability and Society - T-WIWI-108439	115
7.4. Advanced Topics in Economic Theory - T-WIWI-102609	117
7.5. Algorithmic Methods for Hard Optimization Problems - T-INFO-103334	118
7.6. Algorithms for Planar Graphs - T-INFO-101986	119
7.7. Algorithms I - T-INFO-100001	120
7.8. Algorithms II - T-INFO-102020	121
7.9. Analysis of Multivariate Data - T-WIWI-103063	122
7.10. Applied Informatics – Applications of Artificial Intelligence - T-WIWI-110340	123
7.11. Applied Informatics – Information Security - T-WIWI-110342	125
7.12. Applied Informatics – Modelling - T-WIWI-110338	127
7.13. Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services - T-WIWI-110339	130
7.14. Auction & Mechanism Design - T-WIWI-102876	132
7.15. Bachelor Thesis - T-INFO-109907	134
7.16. Basic Notions of Computer Science - T-INFO-101964	135
7.17. Basic Notions of Computer Science Pass - T-INFO-101965	136
7.18. Basic Practical Course for the ICPC-Programming Contest - T-INFO-101991	137
7.19. Basic Principles of Economic Policy - T-WIWI-103213	138
7.20. Basics of German Company Tax Law and Tax Planning - T-WIWI-108711	140
7.21. Big Data Analytics - T-INFO-101305	141
7.22. Business Administration: Finance and Accounting - T-WIWI-102819	142
7.23. Business Administration: Production Economics and Marketing - T-WIWI-102818	143
7.24. Business Process Modelling - T-WIWI-102697	145
7.25. Business Strategies of Banks - T-WIWI-102626	147
7.26. Civil Law for Beginners - T-INFO-103339	148
7.27. Cognitive Systems - T-INFO-101356	149
7.28. Competition in Networks - T-WIWI-100005	150
7.29. Computer Architecture - T-INFO-101355	151
7.30. Computer Graphics - T-INFO-101393	152
7.31. Computer Graphics Pass - T-INFO-104313	153
7.32. Computer Organization - T-INFO-103531	154
7.33. Consulting in Practice - T-INFO-101975	155
7.34. Consumer Behavior - T-WIWI-106569	156
7.35. Curves in CAD - T-INFO-102067	159
7.36. Data and Storage Management - T-INFO-101276	160
7.37. Data Mining and Applications - T-WIWI-103066	161
7.38. Database Systems - T-INFO-101497	163
7.39. Decision Theory - T-WIWI-102792	164
7.40. Deployment of Database Systems - T-INFO-101317	165
7.41. Derivatives - T-WIWI-102643	166
7.42. Design, Construction and Sustainability Assessment of Buildings I - T-WIWI-102742	167
7.43. Design, Construction and Sustainability Assessment of Buildings II - T-WIWI-102743	169
7.44. Digital Circuits Design - T-INFO-103469	171
7.45. Digital Services - T-WIWI-109938	172
7.46. Economics and Behavior - T-WIWI-102892	174
7.47. Economics I: Microeconomics - T-WIWI-102708	176
7.48. Economics III: Introduction in Econometrics - T-WIWI-102736	178
7.49. eFinance: Information Systems for Securities Trading - T-WIWI-110797	179
7.50. Empirical Finance - T-WIWI-110216	180
7.51. Energy Policy - T-WIWI-102607	181
7.52. Enterprise Architecture Management - T-WIWI-102668	182
7.53. Exercises in Civil Law - T-INFO-102013	183
7.54. Facility Location and Strategic Supply Chain Management - T-WIWI-102704	184
7.55. Financial Accounting for Global Firms - T-WIWI-107505	185
7.56. Financial Econometrics - T-WIWI-103064	186
7.57. Financial Intermediation - T-WIWI-102623	188
7.58. Financial Management - T-WIWI-102605	189
7.59. Formal Systems - T-INFO-101336	190
7.60. Foundations of Interactive Systems - T-WIWI-109816	191

7.61. Foundations of Mobile Business - T-WIWI-104679	193
7.62. Fundamentals of Production Management - T-WIWI-102606	194
7.63. Geometric Basics for Geometry Processing - T-INFO-101293	195
7.64. Geometric Optimization - T-INFO-101267	196
7.65. Global Optimization I - T-WIWI-102726	197
7.66. Global Optimization I and II - T-WIWI-103638	198
7.67. Global Optimization II - T-WIWI-102727	199
7.68. Human Resource Management - T-WIWI-102909	200
7.69. Human-Machine-Interaction - T-INFO-101266	201
7.70. Human-Machine-Interaction Pass - T-INFO-106257	202
7.71. Industrial Organization - T-WIWI-102844	203
7.72. Information Systems 1 - T-WIWI-109817	204
7.73. Information Systems 2 - T-WIWI-109818	205
7.74. Integrated Network and Systems Management - T-INFO-101284	206
7.75. Intellectual Property and Data Protection - T-INFO-109840	207
7.76. International Finance - T-WIWI-102646	208
7.77. International Marketing - T-WIWI-102807	209
7.78. Introduction in Computer Networks - T-INFO-102015	211
7.79. Introduction to Energy Economics - T-WIWI-102746	212
7.80. Introduction to Game Theory - T-WIWI-102850	213
7.81. Introduction to Operations Research I and II - T-WIWI-102758	215
7.82. Introduction to Public Finance - T-WIWI-102877	217
7.83. Introduction to Stochastic Optimization - T-WIWI-106546	218
7.84. Investments - T-WIWI-102604	219
7.85. Lab Protocol Engineering - T-INFO-102066	220
7.86. Lab: Working with Database Systems - T-INFO-103552	221
7.87. Logistics and Supply Chain Management - T-WIWI-102870	222
7.88. Macroeconomic Theory - T-WIWI-109121	223
7.89. Management and Strategy - T-WIWI-102629	224
7.90. Managing Organizations - T-WIWI-102630	226
7.91. Managing the Marketing Mix - T-WIWI-102805	228
7.92. MARS Basis Lab - T-INFO-102053	230
7.93. Mathematics I for Information Systems - Exam - T-MATH-109942	231
7.94. Mathematics I for Information Systems - Exercise - T-MATH-109943	232
7.95. Mathematics II for Information Systems - Exam - T-MATH-109944	233
7.96. Mathematics II for Information Systems - Exercise - T-MATH-109945	234
7.97. Mechanisms and Applications of Workflow Systems - T-INFO-101257	235
7.98. Mechano-Informatics and Robotics - T-INFO-101294	236
7.99. Microprocessors I - T-INFO-101972	237
7.100. Mobile Computing and Internet of Things - T-INFO-102061	238
7.101. Mobile Robots – Practical Course - T-INFO-101992	239
7.102. Modeling and OR-Software: Introduction - T-WIWI-106199	240
7.103. Nonlinear Optimization I - T-WIWI-102724	241
7.104. Nonlinear Optimization I and II - T-WIWI-103637	243
7.105. Nonlinear Optimization II - T-WIWI-102725	245
7.106. Optimization under Uncertainty - T-WIWI-106545	247
7.107. Personnel Policies and Labor Market Institutions - T-WIWI-102908	248
7.108. Platform Economy - T-WIWI-109936	250
7.109. Practical Course Computer Engineering: Hardware Design - T-INFO-102011	251
7.110. Practical Course Computer Engineering: Hardware Design Pass - T-INFO-105983	252
7.111. Practical Course Web Applications and Service-Oriented Architectures (I) - T-INFO-103119	253
7.112. Practical Course: Lego Mindstorms - T-INFO-107502	254
7.113. Practical Seminar Interaction - T-WIWI-109935	255
7.114. Practical Seminar Platforms - T-WIWI-109937	256
7.115. Practical Seminar Servitization - T-WIWI-109939	257
7.116. Practical Seminar: Digital Services - T-WIWI-110888	258
7.117. Problem Solving, Communication and Leadership - T-WIWI-102871	259
7.118. Process Mining - T-WIWI-109799	261
7.119. Production Economics and Sustainability - T-WIWI-102820	263
7.120. Programming - T-INFO-101531	264

7.121. Programming Pass - T-INFO-101967	265
7.122. Project Management in Practice - T-INFO-101976	266
7.123. Public Law I & II - T-INFO-110300	267
7.124. Public Revenues - T-WIWI-102739	268
7.125. Public Sector Finance - T-WIWI-109590	269
7.126. Python for Empirical Finance - T-WIWI-110217	270
7.127. Real Estate Management I - T-WIWI-102744	271
7.128. Real Estate Management II - T-WIWI-102745	273
7.129. Real-Time Systems - T-INFO-101340	275
7.130. Renewable Energy-Resources, Technologies and Economics - T-WIWI-100806	276
7.131. Robotics I - Introduction to Robotics - T-INFO-108014	278
7.132. Security - T-INFO-101371	279
7.133. Selling IT-Solutions Professionally - T-INFO-101977	280
7.134. Semantic Web Technologies - T-WIWI-110848	281
7.135. Seminar in Business Administration (Bachelor) - T-WIWI-103486	284
7.136. Seminar in Economics (Bachelor) - T-WIWI-103487	293
7.137. Seminar in Informatics (Bachelor) - T-WIWI-103485	296
7.138. Seminar in Operations Research (Bachelor) - T-WIWI-103488	302
7.139. Seminar in Statistics (Bachelor) - T-WIWI-103489	305
7.140. Seminar Informatics A - T-INFO-104336	306
7.141. Seminar: Legal Studies I - T-INFO-101997	308
7.142. Services Marketing and B2B Marketing - T-WIWI-102806	310
7.143. Software Engineering I - T-INFO-101968	312
7.144. Software Engineering I Pass - T-INFO-101995	313
7.145. Software Engineering II - T-INFO-101370	314
7.146. Special Topics in Information Systems - T-WIWI-109940	315
7.147. Statistical Modeling of Generalized Regression Models - T-WIWI-103065	316
7.148. Statistics I - T-WIWI-102737	317
7.149. Statistics II - T-WIWI-102738	319
7.150. Strategic Finance and Technoloy Change - T-WIWI-110511	321
7.151. Supplement Applied Informatics - T-WIWI-110711	322
7.152. Surfaces for Computer aided Design - T-INFO-102073	323
7.153. Tactical and Operational Supply Chain Management - T-WIWI-102714	324
7.154. Team Project Software Development - T-INFO-109823	326
7.155. Technical Conditions Met - T-WIWI-106623	327
7.156. Telematics - T-INFO-101338	328
7.157. Theoretical Foundations of Computer Science - T-INFO-103235	330
7.158. Web Applications and Service-Oriented Architectures (I) - T-INFO-103122	331
7.159. Welfare Economics - T-WIWI-102610	332

1 Welcome to the new module handbook of your study programme

We are delighted that you have decided to study at the KIT Department of Economics and Management and KIT Department of Informatics. We wish you a good start into the new semester!

The following contact persons are at your disposal for questions and problems at any time.

For Bachelor Students



KIT Department of Informatics, Informatics Study Program Service
Personal counselling

☎ +49 721 608-44031
✉ bachelor@wirtschaftsinformatik.kit.edu

For Master Students



KIT Department of Economics and Management, Examination Office
Personal counselling

☎ +49 721 608-43768
✉ master@wirtschaftsinformatik.kit.edu

Editorial responsibility



Dr. André Wiesner, KIT Department of Economics and Management
Editorial responsibility

☎ +49 721 608-44061
✉ modul@wiwi.kit.edu



2 About this handbook

2.1 Notes and rules

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

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

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

2.1.1 Begin and completion of a module

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

2.1.2 Module versions

It is not uncommon for modules to be revised due to, for example, new courses or cancelled examinations. As a rule, a new module version is created, which applies to all students who are new to the module. On the other hand, students who have already started the module enjoy confidence and remain in the old module version. These students can complete the module on the same conditions as at the beginning of the module (exceptions are regulated by the examination committee). The date of the student's "binding declaration" on the choice of the module in the sense of §5(2) of the Study and Examination Regulation is decisive. This binding declaration is made by registering for the first examination in this module.

In the module handbook, all modules are presented in their current version. The version number is given in the module description. Older module versions can be accessed via the previous module handbooks in the archive at http://www.wiwi.kit.edu/Archiv_MHB.php.

2.1.3 General and partial examinations

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

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

For further and more detailed information, <https://studium.kit.edu/Seiten/FAQ.aspx>.

2.1.4 Types of exams

Exams are split into written exams, oral exams and alternative exam assessments. Exams are always graded. Non exam assessments can be repeated several times and are not graded.

2.1.5 Repeating exams

Principally, a failed written exam, oral exam or alternative exam assessment can be repeated only once. If the repeat examination (including an eventually provided verbal repeat examination) will be failed as well, the examination claim is lost. A request for a

second repetition has to be made in written form to the examination committee two months after losing the examination claim. A counseling interview is mandatory.

For further information see <http://www.wiwi.kit.edu/hinweiseZweitwdh.php>.

2.1.6 Examiners

The examination committee has appointed the KIT examiners and lecturers listed in the module handbook for the modules and their courses as examiners for the courses they offer.

2.1.7 Allocation of places for courses with a limited number of participants

The allocation of places in courses with a limited number of participants will be based on preferences and suitability for the topics. Among other things, professional and practical experience in the subject area as well as foreign language skills, if applicable, play a role. Students with the highest academic progress will be given preferential admission. Places are usually allocated via the WIWI portal at <https://portal.wiwi.kit.edu/>.

2.1.8 Additional accomplishments

Additional accomplishments are voluntarily taken exams, which have no impact on the overall grade of the student and can take place on the level of single courses or on entire modules. It is also mandatory to declare an additional accomplishment as such at the time of registration for an exam. Additional accomplishments with at most 30 CP may appear additionally in the certificate.

2.1.9 Further information

More detailed information about the legal and general conditions of the program can be found in the examination regulation of the program (<http://www.sle.kit.edu/amtlicheBekanntmachungen.php>).

3 Why Information Systems?

Digitalization leads to profound changes in economy and society. The successful design of sustainable digital solutions requires competencies in the fields of information technology, business and law. By studying Information Systems, you will acquire the necessary qualifications for the digital world of work and life of the future. Become a designer of the digital economy and society with excellent, cross-sector career opportunities in start-ups, medium-sized businesses and large companies!

****Why Information Systems at KIT? Study Information Systems at KIT to successfully combine science and practice of digitization. KIT Information Systems is characterized by an interdisciplinary approach based on an interdisciplinary model. The central unique selling points and arguments for studying Information Systems at KIT are:**

- **Options**:** You benefit from a high-quality and comprehensive range of courses offered by the two large KIT Departments of Informatics and Economics.
- **Flexibility**:** In both the Bachelor's and Master's programmes, you can set your own priorities and develop your personal profile. At KIT you can study both a technical and a more economic profile of Information Systems.
- **Problem solving competence**:** The obligatory team project for software development in the Bachelor's programme implements the KIT concept of research-oriented teaching. Students develop functional application software in a team using modern methods and tools. The further development of specific problem-solving skills also plays an important role in the Master's programme, for example in the form of design seminars in cooperation with practical experience.

The study programme Information Systems (B.Sc. / M.Sc.) will be offered at the Karlsruhe Institute of Technology (KIT) from the winter semester 2019/20.

Where can I get further information? Further information on the Bachelor's and Master's degree programmes is available at <http://www.wirtschaftsinformatik.kit.edu>.

3.1 Special features of the Bachelor's programme

Founded basic education KIT Information Systems is characterized by an interdisciplinary approach based on a cross-faculty model. The study contents of the first four semesters are organized in five main areas and contain the following contents:

Subject	Contents
Information Systems	Basic Terms of Information Systems, Concepts and Systems for Digitization on the Levels of Individual, Group, Organization and Market
Informatics	Basic Terms of Informatics, Programming, Algorithms, Theoretical Foundations, Communication and Data Management, Applied Computer Science, Software Engineering
Mathematics & Statistics	Linear Algebra, Analysis, Development of Mathematical Models, Descriptive Statistics, Probability Theory, Elements of Estimation and Test Theory
Economics	Business Administration (Marketing, Production, Finance and Accounting), Operations Research and Economics
Law	Basics of the BGB, Public Law, Commercial Law

Team Project Software Development The team project for software development in the 5th semester implements the concept of research-oriented teaching and ensures a high level of practical experience. The students develop functional application software in a team using modern methods and tools.

Individual choices The diverse optional modules of the two KIT Departments round off the study programme. Through them, students have the opportunity to deepen their knowledge in accordance with their individual inclinations already during the Bachelor's programme. Students can opt for a focus with 9 or 18 credit points in Informatics or Economics. Further information on specific options can be found in the module handbook.

International orientation Organised exchange programmes, free language courses, courses in English and sponsored internships abroad enable students to gain international experience even during their bachelor's studies. Students benefit from numerous partnerships of the two KIT Departments with other universities within and outside Europe, e.g. in Spain, Sweden, France, the USA, Australia and Singapore.

Degree The study concludes in the 6th semester with a bachelor thesis. Upon successful completion of the program, students are awarded the academic degree "Bachelor of Science" and have the best chances of being placed in the new Master's program in Information Systems at KIT.

4 The course of studies

4.1 Qualification goals

The graduates of the interdisciplinary, six-semester Bachelor's programme in Information Systems understand the digital transformation of business and society as a socio-technical process of shaping processes (internal digitisation) and products and services (external digitisation). They are familiar with the subject area of Information Systems in science and practice and have methodologically oriented basic knowledge in the fields of Informatics (theoretical computer science, algorithms, software technology, databases, communication networks), Economics (finance, accounting, production economics, marketing, accounting, economic interrelations of microeconomics) and Law (public law, private law, business private law, constitutional and administrative law, data protection law) as well as Mathematics, Statistics and Operations Research.

Thanks to their sound basic methodological knowledge, graduates are able to name subject-specific basic terms, methods, models and procedures and apply them in an interdisciplinary manner.

KIT Bachelor of Information Systems graduates have in-depth knowledge of Informatics, Economics and Law and understand the interrelationships between these sub-disciplines. They are able to identify, describe and communicate economic, IT and legal problems and topics. In this complex of topics they plan, analyse, compare, evaluate and optimise information systems and infrastructures in business and society. They make decisions, develop subject-specific solutions and implement their innovative ideas using methods and models from the various disciplines, taking into account given resources. They know how to document, present, validate, assess and ensure the quality of the results obtained. Their practical handling of specialist knowledge takes account of social, scientific and ethical aspects.

Due to the interdisciplinarity of the study programme, KIT Bachelor of Information Systems graduates can act effectively at the interface of these three subject areas and shape communication between the disciplines in a targeted manner. The graduates are able to work in a team and master challenges in the field of information and communication technologies.

KIT Bachelor of Information Systems graduates have the ability to work in a professional field in industry, the service sector or trade, to found their own company or to take up a Master's degree in Information Systems or a related degree.

4.2 Structure according to SPO 2019

The Bachelor's programme in Information Systems has a standard study period of six semesters and comprises 180 credit points. The basic area in the first four semesters is methodically oriented. In the fifth and sixth semesters, students deepen their specialist knowledge, which can be structured according to personal interests and goals within the curriculum.

Figure 2 shows the subject and module structure with the allocation of credit points (LP) and, as an example, a possible distribution of modules and courses in the basic area over the semesters.

Semester	Leistungspunkte	Wirtschaftsinformatik	Informatik	Mathematik	Wirtschaftswissenschaften	Rechtswissenschaften	Seminar	Abschlussarbeit
1 (WS)	33	Wirtschaftsinformatik I 4 LP	Grundbegriffe der Informatik* 6 LP Programmieren* 5 LP	Mathematik I* 8 LP	Volkswirtschaftslehre 5 LP	Einführung in das Privatrecht 5 LP		
2 (SS)	29,5	Wirtschaftsinformatik II 4 LP	Algorithmen I 6 LP	Mathematik II* 8 LP	Einführung in das Operations Research 9 LP			
3 (WS)	28,5		Theoretische Informatik 6 LP	Einführung in die Statistik 10 LP				
4 (SS)	30		Angewandte Informatik 8 LP		Betriebswirtschaftslehre 8 LP	Wirtschaftsprivatrecht 9 LP		
			Datenbanksysteme 4 LP					
			Einführung in Rechnernetze 4 LP					
			Softwaretechnik I* 6 LP					
5 (WS)	30,5	Teamprojekt Softwareentwicklung 8 LP	1-2 Wahlmodule 9/18 LP		1-2 Wahlmodule 9/18 LP	Wahlmodul 6 LP	Seminar 3 LP	
6 (SS)	28,5							Bachelorarbeit 15 LP
	180	16	54-63	26	31-40	26	3	15

* Im Rahmen des Moduls ist eine Studienleistung zu erbringen (z.B. verpflichtender Übungsschein)

Figure 2: Recommended structure and subject structure of the bachelor's programme in Information Systems (german)

In the first four semesters, the modules illustrated from the subjects Information Systems, Informatics, Mathematics, Economics and Law are compulsory.

In the fifth and sixth semesters, elective modules of 9 to 18 credit points must be completed in the subjects of Informatics and Economics. In the subject Law, one or more modules with a total of 6 credit points must be selected. A software development project with 5 credit points is to be completed in the subject Information Systems. Key qualifications are taught integratively. The bachelor thesis comprises 15 credit points and is planned for the 6th semester.

It is up to the individual study plan (taking into account the relevant requirements in the study and examination regulations as well as any module regulations) in which semester the selected module examinations are started or completed.

5 Field of study structure

Mandatory	
Bachelor Thesis	15 CR
Orientation Exam	
Information Systems	16 CR
Informatics	54-63 CR
Mathematics	26 CR
Economics and Management	31-40 CR
Law	26 CR
Seminars	3 CR

5.1 Bachelor Thesis

Credits
15

Mandatory		
M-INFO-104875	Module Bachelor Thesis	15 CR

5.2 Orientation Exam

Mandatory		
M-WIWI-104843	Orientation Exam	0 CR

5.3 Information Systems

Credits
16

Mandatory		
M-INFO-104809	Team Project Software Development	8 CR
M-WIWI-104820	Information Systems I	4 CR
M-WIWI-104821	Information Systems II	4 CR

5.4 Informatics

Credits
54-63

Election notes

In Informatics, in addition to the compulsory modules, optional modules with a total of 9 or 18 credit points must be completed. If elective modules totalling 18 LP are chosen, only elective modules totalling 9 credit points can be taken in the subject of Economics and Management.

Mandatory		
M-INFO-100030	Algorithms I	6 CR
M-WIWI-101430	Applied Informatics	8 CR
M-INFO-104921	Database Systems	4 CR
M-INFO-103455	Introduction in Computer Networks	4 CR
M-INFO-101170	Basic Notions of Computer Science	6 CR
M-INFO-101174	Programming	5 CR
M-INFO-101175	Software Engineering I	6 CR
M-INFO-101189	Theoretical Informatics	6 CR
Election block: Compulsory Elective Modules in Informatics (between 9 and 18 credits)		
M-INFO-101220	Algorithms for Planar Graphs	5 CR
M-INFO-101173	Algorithms II	6 CR
M-INFO-101237	Algorithmic Methods for Hard Optimization Problems	5 CR
M-INFO-101865	Lab: Working with Database Systems	4 CR
M-INFO-101184	Mobile Robots – Practical Course	4 CR
M-INFO-101247	Lab Protocol Engineering	4 CR
M-INFO-101219	Practical Course Computer Engineering: Hardware Design	4 CR
M-INFO-101633	Practical Course Web Applications and Service-Oriented Architectures (I)	5 CR
M-INFO-101230	Basic Practical Course for the ICPC-Programming Contest	4 CR
M-INFO-100856	Computer Graphics	6 CR
M-INFO-102978	Digital Circuits Design	6 CR
M-INFO-100803	Real-Time Systems	6 CR
M-INFO-101254	Surfaces for Computer Aided Design	5 CR
M-INFO-100799	Formal Systems	6 CR
M-INFO-100756	Geometric Basics for Geometry Processing	5 CR
M-INFO-100730	Geometric Optimization	3 CR
M-WIWI-101476	Business Processes and Information Systems	9 CR
M-INFO-101235	Introduction to Data and Information Management	9 CR
M-WIWI-104069	Information Security	9 CR
M-WIWI-101440	Information Services in Networks	9 CR
M-INFO-100819	Cognitive Systems	6 CR
M-INFO-101248	Curves in CAD	5 CR
M-INFO-102557	Lego Mindstorms - Practical Course	4 CR
M-INFO-101245	MARS-Based Internship	4 CR
M-INFO-100757	Mechano-Informatics and Robotics	4 CR
M-INFO-100729	Human Computer Interaction	6 CR
M-INFO-101183	Microprocessors I	3 CR
M-INFO-101249	Mobile Computing and Internet of Things	5 CR
M-INFO-103179	Computer Organization	6 CR
M-INFO-100818	Computer Architecture	6 CR
M-INFO-100893	Robotics I - Introduction to Robotics	6 CR
M-WIWI-101438	Semantic Knowledge Management	9 CR
M-INFO-100834	Security	6 CR

M-INFO-100833	Software Engineering II	6 CR
M-INFO-100801	Telematics	6 CR
M-INFO-101636	Web Applications and Service-Oriented Architectures (I)	4 CR

5.5 Mathematics

Credits
26

Mandatory		
M-WIWI-101432	Introduction to Statistics	10 CR
M-MATH-104914	Mathematics I	8 CR
M-MATH-104915	Mathematics II	8 CR

5.6 Economics and Management

Credits
31-40

Election notes

In addition to the compulsory modules, one or two modules of 9 credit points each in Business Administration, Economics, Operations Research and Statistics must be completed. If two optional modules with a total of 18 credit points are chosen, only optional modules with a total of 9 credit points can be completed in Informatics.

Mandatory		
M-WIWI-105267	Business Administration	8 CR
M-WIWI-101418	Introduction to Operations Research	9 CR
M-WIWI-101431	Economics	5 CR
Election block: Business Administration ()		
M-WIWI-101467	Design, Construction and Sustainability Assessment of Buildings	9 CR
M-WIWI-101434	eBusiness and Service Management	9 CR
M-WIWI-101402	eFinance	9 CR
M-WIWI-105035	Empirical Finance	9 CR
M-WIWI-101464	Energy Economics	9 CR
M-WIWI-101435	Essentials of Finance	9 CR
M-WIWI-102752	Fundamentals of Digital Service Systems	9 CR
M-WIWI-101424	Foundations of Marketing	9 CR
M-WIWI-101437	Industrial Production I	9 CR
M-WIWI-104911	Information Systems & Digital Business: Interaction	9 CR
M-WIWI-104912	Information Systems & Digital Business: Platforms	9 CR
M-WIWI-104913	Information Systems & Digital Business: Servitization	9 CR
M-WIWI-101513	Human Resources and Organizations	9 CR
M-WIWI-101466	Real Estate Management	9 CR
M-WIWI-101425	Strategy and Organization	9 CR
M-WIWI-101421	Supply Chain Management	9 CR
M-WIWI-101465	Topics in Finance I	9 CR
M-WIWI-101423	Topics in Finance II	9 CR
Election block: Operations Research ()		
M-WIWI-101413	Applications of Operations Research	9 CR
M-WIWI-101936	Methodical Foundations of OR	9 CR
M-WIWI-103278	Optimization under Uncertainty	9 CR
Election block: Statistics ()		
M-WIWI-101599	Statistics and Econometrics	9 CR
Election block: Economics ()		
M-WIWI-101499	Applied Microeconomics	9 CR
M-WIWI-101403	Public Finance	9 CR
M-WIWI-101599	Statistics and Econometrics	9 CR
M-WIWI-101668	Economic Policy I	9 CR
M-WIWI-101501	Economic Theory	9 CR

5.7 Law**Credits**
26

Mandatory		
M-INFO-101190	Introduction to Civil Law	5 CR
M-INFO-101191	Commercial Law	9 CR
M-INFO-105247	Constitutional and Administrative Law	6 CR
Election block: Compulsory Elective Module in Law (at least 6 credits)		
M-INFO-101253	Intellectual Property and Data Protection	6 CR

5.8 Seminars**Credits**
3

Election block: Compulsory Elective Seminar in Informatics (at least 3 credits)		
M-INFO-102058	Seminar Module Informatics	3 CR
M-INFO-101218	Seminar Module Law	3 CR
M-WIWI-101826	Seminar Module Economic Sciences	3 CR

6 Modules

M

6.1 Module: Algorithmic Methods for Hard Optimization Problems [M-INFO-101237]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
5	Irregular	1 semester	German	3	1

Mandatory			
T-INFO-103334	Algorithmic Methods for Hard Optimization Problems	5 CR	Wagner

Competence Goal

The goal of this course is to familiarize the students with hard problems and possible approaches to solve them. Online problems may also be part of the course.

Content

There are many practical problems that cannot be solved optimally - some not at all and some not in a reasonable amount of time. An example is the "bin packing problem" where a collection of objects must be packed using a possibly small number of bins. Moreover, problems sometimes arise where knowledge about the future (or even about the present) is incomplete, but a decision is required nevertheless ("online problems"). Regarding bin packing, for example, there must be a point in time when you close the bins and send them away. Even if there are some more objects arriving later.

M

6.2 Module: Algorithms for Planar Graphs [M-INFO-101220]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
5	Each summer term	1 semester	German	3	1

Mandatory			
T-INFO-101986	Algorithms for Planar Graphs	5 CR	Wagner

Content

A planar graph is defined as a graph that can be drawn in the plane such that no edges intersect. Planar graphs have many interesting properties that can be used to solve several problems in a particularly simple, fast and elegant way. In addition, some problems that are (NP-)hard in general graphs can be efficiently solved in planar graphs. The lecture presents a selection of these problems and corresponding algorithmic approaches.

Annotation

The module is offered irregularly.

Workload

approx. 150 h

M

6.3 Module: Algorithms I [M-INFO-100030]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: [Informatics \(mandatory\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	1	1

Mandatory			
T-INFO-100001	Algorithms I	6 CR	Sanders

M

6.4 Module: Algorithms II [M-INFO-101173]

Responsible: Prof. Dr. Hartmut Prautzsch
 Prof. Dr. Peter Sanders
 Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 semester	German	3	1

Mandatory			
T-INFO-102020	Algorithms II	6 CR	Prautzsch, Sanders, Wagner

M

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

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Operations Research)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German	3	9

Election block: Compulsory Elective Courses (between 1 and 2 items)			
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 CR	Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management	4,5 CR	Nickel
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102726	Global Optimization I	4,5 CR	Stein
T-WIWI-106199	Modeling and OR-Software: Introduction	4,5 CR	Nickel
T-WIWI-106545	Optimization under Uncertainty	4,5 CR	Rebennack

Competence Certificate

Due to a research semester of Professor Nickel in WS 19/20, the events Location Planning and Strategic SCM and Practice Seminar: Health Care Management do NOT take place in WS 19/20. Please also refer to the information at <https://dol.ior.kit.edu/Lehrveranstaltungen.php> for further details.

The assessment is carried out as partial exams (according to § 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

- is familiar with basic concepts and terms of Supply Chain Management,
- knows the different areas of Supply Chain Management and their respective optimization problems,
- is acquainted with classical location problem models (in the plane, on networks and discrete) as well as fundamental methods for distribution and transport planning, inventory planning and management,
- is able to model practical problems mathematically and estimate their complexity as well as choose and adapt appropriate solution methods.

Prerequisites

At least one of the courses *Facility Location and strategic Supply Chain Management* and *Tactical and operational Supply Chain Management* has to be taken.

Content

Supply Chain Management is concerned with the planning and optimization of the entire, inter-company procurement, production and distribution process for several products taking place between different business partners (suppliers, logistics service providers, dealers). The main goal is to minimize the overall costs while taking into account several constraints including the satisfaction of customer demands.

This module considers several areas of Supply Chain Management. On the one hand, the determination of optimal locations within a supply chain is addressed. Strategic decisions concerning the location of facilities like production plants, distribution centers or warehouses are of high importance for the rentability of supply chains. Thoroughly carried out, location planning tasks allow an efficient flow of materials and lead to lower costs and increased customer service. On the other hand, the planning of material transport in the context of Supply Chain Management represents another focus of this module. By linking transport connections and different facilities, the material source (production plant) is connected with the material sink (customer). For given material flows or shipments, it is considered how to choose the optimal (in terms of minimal costs) distribution and transportation chain from the set of possible logistics chains, which asserts the compliance of delivery times and further constraints.

Furthermore, this module offers the possibility to learn about different aspects of the tactical and operational planning level in Supply Chain Management, including methods of scheduling as well as different approaches in procurement and distribution logistics. Finally, issues of warehousing and inventory management will be discussed.

Recommendation

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

Annotation

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

Workload

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

M

6.6 Module: Applied Informatics [M-WIWI-101430]

Responsible: Prof. Dr. Andreas Oberweis
Prof. Dr. Ali Sunyaev

Organisation: KIT Department of Economics and Management

Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
8	Each term	2 semester	German	2	3

Mandatory			
T-WIWI-110339	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	4 CR	Sunyaev
T-WIWI-110338	Applied Informatics – Modelling	4 CR	Oberweis, Sure-Vetter

Competence Certificate

The learning control for both courses takes the form of a written examination (60 minutes) in accordance with § 4(2), 1 SPO.

The module grade consists of the credit-weighted average of the grades for both courses.

Competence Goal

The student should:

- Becomes familiar with relevant modelling languages for describing application domains and aspects of early software system design.
- Gains insight into methods and systems of computer science for the design and development of distributed information systems (supporting electronic business),
- is able to select, design, and apply these methods and systems in a way that is appropriate for the application context.

Prerequisites

None.

Content

The course Applied Informatics - Modelling [2511030] mainly addresses the early phases of the development of database-supported information systems, distributed systems for information services, intelligent systems and software systems in general. Main topics are modelling concepts and languages for describing application domains as well as static and dynamic aspects of early software system design. The course addresses in detail the following approaches: Entity-Relationship model, advanced aspects of UML, description logic, relational model, Petri nets, and event-driven process chains.

The course Applied Informatics - Internet Computing [2511032] provides insights into fundamental concepts and future technologies of distributed systems and Internet computing. Students should be able to select, design and apply the presented concepts and technologies. The course first introduces basic concepts of distributed systems (e.g. design of architectures for distributed systems, internet architectures, web services, middleware).

In the second part of the course, emerging technologies of Internet computing will be examined in depth. These include, among others:

- Cloud Computing
- Edge & Fog Computing
- Internet of Things
- Blockchain
- Artificial Intelligence

Recommendation

Knowledge of the module *Basic Notions of Computer Science* as well as *Algorithms I* is expected.

Workload

See german version.

M

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

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Economics)

Credits
9

Recurrence
Each term

Language
German

Level
3

Version
3

Election block: Compulsory Elective Courses (at least 9 credits)			
T-WIWI-102876	Auction & Mechanism Design	4,5 CR	Szech
T-WIWI-102892	Economics and Behavior	4,5 CR	Szech
T-WIWI-102850	Introduction to Game Theory	4,5 CR	Puppe, Reiß
T-WIWI-102792	Decision Theory	4,5 CR	Ehrhart
T-WIWI-102844	Industrial Organization	4,5 CR	Reiß
T-WIWI-102739	Public Revenues	4,5 CR	Wigger
T-WIWI-102736	Economics III: Introduction in Econometrics	5 CR	Schienle
T-WIWI-100005	Competition in Networks	4,5 CR	Mitusch

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

Students

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

Prerequisites

None.

Content

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

Recommendation

Completion of the module Economics is assumed.

Workload

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

M

6.8 Module: Basic Notions of Computer Science [M-INFO-101170]

Responsible: Dr. Sebastian Stüker
Thomas Worsch

Organisation: KIT Department of Informatics

Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 term	German	1	1

Mandatory			
T-INFO-101965	Basic Notions of Computer Science Pass	0 CR	Stüker, Worsch
T-INFO-101964	Basic Notions of Computer Science	6 CR	Stüker, Worsch

Competence Goal

- Students know the most important techniques for definitions and are able to read and understand such definitions.
- Students know the difference between syntax and semantics.
- Students know the most important notions from discrete mathematics and computer science and are able to use them for the description of problems and in proofs.

Content

- informal notion of algorithm, basics of correctness proofs
- computational complexity measures, hard problems
- big O notation, master theorem
- alphabets, words, formal languages
- finite acceptors, contextfree grammars
- inductive/recursive definitions, proofs by induction, closure
- relations and functions
- graphs

Workload

180 h

M**6.9 Module: Basic Practical Course for the ICPC-Programming Contest [M-INFO-101230]****Responsible:** Prof. Dr. Dorothea Wagner**Organisation:** KIT Department of Informatics**Part of:** [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Language	Level	Version
4	Each summer term	German	3	1

Mandatory			
T-INFO-101991	Basic Practical Course for the ICPC-Programming Contest	4 CR	Wagner

M

6.10 Module: Business Administration [M-WIWI-105267]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
8	Each term	2 semester	German	2	1

Mandatory			
T-WIWI-102819	Business Administration: Finance and Accounting	4 CR	Ruckes, Uhrig-Homburg, Wouters
T-WIWI-102818	Business Administration: Production Economics and Marketing	4 CR	Fichtner, Klarmann, Lützkendorf, Ruckes, Schultmann

Competence Certificate

The assessments of the courses are written examinations (90 minutes each) according to §4(2), 1 of the examination regulation.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student should be able to

- deal with advanced topics in accounting,
- describe the impacts and features of marketing instruments,
- knows the problem formulation and theories of production management, including the areas of energy, construction, real-estate and ergonomics,
- evaluate information as a competitive factor and is in control of the terminology and the methods to assess information.

Prerequisites

None

Content

The institutional framework and the modelling and formal description of a company's decisions play an essential role in this module. This module contains problems in procurement and materials management as well as in logistics. Modern production processes for goods and services are systematically presented. Marketing research and knowledge of the range of marketing instruments are fundamental for decisions in a competitive market environment. Advanced topics in accounting are also taught.

Recommendation

It is highly recommended to fulfil this module only after completing the module *Foundations in Business Administration*.

Workload

See German version.

M

6.11 Module: Business Processes and Information Systems [M-WIWI-101476]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German	3	5

Election block: Compulsory Elective Courses (between 1 and 2 items)			
T-WIWI-102697	Business Process Modelling	4,5 CR	Oberweis
T-WIWI-109799	Process Mining	4,5 CR	Oberweis
Election block: Supplementary Courses (between 0 and 1 items)			
T-WIWI-102668	Enterprise Architecture Management	4,5 CR	Wolf
T-WIWI-110711	Supplement Applied Informatics	4,5 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-104679	Foundations of Mobile Business	4,5 CR	Oberweis
T-WIWI-110541	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik

Competence Certificate

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.

Competence Goal

Students

- design architecture models of enterprise information systems and compare alternative designs,
- explain the concepts and principles of process modeling languages and methods, apply the methods in a concrete situation and evaluate the results,
- choose an appropriate modeling language according to a given context for analysing, modeling and improving business processes.

Prerequisites

At least one of the courses "Business Process Modelling" or "Process Mining" has to be attended.

Content

Modeling the relevant aspects of a business process is the basis for efficient and effective support of this process in an enterprise information system. Detailed knowledge of languages, methods and software tools for supporting business process modeling is taught in this module.

Additionally fundamentals of software quality management are considered in this module. Maturity models like CMMI or SPICE for evaluation and improvement of a software development process are introduced.

M

6.12 Module: Cognitive Systems [M-INFO-100819]

Responsible: Prof. Dr. Gerhard Neumann
Prof. Dr. Alexander Waibel

Organisation: KIT Department of Informatics

Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101356	Cognitive Systems	6 CR	Neumann, Waibel

M

6.13 Module: Commercial Law [M-INFO-101191]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [Law \(mandatory\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German	1	3

Mandatory			
T-INFO-102013	Exercises in Civil Law	9 CR	Dreier, Matz

M

6.14 Module: Computer Architecture [M-INFO-100818]

Responsible: Prof. Dr.-Ing. Jörg Henkel
Prof. Dr. Wolfgang Karl

Organisation: KIT Department of Informatics

Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits
6

Recurrence
Each summer term

Duration
1 term

Language
German

Level
3

Version
1

Mandatory			
T-INFO-101355	Computer Architecture	6 CR	Henkel, Karl

M

6.15 Module: Computer Graphics [M-INFO-100856]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101393	Computer Graphics	6 CR	Dachsbacher
T-INFO-104313	Computer Graphics Pass	0 CR	Dachsbacher

M

6.16 Module: Computer Organization [M-INFO-103179]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Language	Level	Version
6	Each winter term	German	3	1

Mandatory			
T-INFO-103531	Computer Organization	6 CR	Karl

M

6.17 Module: Constitutional and Administrative Law [M-INFO-105247]

Responsible: Prof. Dr. Nikolaus Marsch
Organisation: KIT Department of Informatics
Part of: [Law \(mandatory\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each term	2 semester	German	2	1

Mandatory			
T-INFO-110300	Public Law I & II	6 CR	Marsch

Workload

See German version.

M

6.18 Module: Curves in CAD [M-INFO-101248]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
5	Irregular	1 semester	German	3	1

Mandatory			
T-INFO-102067	Curves in CAD	5 CR	Prautzsch

Competence Goal

Basic knowledge about smooth freeform curves, and about their representations in CAD systems and in computer graphics. In particular, knowledge of control points and the geometric properties of Bézier and B-spline representations.

Content

Bézier and B-spline-Technics, polarforms, algorithms of de Casteljau, de Boor and Boehm, Oslo-Algorithm, Stärk's C^k construction, subdivision, change of representations, intersection algorithms, interpolation with splines, and a bit on tensorproduct surfaces (= curves controlled by curves).

M

6.19 Module: Database Systems [M-INFO-104921]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [Informatics \(mandatory\)](#)

Credits	Recurrence	Language	Level	Version
4	Each summer term	German	2	1

Mandatory			
T-INFO-101497	Database Systems	4 CR	Böhm

M

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

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Business Administration\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German	3	3

Mandatory			
T-WIWI-102742	Design, Construction and Sustainability Assessment of Buildings I	4,5 CR	Lützkendorf
T-WIWI-102743	Design, Construction and Sustainability Assessment of Buildings II	4,5 CR	Lützkendorf

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

None

Content

Sustainable design, construction and operation of buildings currently are predominant topics of the real estate sector, as well as "green buildings". Not only designers and civil engineers, but also other actors who are concerned with project development, financing and insurance of buildings or portfolio management are interested in these topics.

On the one hand the courses included in this module cover the basics of energy-efficient, resource-saving and health-supporting design and construction of buildings. On the other hand fundamental assessment procedures for analysing and communicating the ecological advantageousness of technical solutions are discussed. With the basics of green building certification systems the lectures provide presently strongly demanded knowledge.

Additionally, videos and simulation tools are used for providing a better understanding of the content of teaching.

Recommendation

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

Furthermore a combination with courses in the area of

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

is recommended.

Workload

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

M

6.21 Module: Digital Circuits Design [M-INFO-102978]

Responsible: Prof. Dr.-Ing. Uwe Hanebeck
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Language	Level	Version
6	Each summer term	German	3	1

Mandatory			
T-INFO-103469	Digital Circuits Design	6 CR	Karl

M

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

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Business Administration)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	9

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-109938	Digital Services	4,5 CR	Satzger, Weinhardt
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-109936	Platform Economy	4,5 CR	Dorner, Weinhardt
T-WIWI-109940	Special Topics in Information Systems	4,5 CR	Weinhardt

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The students

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

Prerequisites

None

Content

This module gives an overview of the mutual dependencies of strategic management and information systems. The central role of information is exemplified by the structuring concept of the information life cycle.

The single phases of this life cycle from generation over allocation until dissemination and use of the information are analyzed from a business and microeconomic perspective, applying classical and new theories. The state of the art of economic theory on aspects of the information life cycle are presented. The lecture is complemented by exercise courses. The courses "Platform Economy", "eFinance: Information systems in finance" and "eServices" constitute three different application domains in which the basic principles of the Internet Economy are deepened. In the core lecture "Platform Economy" the focus is set on markets between two parties that act through an intermediary on an Internet platform. Topics discussed are network effects, peer-to-peer markets, blockchains and marketdesign. The course is held in English and teaches parts of the syllabus with the support of a case study in which students analyze a platform.

The course "eFinance: information systems for securities trading" provides theoretically profound and also practical-oriented background about the functioning of international financial markets. The focus is placed on the economic and technical design of markets as information processing systems.

In "eServices" the increasing impact of electronic services compared to the traditional services is outlined. The Information- und Communication Technologies enable the provision of services, which are mainly characterized by interactivity and individuality. This course provides basic knowledge about the development and management of ICT-based services.

The theoretic fundamentals of Information systems can be enriched by a practical experience in Special Topics in Information Engineering and Management. Any practical Seminar at the IM can be chosen for the course Special Topics in Information systems.

Annotation

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

Workload

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

M

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

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Economics\)](#)

Credits
9

Recurrence
Each term

Language
German

Level
3

Version
9

Mandatory			
T-WIWI-103213	Basic Principles of Economic Policy	4,5 CR	Ott
Election block: Compulsory Elective Courses (1 item)			
T-WIWI-109121	Macroeconomic Theory	4,5 CR	Brumm
T-WIWI-102739	Public Revenues	4,5 CR	Wigger
T-WIWI-102908	Personnel Policies and Labor Market Institutions	4,5 CR	Nieken
T-WIWI-100005	Competition in Networks	4,5 CR	Mitusch

Competence Certificate

The module examination takes place in the form of examinations (§4(2),1 SPO) of the selected partial module performance. The examination is carried out separately for each partial module and is described there. It is possible to repeat examinations at any regular examination date.

The grades of the partial module correspond to the grades of the passed examinations. The overall grade of the module is formed from the grades of the partial performances weighted with LP.

Competence Goal

Students shall be given the ability to

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

Prerequisites

The course "Introduction to Economic Policy" is mandatory in the module.

Content

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

Recommendation

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

Workload

Total effort for 9 credit points: approx. 270 hours. The distribution is made according to the credit points of the courses of the module.

M

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

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Economics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German/English	3	3

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102609	Advanced Topics in Economic Theory	4,5 CR	Mitusch
T-WIWI-102876	Auction & Mechanism Design	4,5 CR	Szech
T-WIWI-102892	Economics and Behavior	4,5 CR	Szech
T-WIWI-102850	Introduction to Game Theory	4,5 CR	Puppe, Reiß
T-WIWI-102844	Industrial Organization	4,5 CR	Reiß
T-WIWI-109121	Macroeconomic Theory	4,5 CR	Brumm
T-WIWI-102610	Welfare Economics	4,5 CR	Puppe

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2), 1 or 2 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

See German version.

Prerequisites

None

Content

The lecture Introduction to Game Theory focuses on the basics of non-cooperative game theory. Model assumptions, solution concepts and applications are discussed in detail both for simultaneous games (normal form games) and for sequential games (extensive form games). Classical equilibrium concepts like the Nash equilibrium or the subgame perfect equilibrium, but also advanced concepts will be discussed in detail. If necessary, a brief insight into cooperative game theory will also be given.

The course Auction & Mechanism Design starts with the basic theory of equilibrium behavior and yield management in single object standard auctions. After introducing the yield equivalence theorem for standard auctions, the focus shifts to mechanism design and its applications for single-object auctions and bilateral exchanges.

The course Economics and Behavior introduces fundamental topics of behavioural economics in terms of content and methodology. Students will also gain insight into the design of economic experimental studies. Students will also be introduced to the reading of and critical examination of current research in behavioural economics.

Recommendation

None

Annotation

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

M

6.25 Module: Economics [M-WIWI-101431]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(mandatory\)](#)

Credits	Recurrence	Duration	Language	Level	Version
5	Each term	1 semester	German	1	2

Mandatory			
T-WIWI-102708	Economics I: Microeconomics	5 CR	Puppe, Reiß

Competence Certificate

The assessment of the module is a written examination according to §4(2), 1 of the examination regulation. The grade of the module corresponds to the grade of this examination.

The main exam takes place subsequent to the lectur. The re-examination is offered at the same examination period. Only repeating candidates are entitled for taking place the re-examination. For a detailed description on the exam regulations see the information of the respective chair.

Competence Goal

It is the main aim of this module to provide basic knowledge in economic modelling. In particular, the student should be able to analyze market processes and the determinants of market results. Furthermore, she should be able to evaluate the effects of economic policy measures on market behavior and propose alternative, more effective policy measures.

In particular, the student should learn

- to apply simple microeconomic concepts,
- to analyze the structure of real world economic phenomena,
- to judge the possible effects of economic policy measures on the behavior of economic agents (in simple decision problems),
- to suggest alternative policy measures,
- to analyze as a participant of a tutorial simple economic problems by solving written exercises and to present the results of the exercises on the blackboard,
- to become familiar with the basic literature on microeconomics.

The student should gain basic knowledge in order to help in practical problems

- to analyze the structure of microeconomics relationships and to present own problem solutions,
- solve simple economic decision problems.

Prerequisites

None

Content

In the two main parts of the course, problems of microeconomic decision making (household and firm behavior) and problems of commodity allocation on markets (market equilibria and their efficiency properties of markets) are discussed. In the final part of the course, basics of imperfect competition (oligopolistic markets) and of game theory as well as welfare economics are presented.

Annotation

When personal resources are available students' tutorials will be established.

Workload

See German version.

M

6.26 Module: eFinance [M-WIWI-101402]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Business Administration)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German/English	3	8

Mandatory			
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
Election block: Supplementary Courses (at least 4,5 credits)			
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The students

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

Prerequisites

The course *eFinance: Information Systems for Securities Trading* [2540454] is compulsory and must be examined.

Content

The module "eFinance: Information engineering and management in finance" addresses current problems in the finance sector. It is investigated the role of information and knowledge in the finance sector and how information systems can solve or extenuate them. Speakers from practice will contribute to lectures with their broad knowledge. Core courses of the module deal with the background of banks and insurance companies and the electronic commerce of stocks in global finance markets. In addition the course Derivatives offers an insight into future and forward contracts as well as the assesment of options. Exchanges and International Finance are also alternatives which provide a supplementary understanding for capital markets.

Information management topics are in the focus of the lecture "eFinance: information engineering and management for securities trading". For the functioning of the international finance markets, it is necessary that there is an efficient information flow. Also, the regulatory frameworks play an important role. In this context, the role and the functioning of (electronic) stock markets, online brokers and other finance intermediaries and their platforms are presented. Not only IT concepts of German finance intermediaries are presented, but also international system approaches will be compared. The lecture is supplemented by speakers from the practice (and excursions, if possible) coming from the Deutsche Börse and the Stuttgart Stock Exchange.

Annotation

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

Workload

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

M

6.27 Module: Empirical Finance [M-WIWI-105035]

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Business Administration\)](#)

Credits	Recurrence	Language	Level	Version
9	Each winter term	English	3	2

Mandatory			
T-WIWI-110216	Empirical Finance	6 CR	Ulrich
T-WIWI-110217	Python for Empirical Finance	3 CR	Ulrich

Competence Certificate

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

The assessment of "Empirical Finance" is carried out in form of a written exam (90 minutes), the assessment of "Python for Empirical Finance" is carried out in form of six biweekly Python programming tasks and offered each winter term.

The overall grade of the module is the grade of the written exam weighted with factor 0.75 and the grade for the Python programming tasks weighted with factor 0.25. The resulting grade is truncated after the first decimal.

Competence Goal

Students learn the fundamental concepts of modern portfolio theory and their realization in Python. The course focuses on the implementation of statistical concepts in Python, such that students are able to make investment decision under uncertainty after successful completion of this module.

Content

The module covers several topics, among them:

- Mean-Variance Portfolio Optimization
- Modeling Distribution of Asset Returns with Factor Models and ARMA-GARCH
- Monte-Carlo Simulation
- Parameter Estimation with Maximum Likelihood and Regressions?

Recommendation

Prior knowledge of statistics is recommended.

Workload

Total effort for 9 credit points: approx. 270 hours. The distribution is based on the credit points of the courses of the module. The total number of hours per course results from the effort required to attend lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

M

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

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Business Administration\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	3

Mandatory			
T-WIWI-102746	Introduction to Energy Economics	5,5 CR	Fichtner
Election block: Supplementary Courses (3,5 credits)			
T-WIWI-102607	Energy Policy	3,5 CR	Wietschel
T-WIWI-100806	Renewable Energy-Resources, Technologies and Economics	3,5 CR	Jochem, McKenna

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) about the lecture *Introduction into Energy Economics* [2581010] and one optional lecture of the module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

The lecture *Introduction into Energy Economics* [2581010] has to be examined.

Content

Introduction to Energy Economics: Characterisation (reserves, suppliers, cost, technologies) of different energy carriers (coal, gas, oil, electricity, heat etc.)

Renewable Energy - Resources, Technology and Economics: Characterisation of different renewable energy carriers (wind, solar, hydro, geothermal etc.)

Energy Policy: Management of energy flows, energy-political targets and instruments (emission trading etc.)

Recommendation

The courses are conceived in a way that they can be attended independently from each other. Therefore, it is possible to start the module in winter and summer term.

Annotation

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

Workload

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

M

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

Responsible: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Business Administration\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each summer term	1 semester	German	3	2

Mandatory			
T-WIWI-102605	Financial Management	4,5 CR	Ruckes
T-WIWI-102604	Investments	4,5 CR	Uhrig-Homburg

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

None

Content

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

Workload

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

M

6.30 Module: Formal Systems [M-INFO-100799]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101336	Formal Systems	6 CR	Beckert

M

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

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Business Administration\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	5

Mandatory			
T-WIWI-102805	Managing the Marketing Mix	4,5 CR	Klarmann
Election block: Supplementary Courses (at least 4,5 credits)			
T-WIWI-102806	Services Marketing and B2B Marketing	3 CR	Klarmann
T-WIWI-102807	International Marketing	1,5 CR	Feurer

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Prerequisites

The course *Marketing Mix* is compulsory and must be examined.

Content

The core course of the module is "Marketing Mix". This course is compulsory and must be examined. "Marketing Mix" contains instruments and methods that enable you to goal-oriented decisions in the operative marketing management (product management, pricing, promotion and sales management).

To deepen the marketing knowledge students can complete the courses "Services- and B2B-Marketing" and "International Marketing".

Annotation

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

Workload

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

M

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

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Business Administration\)](#)

Credits
9Recurrence
Each termLanguage
GermanLevel
3Version
6

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-109938	Digital Services	4,5 CR	Satzger, Weinhardt
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-110888	Practical Seminar: Digital Services	4,5 CR	Satzger, Weinhardt

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO), whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

Students

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

Prerequisites

None

Content

Global economy is increasingly determined by services: in industrialized countries nearly 70% of gross value added is achieved in the tertiary sector. Unfortunately, for the design, development and the management of services traditional concepts focused on goods are often insufficient or inappropriate. Besides, the rapid technical advance in the information and communication technology sector pushes the economic importance of digital services even further thus changing the competition environment. ICT-based interaction and individualization open up completely new dimensions of shared value between clients and providers, dynamic and scalable "service value networks" replace established value chains, digital services are provided globally crossing geographical boundaries. This module establishes a basis for further specialization in service innovation, service economics, service design, service modelling, service analytics as well as the transformation and coordination of service networks.

Recommendation

None

Annotation

This module is part of the KSRI teaching profile "Digital Service Systems". Further information on a service-specific profiling is available under www.ksri.kit.edu/teaching.

Workload

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

M

6.33 Module: Geometric Basics for Geometry Processing [M-INFO-100756]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
5	Irregular	1 term	German	3	1

Mandatory			
T-INFO-101293	Geometric Basics for Geometry Processing	5 CR	Prautzsch

M

6.34 Module: Geometric Optimization [M-INFO-100730]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
3	Irregular	1 term	German	3	1

Mandatory			
T-INFO-101267	Geometric Optimization	3 CR	Prautzsch

M

6.35 Module: Human Computer Interaction [M-INFO-100729]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101266	Human-Machine-Interaction	6 CR	Beigl
T-INFO-106257	Human-Machine-Interaction Pass	0 CR	Beigl

M

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

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Business Administration\)](#)

Credits	Recurrence	Language	Level	Version
9	Each term	German	3	4

Mandatory			
T-WIWI-102909	Human Resource Management	4,5 CR	Nieken
Election block: Supplementary Courses (between 4,5 and 5,5 credits)			
T-WIWI-102630	Managing Organizations	3,5 CR	Lindstädt
T-WIWI-102908	Personnel Policies and Labor Market Institutions	4,5 CR	Nieken
T-WIWI-102871	Problem Solving, Communication and Leadership	2 CR	Lindstädt

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

The course "Human Resource Management" is compulsory and must be examined.

Content

Students acquire basic knowledge in the field of human resource and organizational management. Strategic as well as operative aspects of human resource management practices are analyzed. The module offers an up-to-date overview over basic concepts and models. It also shows the strengths and weaknesses of rational concepts in human resources and organizational management.

The students learn to apply methods and instruments to plan, select, and manage staff. Current issues of organizational management or selected aspects of personnel politics are examined and evaluated.

The focus lies on the strategic analysis of decisions and the use microeconomic or behavioral approaches. Empirical results of field or lab studies are discussed critically.

Recommendation

Completion of module Business Administration is recommended.

Basic knowledge of microeconomics, game theory and statistics is recommended.

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Business Administration)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German/English	3	3

Mandatory			
T-WIWI-102606	Fundamentals of Production Management	5,5 CR	Schultmann
Election block: Supplementary Courses (3,5 credits)			
T-WIWI-102870	Logistics and Supply Chain Management	3,5 CR	Schultmann, Wiens
T-WIWI-102820	Production Economics and Sustainability	3,5 CR	Schultmann, Volk

Competence Certificate

The assessment is carried out as partial exams (according to section 4 (2), 1 SPO) of the core course “Fundamentals of Production Management” [2581950] and one further single course of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

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

Prerequisites

The course “Fundamentals of Production Management” [2581950] and one additional activity have to be chosen.

Content

This module is designed to introduce students into the wide area of industrial production and logistics management. It focuses on strategic production management under the aspect of sustainability. The courses use interdisciplinary approaches of systems, also theory to describe the central tasks of industrial production management and logistics. Herein, attention is drawn upon strategic corporate planning, research and development as well as site selection. Students will obtain knowledge in solving internal and external transport and storage problems with respect to supply chain management and disposal logistics.

Workload

Total effort will account to 270 hours (9 credit points) and can be allocated according to the credit point rating. Therefore, a course with 3.5 credits requires an effort of approximately 105h and a course with 5.5 credits 165h.

The total effort for each course consists of attending lectures and tutorials, examination times and the time an average student needs to prepare himself in order to pass the exam with an average grade.

M

6.38 Module: Information Security [M-WIWI-104069]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German	3	3

Mandatory			
T-WIWI-110342	Applied Informatics – Information Security	4,5 CR	Volkamer
Election block: Compulsory Elective Courses (1 item)			
T-WIWI-108439	Advanced Lab Security, Usability and Society	4,5 CR	Volkamer
T-WIWI-109786	Advanced Lab Security	4,5 CR	Volkamer

Competence Certificate

The module examination is carried out in the form of partial examinations on the selected courses of the module, with which the minimum requirement at creditpoints is fulfilled. The learning control is described in each course. The overall score of the module is made up of the sub-scores weighted with creditpoints and is cut off after the first comma point.

Competence Goal

The student

- can explain and apply the basics of information security
- knows appropriate measures to achieve different protection goals and can implement these measures
- can assess the quality of organisational protective measures, i. e. among other things knows what has to be taken into account when using the individual measures
- Understanding the differences between information security in the enterprise and in the private context
- knows the areas of application of a variety of relevant standards and knows their weaknesses
- knows and can explain the problems of information security which may arise from human-machine interaction
- can assess messages about detected security problems in a critical way
- can structure a software project in the field of information security and explain and present results in oral and written form
- can use the techniques of Human Centred Security and Privacy by Design to create user-friendly software.

Prerequisites

None

Content

- Basics and concepts of information security
- Understanding the protection objectives of information security and various attack models (including associated assumptions)
- introduction of measures to achieve the respective protection goals, taking into account different attack models
- Note: In contrast to the IT Security lecture, measures such as encryption algorithms are treated only abstractly, i. e. the idea of the measure, assumptions to the attacker and the deployment environment.
- Presentation and analysis of problems of information security arising from human-machine interaction and presentation of the Human Centered Security by Design approach.
- Introduction into organisational protective measures and standards to be observed for companies.

Annotation

This new module can be chosen from summer term 2018.

Workload

The total workload for this module is approximately 270 hours.

M

6.39 Module: Information Services in Networks [M-WIWI-101440]

Responsible: N.N.
Prof. Dr. Hartmut Schmeck

Organisation: KIT Department of Economics and Management

Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	4

Election block: Compulsory Elective Courses ()			
T-INFO-101276	Data and Storage Management	4 CR	Neumair
T-INFO-101284	Integrated Network and Systems Management	4 CR	Neumair
T-WIWI-110541	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik
T-WIWI-110848	Semantic Web Technologies	4,5 CR	Sure-Vetter

Competence Certificate

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

Workload

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

M

6.40 Module: Information Systems & Digital Business: Interaction [M-WIWI-104911]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Business Administration\)](#)

Credits
9

Recurrence
Each term

Language
German

Level
3

Version
3

Election block: Compulsory Elective Area ()			
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-109936	Platform Economy	4,5 CR	Dorner, Weinhardt
T-WIWI-109935	Practical Seminar Interaction	4,5 CR	Mädche, Weinhardt
T-WIWI-106569	Consumer Behavior	4,5 CR	Scheibehenne

Competence Certificate

The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO via courses of the module amounting to a total of at least 9 LP.

The overall score of the module is formed from the credit-weighted scores of the partial examinations and truncated after the first decimal place.

Competence Goal

Students

- understand the basic concepts of interactive systems as well as the economic foundations and key components of platforms
- explore the theoretical grounding of interactive systems leveraging theories from reference disciplines such as psychology
- understand business models, network effects of digital platforms and get to know different market forms and market mechanisms
- gain experience in group work as well as in the analysis of case studies and the professional presentation of research results

Content

The “Information Systems & Digital Business” modules of the research groups of Prof. Dr. Alexander Mädche (Information Systems & Service Design), Prof. Dr. Gerhard Satzger (Digital Service Innovation) and Prof. Dr. Christof Weinhardt ([Information & Market Engineering](#)), offer a comprehensive overview on important topics of digitalization – blending aspects of digital interaction, digital services and the platform economy.

Courses in this module cover the aspects of interaction between humans and information systems as well as the economic foundations of platform businesses:

- **Foundations of Interactive Systems:** Advanced information and communication technologies (ICT) make interactive systems ever-present in the users’ private and business life. They are an integral part of E-Commerce portals or social networking sites as well as at the workplace, e.g. in the form of collaboration portals or analytical dashboards. Furthermore, with the ever-increasing capabilities of ICT, the design of human-computer interaction is becoming increasingly important. The aim of this module is to introduce the foundations, related theories, key concepts, and design principles as well as current practice of contemporary interactive systems. The students get the necessary knowledge to guide the successful implementation of interactive systems in business and private life.
- **Platform Economy:** Apple, Alphabet, Amazon, Microsoft, und Facebook; five of the most valuable companies worldwide create large portions of their profits employing a digital platform model. This module teaches the key design considerations of digital platforms: their foundations in economic theory, their core components and design aspects, the adequate selection of market mechanisms for achieving certain goals and the role of user behavior in the context of digital platforms. The theoretic foundations are enriched by discussions of several real-world examples, e.g. from the finance sector. Thus, the students are enabled to a) analyze given platforms and make recommendations for improvements and b) independently design new platforms for given use cases.
- **Consumer Behavior:** Consumer decisions are ubiquitous in daily life and they can have long-ranging and important consequences for individual (financial) well-being and health but also for societies and the planet as a whole. To help people making better choices it is important to understand the factors that influence their behavior. Towards this goal, we will explore how consumer behavior is shaped by social influences, situational and cognitive constraints, as well as by emotions, motivations, evolutionary forces, neuronal processes, and individual differences. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates. The lecture will be held in English.

Workload

Total effort for 9 credit points: approx. 270 hours. The distribution is based on the credit points of the courses of the module (120-135h for courses with 4.5 credit points). The total number of hours per course results from the effort required to attend lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

M

6.41 Module: Information Systems & Digital Business: Platforms [M-WIWI-104912]

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Business Administration\)](#)

Credits
9Recurrence
Each termLanguage
GermanLevel
3Version
4

Election block: Compulsory Elective Courses ()			
T-WIWI-109938	Digital Services	4,5 CR	Satzger, Weinhardt
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-109936	Platform Economy	4,5 CR	Dorner, Weinhardt
T-WIWI-109937	Practical Seminar Platforms	4,5 CR	Satzger, Weinhardt

Competence Certificate

The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO via courses of the module amounting to a total of at least 9 LP.

The overall score of the module is formed from the credit-weighted scores of the partial examinations and truncated after the first decimal place.

Competence Goal

Students

- understand services from different perspectives, the concept of value creation in service systems as well as the economic foundations and key components or platforms
- get familiar with concepts, methods and tools for the design, modelling, development and management of digital services and platforms
- understand the categories and trends of platforms as providers of digital services
- gain experience in group work as well as in the analysis of case studies and the professional presentation of research results
- are enabled to design new platforms based on a business idea.

Content

The "Information Systems & Digital Business" modules of the research groups of Prof. Dr. Alexander Mädche ([Information Systems & Service Design](#)), Prof. Dr. Gerhard Satzger (Digital Service Innovation) and Prof. Dr. Christof Weinhardt ([Information & Market Engineering](#)), offer a comprehensive overview on important topics of digitalization – blending aspects of digital interaction, digital services and the platform economy.

Courses in this module cover the technical and economic aspects of digital services as well as their application in the platform economy:

- **Digital Services:** The global economy is increasingly determined by services: in industrialized countries, nearly 70% of gross value added is achieved in the tertiary sector. For the design, development and the management of services traditional "goods-focused" concepts are often insufficient or inappropriate – even more so, if companies reap the ample opportunities to offer digital services. The course is centered around the concepts of joint value creation within service systems. It covers the theoretical background of services and service innovation, technical and economic aspects of cloud and cloud labor services as well as webservices. It focusses on the potential to leverage data for novel digital services and business models and to form dynamic and scalable service value networks. It comprises hands-on experience to conceive and build novel digital, cloud-based services.
- **Platform Economy:** Apple, Alphabet, Amazon, Microsoft, und Facebook; five of the most valuable companies worldwide create large portions of their profits employing a digital platform model. This module teaches the key design considerations of digital platforms: their foundations in economic theory, their core components and design aspects, the adequate selection of market mechanisms for achieving certain goals and the role of user behavior in the context of digital platforms. The theoretic foundations are enriched by discussions of several real-world examples, e.g. from the finance sector. Thus, the students are enabled to a) analyze given platforms and make recommendations for improvements and b) independently design new platforms for given use cases.

Workload

Total effort for 9 credit points: approx. 270 hours. The distribution is based on the credit points of the courses of the module (120-135h for courses with 4.5 credit points). The total number of hours per course results from the effort required to attend lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

M

6.42 Module: Information Systems & Digital Business: Servitization [M-WIWI-104913]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Business Administration\)](#)

Credits
9Recurrence
Each termLanguage
GermanLevel
3Version
2

Election block: Compulsory Elective Courses ()			
T-WIWI-109938	Digital Services	4,5 CR	Satzger, Weinhardt
T-WIWI-109816	Foundations of Interactive Systems	4,5 CR	Mädche
T-WIWI-109939	Practical Seminar Servitization	4,5 CR	Mädche, Satzger

Competence Certificate

The module examination takes place in the form of partial examinations in accordance with § 4 Para. 2 No. 1 - No. 3 SPO via courses of the module amounting to a total of at least 9 LP.

The overall score of the module is formed from the credit-weighted scores of the partial examinations and truncated after the first decimal place.

Competence Goal

Students

- understand services from different perspectives and the concept of value creation in service systems
- get familiar with concepts, methods and tools for the design, modelling, development and management of digital services and interactive systems
- understand the basic characteristics and effects of interactive systems as an integral element of digital services – theoretically grounded in reference disciplines such as psychology
- get hands-on experience in conceptualizing and designing digital services and interactive systems in real use cases.

Content

The “Information Systems & Digital Business” modules of the research groups of Prof. Dr. Alexander Mädche ([Information Systems & Service Design](#)), Prof. Dr. Gerhard Satzger (Digital Service Innovation) and Prof. Dr. Christof Weinhardt ([Information & Market Engineering](#)), offer a comprehensive overview on important topics of digitalization – blending aspects of digital interaction, digital services and the platform economy.

Courses in this module cover the technical and economic aspects of digital services as well as the interaction of humans with information systems:

- **Digital Services:** The global economy is increasingly driven by services: in industrialized countries, nearly 70% of gross value added is achieved in the tertiary sector. For the design, development and the management of services traditional “goods-focused” concepts are often insufficient or inappropriate – even more so, if companies reap the ample opportunities to offer digital services. The course is centered around the concepts of joint value creation within service systems. It covers the theoretical background of services and service innovation, technical and economic aspects of cloud and cloud labor services as well as webservices. It focuses on the potential to leverage data for novel digital services and business models and to form dynamic and scalable service value networks. It comprises hands-on experience to conceive and build novel digital, cloud-based services.
- **Foundations of Interactive Systems:** Advanced information and communication technologies (ICT) make interactive systems ever-present in the users’ private and business life. They are an integral part of E-Commerce portals or social networking sites as well as at the workplace, e.g. in the form of collaboration portals or analytical dashboards. Furthermore, with the ever-increasing capabilities of ICT, the design of human-computer interaction is becoming increasingly important. The aim of this module is to introduce the foundations, related theories, key concepts, and design principles as well as current practice of contemporary interactive systems. The students get the necessary knowledge to guide the successful implementation of interactive systems in business and private life.

Workload

Total effort for 9 credit points: approx. 270 hours. The distribution is based on the credit points of the courses of the module (120-135h for courses with 4.5 credit points). The total number of hours per course results from the effort required to attend lectures and exercises, as well as the examination times and the time required to achieve the learning objectives of the module for an average student for an average performance.

M

6.43 Module: Information Systems I [M-WIWI-104820]

Responsible: Prof. Dr. Sebastian Abeck
Prof. Dr. Alexander Mädche

Organisation: KIT Department of Economics and Management

Part of: [Information Systems](#)

Credits	Recurrence	Language	Level	Version
4	Each winter term	German	1	1

Mandatory			
T-WIWI-109817	Information Systems 1	4 CR	Mädche

Competence Certificate

The module examination takes place in the form of a written examination of 60 minutes according to § 4 Abs. 2 via the course "Business Information Systems 1".

Competence Goal

The student

- understands information systems and infrastructures as a dynamic interaction of technical and non-technical elements in the generation and use of information,
- knows application areas of information systems and infrastructures in business and society, understands digital transformation as a socio-technical design process of (business) processes (internal digitisation) and products/services (external digitisation) in information systems and infrastructures,
- knows different types of information systems and infrastructures in business and society,
- knows the potential benefits of a targeted supply of information in business and society through the appropriate use of information systems and infrastructures.

General qualifications:

- Teamwork: communication, organization
- Problem-solving competence for socially relevant problems

Content

In the lecture "Business Information Systems 1" of the module central basics of information systems are introduced as a scientific discipline. The subject area, basic terms, scientific character and goals as well as methods in science and practice of information systems are introduced. Concepts, methods and theories as well as systems and their engineering design are discussed along the levels of individual, organization and market. The lectures are complemented by Capstone projects with real questions.

Workload

Total effort for 4 credit points: approx. 120 hours.

Presence time: 40 hours

Preparation / follow-up: 40 hours

Exam and exam preparation: 40 hours

M

6.44 Module: Information Systems II [M-WIWI-104821]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [Information Systems](#)

Credits	Recurrence	Language	Level	Version
4	Each summer term	German	1	1

Mandatory			
T-WIWI-109818	Information Systems 2	4 CR	Weinhardt

Competence Certificate

The module examination takes place in the form of a written examination of 60 minutes according to § 4 Abs. 2 via the course Business Information Systems 2.

Competence Goal

The student

- Understands how information systems are used in companies and are dependent on the organization.
- Understands concepts of software procurement, IT service management and IT governance.
- Understands concepts of IT consumerization.
- Learns the basics of market engineering and understand how digital platforms contribute to solving allocation problems and how their success can be measured.
- Learns basics in electronic value creation (information economy), as well as basic concepts in the evaluation and analysis of data.

Content

In the lecture Information Systems II of the module four central issues of Information Systems, respectively their relevance in companies and society, are deepened. This includes the management of IT systems in organizations (IT Management), the use of IT for corporate management (Integrated Information Systems), the use of digital platforms and markets to coordinate economic problems such as the allocation and exchange of goods and services (Platform Economics), and the value and use of data (i.a. big data, open data, etc.) (Information Economics).

Workload

Total effort for 4 credit points: approx. 120 hours.

Presence time: 40 hours

Preparation / follow-up: 40 hours

Exam and exam preparation: 40 hours

M

6.45 Module: Intellectual Property and Data Protection [M-INFO-101253]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [Law \(Compulsory Elective Module in Law\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 semester	German	3	2

Mandatory			
T-INFO-109840	Intellectual Property and Data Protection	6 CR	Matz

Content

Building onto what the students have learned in law during the first two years of Bachelor studies, the module *Law* in the third Bachelor years has the purpose of both deepening and specialising the legal studies in areas of practical importance for information economics and management...

M

6.46 Module: Introduction in Computer Networks [M-INFO-103455]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [Informatics \(mandatory\)](#)

Credits	Recurrence	Language	Level	Version
4	Each summer term	German	2	1

Mandatory			
T-INFO-102015	Introduction in Computer Networks	4 CR	Zitterbart

M

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

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [Law \(mandatory\)](#)

Credits	Recurrence	Duration	Language	Level	Version
5	Each winter term	1 semester	German	1	3

Mandatory			
T-INFO-103339	Civil Law for Beginners	5 CR	Dreier

M

6.48 Module: Introduction to Data and Information Management [M-INFO-101235]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
9	Once	1 semester	German/English	3	1

Mandatory			
T-INFO-101497	Database Systems	4 CR	Böhm
Election block: Introduction to Data and Information Management (at least 1 item as well as at least 5 credits)			
T-INFO-101305	Big Data Analytics	5 CR	Böhm
T-INFO-103552	Lab: Working with Database Systems	4 CR	Böhm
T-INFO-101317	Deployment of Database Systems	5 CR	Böhm
T-INFO-101257	Mechanisms and Applications of Workflow Systems	5 CR	Mülle
T-INFO-101977	Selling IT-Solutions Professionally	1,5 CR	Böhm
T-INFO-101975	Consulting in Practice	1,5 CR	Böhm
T-INFO-101976	Project Management in Practice	1,5 CR	Böhm

Competence Goal

The students

- see the necessity of specialised systems for information and data management and are able to define and deploy decision criteria for purchasing such software,
- are aware of the fundamental approaches in information and database systems and are able to judge their potential applications,
- understand database applications and develop simple database applications on their own,
- are able to communicate at a professional level about technical aspects of information and knowledge management

Prerequisites

None

Content

This module aims at exposing students to modern information and database systems. Beyond fundamental theory and concepts, this module covers the deployment of such technology.

M

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

Responsible: Prof. Dr. Stefan Nickel
 Prof. Dr. Steffen Rebennack
 Prof. Dr. Oliver Stein

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(mandatory\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each summer term	2 semester	German	1	1

Mandatory			
T-WIWI-102758	Introduction to Operations Research I and II	9 CR	Nickel, Rebennack, Stein

Competence Certificate

The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.

In each term (usually in March and July), one examination is held for both courses.

Competence Goal

The student

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

Module grade calculation

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

Prerequisites

None

Content

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

This module forms the basis of a series of advanced lectures with a focus on both theoretical and practical aspects of Operations Research.

Workload

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

M

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

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [Mathematics](#)

Credits	Recurrence	Duration	Language	Level	Version
10	Each term	2 semester	German	1	2

Mandatory			
T-WIWI-102737	Statistics I	5 CR	Grothe, Schienle
T-WIWI-102738	Statistics II	5 CR	Grothe, Schienle

Competence Certificate

The assessment of this module consists of two written examinations according to Section 4(2), 1 of the examination regulation (one for each of the courses Statistics I and II).

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

Competence Goal

See German version.

Module grade calculation

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

Prerequisites

Keine

Content

The module contains the fundamental methods and scopes of Statistics.

A. Descriptive Statistics: univariate und bivariate analysis

B. Probability Theory: probability space, conditional and product probabilities, transformation of probabilities, parameters of location and dispersion, most important discrete and continuous distributions, covariance and correlation, limit distributions

C. Theory of estimation and testing: sufficiency of statistics, point estimation (optimality, ML-method), internal estimations, linear regression

Recommendation

In some cases, knowledge is required that is imparted within the mathematics module. The module should therefore only be attended if the course Mathematics I for [Information Engineering and Management](#) [01360] has been attended beforehand.

It is strongly recommended to attend the course Statistics I [25008/25009] before the course Statistics II [25020/25021].

The lecture will be accompanied by an exercise, a tutorial and a computer internship, which are recommended.

Workload

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

M

6.51 Module: Lab Protocol Engineering [M-INFO-101247]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
4	Each winter term	1 semester	German	3	1

Mandatory			
T-INFO-102066	Lab Protocol Engineering	4 CR	Zitterbart

M

6.52 Module: Lab: Working with Database Systems [M-INFO-101865]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits
4

Recurrence
Each winter term

Language
German

Level
3

Version
1

Mandatory			
T-INFO-103552	Lab: Working with Database Systems	4 CR	Böhm

M

6.53 Module: Lego Mindstorms - Practical Course [M-INFO-102557]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Language	Level	Version
4	Each winter term	German	3	2

Mandatory			
T-INFO-107502	Practical Course: Lego Mindstorms	4 CR	Asfour

Competence Goal

The participants are able to design and construct a robot with motors and sensors using the Lego Mindstorms kit. The students are familiar with programming the Lego EV3 components using the Java programming language. They are able to understand and solve several key problems in mobile robotics, such as autonomous navigation, detection of landmarks and objects as well as obstacle avoidance. The students know how to efficiently and independently solve problems in a small group in a given time frame and are able to systematically document their work and results.

Content

In this practical course, teams of three students build and program a mobile robot using Lego Mindstorms and the Java programming language. The robots are challenged to complete a versatile parkour including sections like the traversal of a maze, following a line, crossing a bridge or avoiding obstacle. After initial building of the robots, a section of the parkour will be set up each week and tackled by the robots, for which the students have to prepare their code beforehand. A final race of the robots on the entire parkour will be held at the end of the semester.

Recommendation

Basic knowledge in JAVA is necessary for successful completion of this course.

M

6.54 Module: MARS-Based Internship [M-INFO-101245]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
4	Each term	1 semester	German/English	3	1

Mandatory			
T-INFO-102053	MARS Basis Lab	4 CR	Prautzsch

Workload
120 h

M

6.55 Module: Mathematics I [M-MATH-104914]

Responsible: Prof. Dr. Andreas Rieder
Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: [Mathematics](#)

Credits	Recurrence	Duration	Language	Level	Version
8	Each winter term	1 semester	German	1	2

Mandatory			
T-MATH-109942	Mathematics I for Information Systems - Exam	7 CR	Rieder, Weiß, Wieners
T-MATH-109943	Mathematics I for Information Systems - Exercise	1 CR	Rieder, Weiß, Wieners

Competence Certificate

The assessment in this module consists of

1. a nongraded certificate of exercise following §4(3) of the examination regulation from the exercises to mathematics I (1 credit) and
2. a written examination of 60 minutes on the lectures mathematics I following §4(2), 1 of the examination regulations (7 credits).

The grade of the module is the grade of the written examination.

Competence Goal

Mathematical models are an important part in economical sciences. Therefore, the students need a basic knowledge in mathematics. The aim is the instruction in a comprehension of basic methods in analysis and linear algebra.

The students learn

- to use simple concepts and structures in mathematics;
- to recognize the mathematical structure of practical applications and to solve in simple cases mathematical problems;
- to comprehend the mathematical structure of more complex applications;
- to understand the mathematical basics to develop mathematical models for applications in cooperation with experts;
- to explain as a group member in the tutorial elementary mathematical structures and to stimulate in the discussion of examples the success of the group;
- to be in time for the tutorial group and for the preparation of homeworks;
- to work with basic mathematical literature.

The provides the foundations for

- comprehending the mathematical structure of more complex applications;
- developing mathematical models for applications in cooperation with experts;
- constructing algorithmical solutions of mathematical models for applications in cooperation with experts.

Prerequisites

None

Content

The lectures mathematics I and II give an overview in basic mathematical knowledge which is required to understand modern computer science and economical sciences. Part I consist of linear algebra including the basic algebraic structures, vector spaces and linear mappings. Many algebraic concepts are important for computer science. Part II consists of analysis including an introduction into the calculus of functions of one or several variables.

Annotation

None.

Workload

See German version.

M

6.56 Module: Mathematics II [M-MATH-104915]

Responsible: Prof. Dr. Andreas Rieder
Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: Mathematics

Credits	Recurrence	Duration	Language	Level	Version
8	Each summer term	1 semester	German	1	2

Mandatory			
T-MATH-109944	Mathematics II for Information Systems - Exam	7 CR	Rieder, Weiß, Wieners
T-MATH-109945	Mathematics II for Information Systems - Exercise	1 CR	Rieder, Weiß, Wieners

Competence Certificate

The assessment in this module consists of

1. a nongraded certificate of exercise following §4(3) of the examination regulation from the exercises to mathematics II (1 credit) and
2. a written examination of 60 minutes on the lectures mathematics II following §4(2), 1 of the examination regulations (7 credits).

The grade of the module is the grade of the written examination.

Competence Goal

Mathematical models are an important part in economical sciences. Therefore, the students need a basic knowledge in mathematics. The aim is the instruction in a comprehension of basic methods in analysis and linear algebra.

The students learn

- to use simple concepts and structures in mathematics;
- to recognize the mathematical structure of practical applications and to solve in simple cases mathematical problems;
- to comprehend the mathematical structure of more complex applications;
- to understand the mathematical basics to develop mathematical models for applications in cooperation with experts;
- to explain as a group member in the tutorial elementary mathematical structures and to stimulate in the discussion of examples the success of the group;
- to be in time for the tutorial group and for the preparation of homeworks;
- to work with basic mathematical literature.

The provides the foundations for

- comprehending the mathematical structure of more complex applications;
- developing mathematical models for applications in cooperation with experts;
- constructing algorithmical solutions of mathematical models for applications in cooperation with experts.

Prerequisites

None

Content

The lectures mathematics I and II give an overview in basic mathematical knowledge which is required to understand modern computer science and economical sciences. Part I consist of linear algebra including the basic algebraic structures, vector spaces and linear mappings. Many algebraic concepts are important for computer science. Part II consists of analysis including an introduction into the calculus of functions of one or several variables.

Workload

See German version.

M

6.57 Module: Mechano-Informatics and Robotics [M-INFO-100757]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
4	Each winter term	1 term	German/English	3	1

Mandatory			
T-INFO-101294	Mechano-Informatics and Robotics	4 CR	Asfour

Competence Goal

Based on the example of robotics students understand the synergistic effects and interdisciplinarity of mechatronics and informatics, the embedded systems, the control, and the methods and the algorithms. They are acquainted with the basic terminology and the methods which are common in robotics, signal processing, action representation, machine learning and cognitive systems. They are capable of applying fundamental state-of-the-art methods and tools for the development and programming of robots. Based on examples originating from current research conducted in the fields of humanoid robotics, the students interactively learn how to identify and formalize problems and tasks and how to develop solutions in an analytical and goal-directed way.

Content

The lecture addresses various engineering and algorithmic aspects and topics in robotics which are illustrated and explained based on examples originating from current research conducted in the field of humanoid robotics. First, this lecture gives an introduction into the mathematical fundamentals which are needed to describe a robotic system as well as the basic algorithms commonly applied in motion planning.

Subsequently, models and methods are introduced with which dynamical systems can be formalized and which can be used to encode and represent robot actions. To do so, we will discuss linear time-invariant systems in statespace as well as non-linear systems described as a set of differential equations which are driven by canonical systems. Further topics include perception, exploration, and classification of objects using haptics, and the basics as well as advanced applications of (deep) neural networks. Applications and approaches are presented which address current problems in robotics such as grasping, walking, visual and tactile visual servoing, and the classification of actions.

Recommendation

Siehe Teilleistung.

M

6.58 Module: Methodical Foundations of OR [M-WIWI-101936]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Operations Research)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German	3	8

Election block: Compulsory Elective Courses (at least 1 item as well as between 4,5 and 9 credits)			
T-WIWI-102726	Global Optimization I	4,5 CR	Stein
T-WIWI-103638	Global Optimization I and II	9 CR	Stein
T-WIWI-102724	Nonlinear Optimization I	4,5 CR	Stein
T-WIWI-103637	Nonlinear Optimization I and II	9 CR	Stein
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102727	Global Optimization II	4,5 CR	Stein
T-WIWI-102725	Nonlinear Optimization II	4,5 CR	Stein
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 CR	Nickel

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

At least one of the courses "Nonlinear Optimization I" and "Global Optimization I" has to be examined.

Content

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

Annotation

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

Workload

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

M**6.59 Module: Microprocessors I [M-INFO-101183]****Responsible:** Prof. Dr. Wolfgang Karl**Organisation:** KIT Department of Informatics**Part of:** [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
3	Each summer term	1 semester	German	3	1

Mandatory			
T-INFO-101972	Microprocessors I	3 CR	Karl

M

6.60 Module: Mobile Computing and Internet of Things [M-INFO-101249]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
5	Each winter term	1 semester	German	3	1

Mandatory			
T-INFO-102061	Mobile Computing and Internet of Things	5 CR	Beigl

Prerequisites

None

M

6.61 Module: Mobile Robots – Practical Course [M-INFO-101184]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
4	Each summer term	1 semester	German/English	3	2

Mandatory			
T-INFO-101992	Mobile Robots – Practical Course	4 CR	Asfour

Competence Goal

The student is able to understand circuit diagrams and can assemble, test and debug complex PCBs. The student is familiar with programming microcontroller-based embedded systems using the C language and cross compilers. The student is able to use methods for controlling robotic sensors and actuators, can conduct experiments with robots and solve tasks in this context independently and in small groups.

Content

In this practical course, students assemble an ASURO robot in groups of two. Each student will be provided with his own robot, which he has to put into operation. While using the robots, a new set of problems will be solved each week. The students will need to prepare for each week given the provided material. Sets of problem be solved using the C language and focus on controlling the robot's sensors and actuators as well as on the generation of reflex-based behavior. The course ends with a race, where the robots have to tackle an obstacle course.

M

6.62 Module: Module Bachelor Thesis [M-INFO-104875]

Organisation: KIT Department of Informatics

Part of: Bachelor Thesis

Credits	Recurrence	Language	Level	Version
15	Each term	German/English	3	1

Mandatory			
T-INFO-109907	Bachelor Thesis	15 CR	

Competence Goal

The student can independently work on a relevant topic in accordance with scientific criteria within the specified time frame.

He/she is in a position to research, analyze the information, abstract and identify basic principles and regulations from less structured information.

He/she reviews the task ahead, can select scientific methods and techniques and apply them to solve a problem or identify further potential. This is basically also done under consideration of social and/or ethical aspects.

He/she can interpret, evaluate and if required, graphically present the obtained results.

He/she is in a position to clearly structure a research paper and communicate in writing using the technical terminology.

Content

The Bachelor thesis is a written report which shows that the student can autonomously investigate a scientific problem in Information Engineering and Management. The work load for the Bachelor thesis should be 360h. The recommended project time is 4 months, the maximal project time is 5 months. The Bachelor thesis may also be written in English.

M

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

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Operations Research)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German	3	4

Election block: Compulsory Elective Courses (between 1 and 2 items)			
T-WIWI-106546	Introduction to Stochastic Optimization	4,5 CR	Rebennack
T-WIWI-106545	Optimization under Uncertainty	4,5 CR	Rebennack
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102724	Nonlinear Optimization I	4,5 CR	Stein
T-WIWI-102714	Tactical and Operational Supply Chain Management	4,5 CR	Nickel

Competence Certificate

The assessment is carried out as partial exams (according to § 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

At least one of the courses *Introduction to Stochastic Optimization* and *Optimization approaches under uncertainty* has to be taken.

Content

The module focuses on modeling and analyzing mathematical optimization problems where certain data is not fully present at the time of decision-making. The lectures on the introduction to stochastic optimization deal with methods to integrate distribution information into the mathematical model. The lectures on the optimization approaches under uncertainty offer alternative approaches such as robust optimization.

Recommendation

Knowledge from the lectures "Introduction to Operations Research I" and "Introduction to Operations Research II" are helpful.

Annotation

The curriculum, planned for three years in advance, can be found on the Internet at <http://sop.ior.kit.edu/28.php>.

Workload

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

M

6.64 Module: Orientation Exam [M-WIWI-104843]

Responsible: Studiendekan der KIT-Fakultät für Informatik
Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften

Organisation: KIT Department of Informatics
KIT Department of Economics and Management

Part of: [Orientation Exam](#)

Credits	Recurrence	Language	Level	Version
0	Each term	German	3	1

Mandatory			
T-INFO-101531	Programming	5 CR	Koziolak, Reussner
T-INFO-101967	Programming Pass	0 CR	Koziolak, Reussner
T-MATH-109943	Mathematics I for Information Systems - Exercise	1 CR	Rieder, Weiß, Wieners
T-MATH-109942	Mathematics I for Information Systems - Exam	7 CR	Rieder, Weiß, Wieners
T-WIWI-109817	Information Systems 1	4 CR	Mädche

Modelled deadline

This module must be passed until the end of the **3. term**.

Prerequisites

None

M**6.65 Module: Practical Course Computer Engineering: Hardware Design [M-INFO-101219]****Responsible:** Prof. Dr. Wolfgang Karl**Organisation:** KIT Department of Informatics**Part of:** [Informatics \(Compulsory Elective Modules in Informatics\)](#)**Credits**
4**Recurrence**
Each winter term**Duration**
1 semester**Language**
German**Level**
3**Version**
1

Mandatory			
T-INFO-102011	Practical Course Computer Engineering: Hardware Design	4 CR	Karl
T-INFO-105983	Practical Course Computer Engineering: Hardware Design Pass	0 CR	Karl

Workload

60 h

M

6.66 Module: Practical Course Web Applications and Service-Oriented Architectures (I) [M-INFO-101633]

Responsible: Prof. Dr. Sebastian Abeck

Organisation: KIT Department of Informatics

Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits
5

Recurrence
Each winter term

Language
German

Level
3

Version
2

Mandatory			
T-INFO-103119	Practical Course Web Applications and Service-Oriented Architectures (I)	5 CR	Abeck

M

6.67 Module: Programming [M-INFO-101174]

Responsible: Prof. Dr.-Ing. Anne Koziolk
 Prof. Dr. Ralf Reussner
 Prof. Dr.-Ing. Gregor Snelting

Organisation: KIT Department of Informatics

Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
5	Each winter term	1 semester	German	1	1

Mandatory			
T-INFO-101967	Programming Pass	0 CR	Koziolk, Reussner
T-INFO-101531	Programming	5 CR	Koziolk, Reussner

Competence Goal

Students should learn

- basic structures of the programming language Java and how to apply them; in particular control and simple data structures, object orientation and implementation of basic algorithms
- basics of programming methodology and the ability to autonomously write executable small to medium sized Java programs

Content

- objects and classes
- types, values and variables
- methods
- control structures
- recursion
- references, lists
- inheritance
- input and output
- exceptions
- programming methodology
- implementation of basic algorithms in Java (such as sorting algorithms)

M

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

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Economics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German	3	5

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102877	Introduction to Public Finance	4,5 CR	Wigger
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102739	Public Revenues	4,5 CR	Wigger
T-WIWI-109590	Public Sector Finance	4,5 CR	Wigger

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The exams are offered at the beginning of the recess period about the subject matter of the latest held lecture. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

The overall grade for the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

See German version.

Content

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

Recommendation

It is recommended to attend the course 2560129 after having completed the course 2560120.

Annotation

The course T-WIWI-102790 "Specific Aspects in Taxation" will no longer be offered in the module as of winter semester 2018/2019.

Workload

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

M

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

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [Economics and Management \(Business Administration\)](#)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	2 semester	German	3	2

Mandatory			
T-WIWI-102744	Real Estate Management I	4,5 CR	Lützkendorf
T-WIWI-102745	Real Estate Management II	4,5 CR	Lützkendorf

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the core course and further single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

None

Content

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

This module is also suitable for students who want to discuss macroeconomic, business-management or financial problems in a real estate context.

Recommendation

The combination with the module *Design Constructions and Assessment of Green Buildings* is recommended.

Furthermore a combination with courses in the area of

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

is recommended.

Workload

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

M

6.70 Module: Real-Time Systems [M-INFO-100803]

Responsible: Prof. Dr.-Ing. Tamim Asfour
 Prof. Dr.-Ing. Björn Hein
 Prof. Dr.-Ing. Thomas Längle

Organisation: KIT Department of Informatics

Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101340	Real-Time Systems	6 CR	Asfour, Längle

M**6.71 Module: Robotics I - Introduction to Robotics [M-INFO-100893]**

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Language	Level	Version
6	Each winter term	German	3	3

Mandatory			
T-INFO-108014	Robotics I - Introduction to Robotics	6 CR	Asfour

M

6.72 Module: Security [M-INFO-100834]

Responsible: Prof. Dr. Jörn Müller-Quade
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101371	Security	6 CR	Hofheinz, Müller-Quade

M

6.73 Module: Semantic Knowledge Management [M-WIWI-101438]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	10

Mandatory			
T-WIWI-110848	Semantic Web Technologies	4,5 CR	Sure-Vetter
Election block: Supplementary Courses (at least 1 item)			
T-WIWI-110340	Applied Informatics - Applications of Artificial Intelligence	4,5 CR	Sure-Vetter
T-WIWI-102697	Business Process Modelling	4,5 CR	Oberweis
T-WIWI-110541	Advanced Lab Informatics (Master)	4,5 CR	Professorenschaft des Fachbereichs Informatik

Competence Certificate

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.

Competence Goal

Students

- know the motives for the application of knowledge management in organizations
- know the basic design dimensions of holistic knowledge management (organization, human, information technology, corporate culture)
- know the main group of IT systems for knowledge management and are able to describe the relevant application scenarios and basic operating modes of these systems
- know how to use the different IT systems for knowledge management in practice
- know the basic standards for the modeling of information and processes and are able to describe their formal structures
- know how to apply the different modeling languages
- know criteria to evaluate the success of knowledge management systems and are able to apply them to assess defined knowledge management scenarios

Prerequisites

Lecture *Semantic Web Technologien* [2511310] is mandatory.

Content

In modern companies the availability and usability of knowledge is an essential factor of success for central managerial tasks and duties such as the improvement of business processes, product innovation and the amelioration of customer satisfaction.

This module illustrates the typical problems of knowledge management in organizations and presents IT methods to approach these questions. The relevant groups of knowledge management systems are analyzed and expanded in the subject areas knowledge representation/semantic modeling and document management/groupware systems.

Annotation

Detailed information on the recognition of examinations in the field of Informatics can be found at <http://www.aifb.kit.edu/web/Auslandsaufenthalt>.

Workload

The workload is app. 270 hours.

M

6.74 Module: Seminar Module Economic Sciences [M-WIWI-101826]

Responsible: Studiendekan der KIT-Fakultät für Wirtschaftswissenschaften
Organisation: KIT Department of Economics and Management
Part of: Seminars

Credits	Language	Level	Version
3	German	3	1

Election block: Compulsory Elective Courses (1 item)			
T-WIWI-103486	Seminar in Business Administration (Bachelor)	3 CR	Professorenschaft des Fachbereichs Betriebswirtschaftslehre
T-WIWI-103488	Seminar in Operations Research (Bachelor)	3 CR	Nickel, Rebennack, Stein
T-WIWI-103489	Seminar in Statistics (Bachelor)	3 CR	Grothe, Schienle
T-WIWI-103487	Seminar in Economics (Bachelor)	3 CR	Professorenschaft des Fachbereichs Volkswirtschaftslehre

Competence Certificate

The assessment is done by a seminar with at least 3 CP.

The assessment of the seminar (following §4(2), 3 ER) is described at the course description.

Competence Goal

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

Prerequisites

None.

Content

The module consists of a seminar, that is related to the research field of economic sciences. A complete list of available seminars is published in the internet.

Annotation

The mentioned seminars in this module handbook are place holders. For each semester, a complete list of seminars are published in the Vorlesungsverzeichnis or at the web pages of the participating institutes. Often, the seminar topics for a given semester are published at the end of the preceding semester. Some seminars require an early sign-in deadline at the end of the of the preceding semester.

Workload

The total workload for this module is approximately 90 hours.

M

6.75 Module: Seminar Module Informatics [M-INFO-102058]

Responsible: Dr. Ioana Gheta
 Jürgen Weixler
 Dr. André Wiesner

Organisation: KIT Department of Informatics
 KIT Department of Economics and Management

Part of: [Seminars](#)

Credits	Recurrence	Language	Level	Version
3	Each term	German/English	3	1

Election block: Seminar Informatics (1 item)			
T-INFO-104336	Seminar Informatics A	3 CR	Abeck
T-WIWI-103485	Seminar in Informatics (Bachelor)	3 CR	Professorenschaft des Fachbereichs Informatik

M

6.76 Module: Seminar Module Law [M-INFO-101218]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [Seminars](#)

Credits	Recurrence	Duration	Language	Level	Version
3	Each term	1 semester	German	3	1

Mandatory			
T-INFO-101997	Seminar: Legal Studies I	3 CR	Dreier

M

6.77 Module: Software Engineering I [M-INFO-101175]

Responsible: Prof. Dr.-Ing. Anne Koziolak
 Prof. Dr. Ralf Reussner
 Prof. Dr. Walter Tichy

Organisation: KIT Department of Informatics

Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
6	Each summer term	1 semester	German	2	1

Mandatory			
T-INFO-101968	Software Engineering I	6 CR	Koziolak, Reussner, Tichy
T-INFO-101995	Software Engineering I Pass	0 CR	Tichy

Competence Goal

The students acquire basic knowledge about the principles, methods and tools of software engineering. They learn how to build and to maintain complex software systems in a systematic way.

Content

The content of the lecture is the entire lifecycle of software, spanning project planning, system analysis, cost estimation, design, implementation, validation, verification, and finally the maintaining of software. The covered topics include UML, design patterns, software tools, programming environments and configuration control/versioning systems.

Workload

approx. 180 h

M

6.78 Module: Software Engineering II [M-INFO-100833]

Responsible: Prof. Dr.-Ing. Anne Koziolk
 Prof. Dr. Ralf Reussner
 Prof. Dr. Walter Tichy

Organisation: KIT Department of Informatics

Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 semester	German	3	1

Mandatory			
T-INFO-101370	Software Engineering II	6 CR	Koziolk, Reussner, Tichy

Content

Requirements engineering, software development processes, software quality, software architectures, MDD, Enterprise Software Patterns software maintainability, software security, dependability, embedded software, middleware, statistic testing

M

6.79 Module: Statistics and Econometrics [M-WIWI-101599]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Statistics\)](#)
[Economics and Management \(Economics\)](#)

Credits
9

Recurrence
Each term

Language
German

Level
3

Version
3

Election block: Compulsory Elective Courses (1 item)			
T-WIWI-102736	Economics III: Introduction in Econometrics	5 CR	Schienle
T-WIWI-106623	Technical Conditions Met	0 CR	
Election block: Supplementary Courses (between 1 and 2 items)			
T-WIWI-103063	Analysis of Multivariate Data	4,5 CR	Grothe
T-WIWI-103066	Data Mining and Applications	4,5 CR	Nakhaeizadeh
T-WIWI-103064	Financial Econometrics	4,5 CR	Schienle
T-WIWI-103065	Statistical Modeling of Generalized Regression Models	4,5 CR	Heller

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

- shows an advanced understanding of Econometric techniques and statistical model building.
- is able to develop Econometric models for applied problems based on available data
- is able to apply techniques and models with statistical software, to interpret results and to judge on different approaches with appropriate statistical criteria.

Prerequisites

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

Content

The courses provide a solid Econometric and statistical foundation of techniques necessary to conduct valid regression, time series and multivariate analysis.

Workload

The total workload for this module is approximately 270 hours.

M

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

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Business Administration)

Credits
9

Recurrence
Each term

Language
German

Level
3

Version
4

Election block: Strategy and Organization (at least 9 credits)			
T-WIWI-102630	Managing Organizations	3,5 CR	Lindstädt
T-WIWI-102871	Problem Solving, Communication and Leadership	2 CR	Lindstädt
T-WIWI-102629	Management and Strategy	3,5 CR	Lindstädt

Competence Certificate

The assessment is carried out as partial written exams (according to Section 4(2), 1 of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

- The student describes both central concepts of strategic management as well as concepts and models for the design of organizational structures.
- He / she evaluates the strengths and weaknesses of existing organizational structures and regulations on the basis of systematic criteria.
- The management of organizational changes discusses and examines the students by means of case studies to what extent the models can be used in practice and what conditions must apply to them.
- In addition, students plan to use IT to support corporate governance.

Content

The module has a practical and action-oriented structure and provides the student with an up-to-date overview of basic skills concepts and models of strategic management and a realistic picture of possibilities and limitations rational design approaches of the organization.

The focus is firstly on internal and external strategic analysis, concept and sources of competitive advantage, Formulation of competitive and corporate strategies as well as strategy assessment and implementation. Secondly strengths and weaknesses of organizational structures and regulations are assessed on the basis of systematic criteria. Concepts for the organization of organizational structures, the regulation of organizational processes and the control organizational changes are presented.

Workload

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

M

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

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: Economics and Management (Business Administration)

Credits	Recurrence	Duration	Language	Level	Version
9	Each term	1 semester	German/English	3	9

Mandatory			
T-WIWI-109936	Platform Economy	4,5 CR	Dorner, Weinhardt
Election block: Supplementary Courses (1 item)			
T-WIWI-102704	Facility Location and Strategic Supply Chain Management	4,5 CR	Nickel
T-WIWI-102714	Tactical and Operational Supply Chain Management	4,5 CR	Nickel

Competence Certificate

The assessment is carried out as partial exams (according to Section 4 (2), 1-3 SPO) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The assessment procedures are described for each course of the module separately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The students

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

Prerequisites

The course T-WIWI-107506 "Platform Economy" has to be taken.

Content

The module "Supply Chain Management" gives an overview of the mutual dependencies of information systems and of supply chains spanning several enterprises. The specifics of supply chains and their information needs set new requirements for the operational information management. In the core lecture "Platform Economy" the focus is set on markets between two parties that act through an intermediary on an Internet platform. Topics discussed are network effects, peer-to-peer markets, blockchains and market design. The course is held in English and teaches parts of the syllabus with the support of a case study in which students analyze a platform.

The module is completed by an elective course addressing appropriate optimization methods for the Supply Chain Management and for modern logistic approaches.

Annotation

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

Workload

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

M

6.82 Module: Surfaces for Computer Aided Design [M-INFO-101254]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: Informatics (Compulsory Elective Modules in Informatics)

Credits	Recurrence	Duration	Language	Level	Version
5	Each winter term	1 semester	German	3	1

Mandatory			
T-INFO-102073	Surfaces for Computer aided Design	5 CR	Prautzsch

Competence Goal

Die Hörer und Hörerinnen der Vorlesung können grundlegende CAGD-Techniken für praktische und theoretische Arbeiten auf entsprechenden Gebieten anwenden und sind in der Lage die Qualität von CAGD-Lösungen zu beurteilen.

Brauchen Sie dann noch für alle meine anderen Module Qualifikationsziele? Für alle diese Module wurden bislang noch keine Qualifikationsziele formuliert.

Content

Bézier and B-spline-Technics, for tensorproduct- and triangular surface patches: de Casteljau algorithm, convex surfaces, subdivision, smooth surface joints, Powell-Sabin, Clough-Tocher and Piper's elements, construction of smooth freeform surfaces, vertex enclosure problem, boxesplines.

M

6.83 Module: Team Project Software Development [M-INFO-104809]

Responsible: Prof. Dr. Sebastian Abeck
 Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: [Information Systems](#)

Credits	Recurrence	Language	Level	Version
8	Each term	German	3	1

Mandatory			
T-INFO-109823	Team Project Software Development	8 CR	Abeck, Reussner

M

6.84 Module: Telematics [M-INFO-100801]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101338	Telematics	6 CR	Zitterbart

M

6.85 Module: Theoretical Informatics [M-INFO-101189]

Responsible: Prof. Dr. Jörn Müller-Quade
Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: Informatics (mandatory)

Credits	Recurrence	Duration	Language	Level	Version
6	Each winter term	1 semester	German/English	2	1

Mandatory			
T-INFO-103235	Theoretical Foundations of Computer Science	6 CR	Müller-Quade, Sanders, Wagner

Competence Certificate

The assessment of the module consists of a written examination according to §4(2), 1 of the examination regulations. The grade of the module corresponds to the grade of the written examination. Further details see the german section.

Competence Goal

The student

- has a deeper insight into the fundamentals of theoretical computer science and knows the computation models and proof techniques,
- understands the limits and possibilities of computer science in relation to the solution of definable but only partially predictable problems
- knows basic aspects of computer science in contrast to specific circumstances, such as specific computers or programming languages and also can phrase general statements about the solvability of problems
- is able to apply the proof techniques learned for the specification of systems of computer science and for the systematic design of programs and algorithms

Content

There are important problems whose solutions can clearly be defined but one will never be able to calculate such a solution systematically. Other problems are "likely" to be solved only through trial and error. Other topics of the module provide the basis for circuit design, design of compilers, and many others. Most results are rigorously proved. The proof techniques learned by the way are important for the specification of systems of computer science and for the systematic design of programs and algorithms.

The module provides a deep insight into the principles and methods of theoretical computer science. In particular, this will be discussed on the basic properties of Formal Languages as foundations of programming languages and communication protocols (regular, context-free Chomsky hierarchy), machine models (finite automata, pushdown automata, Turing machines, non determinism, and relations to families of formal languages), equivalence of sufficiently powerful computation models (Church's thesis), non computable important functions (halting problem,...), Gödel's incompleteness theorem and introduction to complexity theory, NP-complete problems and polynomial reductions.

Workload

approx. 210 h

M

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

Responsible: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg

Organisation: KIT Department of Economics and Management

Part of: Economics and Management (Business Administration)

Credits 9	Recurrence Each term	Duration 1 semester	Language German/English	Level 3	Version 8
---------------------	--------------------------------	-------------------------------	-----------------------------------	-------------------	---------------------

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-107505	Financial Accounting for Global Firms	4,5 CR	Luedecke
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg
T-WIWI-110511	Strategic Finance and Technoloy Change	1,5 CR	Ruckes

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.

In addition to that it is possible to choose the module *Topics in Finance II*.

Content

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

Annotation

The course T-WIWI-102790 "Specific Aspects in Taxation" will no longer be offered in the module as of winter semester 2018/2019.

Workload

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

M

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

Responsible: Prof. Dr. Martin Ruckes
Prof. Dr. Marliese Uhrig-Homburg

Organisation: KIT Department of Economics and Management

Part of: [Economics and Management \(Business Administration\)](#)

Credits 9	Recurrence Each term	Duration 1 semester	Language German/English	Level 3	Version 9
---------------------	--------------------------------	-------------------------------	-----------------------------------	-------------------	---------------------

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102643	Derivatives	4,5 CR	Uhrig-Homburg
T-WIWI-110797	eFinance: Information Systems for Securities Trading	4,5 CR	Weinhardt
T-WIWI-102623	Financial Intermediation	4,5 CR	Ruckes
T-WIWI-107505	Financial Accounting for Global Firms	4,5 CR	Luedecke
T-WIWI-102626	Business Strategies of Banks	3 CR	Müller
T-WIWI-108711	Basics of German Company Tax Law and Tax Planning	4,5 CR	Gutekunst, Wigger
T-WIWI-102646	International Finance	3 CR	Uhrig-Homburg
T-WIWI-110511	Strategic Finance and Technoloy Change	1,5 CR	Ruckes

Competence Certificate

The assessment is carried out as partial exams (according to Section 4(2) of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module. The examinations are offered every semester. Re-examinations are offered at every ordinary examination date. The assessment procedures are described for each course of the module seperately.

The overall grade of the module is the average of the grades for each course weighted by the credits and truncated after the first decimal.

Competence Goal

The student

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

Prerequisites

It is only possible to choose this module in combination with the module *Essentials in Finance*. The module is passed only after the final partial exam of *Essentials in Finance* is additionally passed.

In addition to that it is possible to choose the module *Topics in Finance I*.

Content

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

Annotation

The course T-WIWI-102790 "Special Taxation" will no longer be offered in the module as of winter semester 2018/1019.

Workload

The total workload for this module is approximately 270 hours.

M

6.88 Module: Web Applications and Service-Oriented Architectures (I) [M-INFO-101636]**Responsible:** Prof. Dr. Sebastian Abeck**Organisation:** KIT Department of Informatics**Part of:** [Informatics \(Compulsory Elective Modules in Informatics\)](#)**Credits**
4**Recurrence**
Each winter term**Language**
German**Level**
3**Version**
1

Mandatory			
T-INFO-103122	Web Applications and Service-Oriented Architectures (I)	4 CR	Abeck

7 Courses

T

7.1 Course: Advanced Lab Informatics (Master) [T-WIWI-110541]

Responsible: Professorenschaft des Fachbereichs Informatik
Organisation: KIT Department of Economics and Management
Part of: M-WIWI-101438 - Semantic Knowledge Management
M-WIWI-101440 - Information Services in Networks
M-WIWI-101476 - Business Processes and Information Systems

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	1

Events					
WS 19/20	2512301	Linked Data and the Semantic Web	3 SWS		Sure-Vetter, Acosta Deibe, Käfer, Heling
WS 19/20	2512501	Project lab Cognitive automobiles and robots	3 SWS	Practical course (P)	Zöllner
WS 19/20	2512600	Project lab Information Service Engineering	2 SWS	Practical course (P)	Sack
SS 2020	2512204	Lab Business Information Systems: Realisation of innovative services (Bachelor)	3 SWS	Practical course (P)	Oberweis, Schiefer, Schüler, Toussaint
SS 2020	2512400	Development of Sociotechnical Information Systems (Bachelor)	3 SWS	Practical course (P)	Sunyaev, Sturm
SS 2020	2512402	Praktikum Blockchain und Distributed Ledger Technology (Bachelor)	SWS	Practical course (P)	Sunyaev, Beyene, Kannengießer, Pandl
SS 2020	2512554	Practical lab Security, Usability and Society (Bachelor)	3 SWS	Practical course (P)	Volkamer, Strufe, Mayer, Mossano
Exams					
WS 19/20	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
WS 19/20	7900046	Sicherheit		Prüfung (PR)	Volkamer
WS 19/20	7900102	Advanced Lab Information Service Engineering		Prüfung (PR)	Sack
WS 19/20	7900107	Advanced Lab Cognitive Automobile and Robots		Prüfung (PR)	Zöllner
WS 19/20	7900115	Development of Sociotechnical Information Systems		Prüfung (PR)	Sunyaev
WS 19/20	7900116	Advanced Lab Security, Usability and Society		Prüfung (PR)	Volkamer
WS 19/20	7900187	Real-World Challenges in Data Science und Analytics		Prüfung (PR)	Sure-Vetter
SS 2020	7900016	Development of Sociotechnical Information Systems (Bachelor)		Prüfung (PR)	Sunyaev
SS 2020	7900029	Practical lab Security, Usability and Society (Bachelor)		Prüfung (PR)	Volkamer
SS 2020	7900085	Advanced Lab in Information Systems: Realization of innovative services (Bachelor)		Prüfung (PR)	Oberweis
SS 2020	7900096	Lab Blockchain and Distributed Ledger Technology (Bachelor)		Prüfung (PR)	Sunyaev

Competence Certificate

The alternative exam assessment consists of:

- a practical work
- a presentation and
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

Prerequisites

None

Annotation

The title of this course is a generic one. Specific titles and the topics of offered seminars will be announced before the start of a semester in the internet at <https://portal.wiwi.kit.edu>.

Below you will find excerpts from events related to this course:

**Linked Data and the Semantic Web**

2512301, WS 19/20, 3 SWS, Language: German/English, [Open in study portal](#)

Content

Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

**Project lab Cognitive automobiles and robots**

2512501, WS 19/20, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

The lab is intended as a practical supplement to lectures such as "Machine Learning". The theoretical basics are applied in the lab course. The aim of the lab course is that the participants work together to design, develop and evaluate a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

In addition to the scientific objectives involved in the investigation and application of the methods, aspects of project-specific teamwork in research (from specification to presentation of the results) are also developed in this practical course.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and implementation and evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can practically apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles.
- Students master the analysis and solution of corresponding problems in a team.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning, C/C++ knowledge, Python knowledge

Workload:

The workload of 4.5 credit points consists of the time spent in the lab for practical implementation of the selected solution, as well as the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

**Project lab Information Service Engineering**

2512600, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Practical course (P)

Content

The ISE project course is based on the summer semester lecture "Information Service Engineering". Goal of the course is to work on a research problem in small groups (3-4 students) related to the ISE lecture topics, i.e. Natural Language Processing, Knowledge Graphs, and Machine Learning. The solution of the given research problem requires the development of a software implementation.

The project will be worked on in teams of 3-4 students each, guided by a tutor from the teaching staff.

Required coursework includes:

- Mid term presentation (5-10 min)
- Final presentation (10-15 min)
- Course report (c. 20 pages)
- Participation and contribution of the students during the course
- Software development and delivery

Notes:

The ISE project course can also be credited as a **seminar**.

The project will be worked on in teams of 3-4 students each, guided by a tutor from the teaching staff.

The project course will be restricted to 15 participants.

Participation in the lecture "Information Service Engineering" (summer semester) is required.

ISE Tutor Team:

- Dr. Mehwish Alam
- M. Sc. Rima Türker
- M. Sc. Russa Biswas
- M. Sc. Fabian Hoppe
- M. Sc. Genet Asefa Gesese
- B. Sc. Tabea Tietz

**Lab Business Information Systems: Realisation of innovative services (Bachelor)**

2512204, SS 2020, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)

Content

As part of the lab, the participants should work together in small groups to realize innovative services (mainly for students).

Further information can be found on the ILIAS page of the lab.

**Development of Sociotechnical Information Systems (Bachelor)**2512400, SS 2020, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

The aim of the lab is to get to know the development of socio-technical information systems in different application areas. In the event framework, you should develop a suitable solution strategy for your problem alone or in group work, collect requirements, and implement a software artifact based on it (for example, web platform, mobile apps, desktop application). Another focus of the lab is on the subsequent quality assurance and documentation of the implemented software artifact.

Registration information will be announced on the course page.

**Practical lab Security, Usability and Society (Bachelor)**2512554, SS 2020, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

The internship "Security, Usability and Society" will cover topics both of usable security and privacy programming, and how to conduct user studies.

Important dates:

Kick-off: April 24th, 2020, 14: 00-15: 30 Get. 5.20 Room 3A-11.1

Final submission : TBA

Presentation : TBA

Subjects:

Privacy-friendly apps

In this subject, students complete an app (or an extension of an app) among our Privacy-Friendly Apps. Please click the following link to know more about them: <https://secuso.aifb.kit.edu/english/105.php> . Students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

Programming Usable Security Intervention

In this subject, students develop a part of coding, an extension, or another programming task dealing with various usable security interventions, eg as an extension. Eg TORPEDO (<https://secuso.aifb.kit.edu/english/TORPEDO.php>) or PassSec + (<https://secuso.aifb.kit.edu/english/PassSecPlus.php>). Just as before, students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

Conducting Usable Security User studies (online studies only)

These topics are related to how to set up and conducting user studies of various types. This year, due to the Corona outbreak, we decided to conduct online studies only; otherwise, interviews and in lab studies would have been possible. At the end of the semester, the students present a report / paper and a talk in which they present their results.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php .

As reported on the KIT informational page for the Corona outbreak (<https://www.kit.edu/kit/25911.php>), all teaching and in-person contact are forbid until new noticed. If the KIT restrictions are still in effect on the kick-off date, this will still take place at the date and time programmed, albeit in an online form.

In any case, we will inform you promptly as soon a more precise decision is reached.

T

7.2 Course: Advanced Lab Security [T-WIWI-109786]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104069 - Information Security](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each winter term	2

Events					
WS 19/20	2512100	Security	4 SWS	Practical course (P)	Baumgart, Volkamer, Mayer, Zarei
Exams					
WS 19/20	7900046	Sicherheit		Prüfung (PR)	Volkamer

Competence Certificate

The alternative exam assessment consists of:

- a practical work
- a presentation and possibly
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

Prerequisites

None

Recommendation

Knowledge from the lecture "Information Security" is recommended.

Below you will find excerpts from events related to this course:

V

Security

2512100, WS 19/20, 4 SWS, Language: German, [Open in study portal](#)

Practical course (P)

Content

The lab deals with the IT security of everyday utensils. Implemented security mechanisms are first theoretically investigated and put to the test with practical attacks. Finally, countermeasures and suggestions for improvement are worked out. The lab is offered within the competence center for applied security technologies (KASTEL) and is supervised by several institutes.

The success control takes the form of a final presentation, a thesis and the handing over of the developed code.

More information on https://ilias.studium.kit.edu/goto_produkativ_crs_998421.html

T

7.3 Course: Advanced Lab Security, Usability and Society [T-WIWI-108439]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104069 - Information Security](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	2

Events					
WS 19/20	2512551	Practical lab Security, Usability and Society	3 SWS	Practical course (P)	Volkamer, Landesberger von Antburg, Mayer
SS 2020	2512554	Practical lab Security, Usability and Society (Bachelor)	3 SWS	Practical course (P)	Volkamer, Strufe, Mayer, Mossano
Exams					
WS 19/20	7900116	Advanced Lab Security, Usability and Society		Prüfung (PR)	Volkamer
SS 2020	7900029	Practical lab Security, Usability and Society (Bachelor)		Prüfung (PR)	Volkamer

Competence Certificate

The alternative exam assessment consists of:

- a practical work
- a presentation and possibly
- a written seminar thesis

Practical work, presentation and written thesis are weighted according to the course.

Prerequisites

None

Recommendation

Knowledge from the lecture "Information Security" is recommended.

Annotation

The course is expected to be offered from winter term 2018/2019.

Contents:

In the course of the programming lab, changing topics from the field of Human Factors in Security und Privacy will be worked on.

Learning goals:

The student

- can apply the basics of information security
- is able to implement appropriate measures to achieve different protection goals
- can structure a software project in the field of information security
- can use the Human Centred Security and Privacy by Design technique to develop user-friendly software
- can explain and present technical facts and the results of the programming lab in oral and written form

Below you will find excerpts from events related to this course:

V

Practical lab Security, Usability and Society

2512551, WS 19/20, 3 SWS, [Open in study portal](#)

Practical course (P)

Content

Kick-off Meeting (compulsory attendance) on 18.10.2019 at 11:00 in room 3A-11.2

**Practical lab Security, Usability and Society (Bachelor)**2512554, SS 2020, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)

Content

The internship "Security, Usability and Society" will cover topics both of usable security and privacy programming, and how to conduct user studies.

Important dates:

Kick-off: April 24th, 2020, 14: 00-15: 30 Get. 5.20 Room 3A-11.1

Final submission : TBA

Presentation : TBA

Subjects:

Privacy-friendly apps

In this subject, students complete an app (or an extension of an app) among our Privacy-Friendly Apps. Please click the following link to know more about them: <https://secuso.aifb.kit.edu/english/105.php> . Students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

Programming Usable Security Intervention

In this subject, students develop a part of coding, an extension, or another programming task dealing with various usable security interventions, eg as an extension. Eg TORPEDO (<https://secuso.aifb.kit.edu/english/TORPEDO.php>) or PassSec + (<https://secuso.aifb.kit.edu/english/PassSecPlus.php>). Just as before, students are provided with a point list of goals, containing both basic features mandatory to pass the course and more advanced ones that heighten the final grade.

Conducting Usable Security User studies (online studies only)

These topics are related to how to set up and conducting user studies of various types. This year, due to the Corona outbreak, we decided to conduct online studies only; otherwise, interviews and in lab studies would have been possible. At the end of the semester, the students present a report / paper and a talk in which they present their results.

This event counts towards the KASTEL certificate. Further information on how to obtain the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php .

As reported on the KIT informational page for the Corona outbreak (<https://www.kit.edu/kat/25911.php>), all teaching and in-person contact are forbid until new noticed. If the KIT restrictions are still in effect on the kick-off date, this will still take place at the date and time programmed, albeit in an online form.

In any case, we will inform you promptly as soon a more precise decision is reached.

T

7.4 Course: Advanced Topics in Economic Theory [T-WIWI-102609]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101501 - Economic Theory](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Events					
SS 2020	2520527	Advanced Topics in Economic Theory	2 SWS	Lecture (V)	Mitusch, Scheffel
SS 2020	2520528	Übung zu Advanced Topics in Economic Theory	1 SWS	Practice (Ü)	Pegorari

Competence Certificate

The assessment consists of a written exam (60min) (following §4(2), 1 of the examination regulation) at the end of the lecture period or at the beginning of the following semester.

Prerequisites

None

Recommendation

This course is designed for advanced Master students with a strong interest in economic theory and mathematical models. Bachelor students who would like to participate are free to do so, but should be aware that the level is much more advanced than in other courses of their curriculum.

Below you will find excerpts from events related to this course:

V

Advanced Topics in Economic Theory

2520527, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature

Die Veranstaltung wird in englischer Sprache angeboten:

The course is based on the excellent textbook "Microeconomic Theory" (Chapters 1-5, 10, 13-20) by A.Mas-Colell, M.D.Whinston, and J.R.Green.

T

7.5 Course: Algorithmic Methods for Hard Optimization Problems [T-INFO-103334]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-101237 - Algorithmic Methods for Hard Optimization Problems](#)

Type	Credits	Recurrence	Version
Oral examination	5	Irregular	1

T

7.6 Course: Algorithms for Planar Graphs [T-INFO-101986]

Responsible: Prof. Dr. Dorothea Wagner
Organisation: KIT Department of Informatics
Part of: [M-INFO-101220 - Algorithms for Planar Graphs](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each summer term	1

Events					
SS 2020	24614	Algorithmen für planare Graphen (mit Übungen)	2 SWS	Lecture / Practice (VÜ)	Ueckerdt, Gottesbüren
Exams					
WS 19/20	7500227	Algorithms for Planar Graphs		Prüfung (PR)	Wagner

T 7.7 Course: Algorithms I [T-INFO-100001]

Responsible: Prof. Dr. Peter Sanders
Organisation: KIT Department of Informatics
Part of: [M-INFO-100030 - Algorithms I](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	24500	Algorithms I	4 SWS	Lecture / Practice (VÜ)	Dachsbacher, Schüßler, Jung, Opitz
Exams					
WS 19/20	7500274	Algorithms I		Prüfung (PR)	Sinz

T

7.8 Course: Algorithms II [T-INFO-102020]

Responsible: Prof. Dr. Hartmut Prautzsch
 Prof. Dr. Peter Sanders
 Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [M-INFO-101173 - Algorithms II](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24079	Algorithms II	4 SWS	Lecture (V)	Sanders, Lamm, Heuer
Exams					
WS 19/20	7500245	Algorithms II		Prüfung (PR)	Sanders

T

7.9 Course: Analysis of Multivariate Data [T-WIWI-103063]

Responsible: Prof. Dr. Oliver Grothe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101599 - Statistics and Econometrics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Events					
WS 19/20	2550550		2 SWS	Lecture (V)	Grothe
WS 19/20	2550551		2 SWS	Practice (Ü)	Grothe, N.N.
Exams					
WS 19/20	7900297	Analysis of Multivariate Data		Prüfung (PR)	Grothe

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. The exam is offered every semester. Re-examinations are offered only for repeaters.

Prerequisites

None

Recommendation

Attendance of the courses Statistics 1 [2600008] and Statistics 2 [2610020] is recommended.

Annotation

The lecture is not offered regularly. The courses planned for three years in advance can be found online.

Below you will find excerpts from events related to this course:

V

2550550, WS 19/20, 2 SWS, [Open in study portal](#)

Lecture (V)

Literature

Skript zur Vorlesung

T

7.10 Course: Applied Informatics – Applications of Artificial Intelligence [T-WIWI-110340]

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101438 - Semantic Knowledge Management](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2511314	Applications of Artificial Intelligence	2 SWS	Lecture (V)	Sure-Vetter
WS 19/20	2511315	Exercises to Applied Informatics – Applications of Artificial Intelligence	1 SWS	Practice (Ü)	Sure-Vetter, Weller
Exams					
WS 19/20	7900091	Applied Informatics - Applications of Artificial Intelligence		Prüfung (PR)	Sure-Vetter
SS 2020	7900009	Applied Informatics - Applications of AI (Registration until 13 July 2020)		Prüfung (PR)	Sure-Vetter

Competence Certificate

Written Examination (60 min) according to §4, Abs. 2, 1 of the examination regulations or oral examination of 20 minutes according to §4, Abs. 2, 2 of the examination regulations. The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

None.

Recommendation

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

Annotation

Replaces from winter semester 2019/2020 T-WIWI-109263 "Applications of Artificial Intelligence".

Below you will find excerpts from events related to this course:

V

Applications of Artificial Intelligence

2511314, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The lecture provides insights into the fundamentals of artificial intelligence. Basic methods of artificial intelligence and their applications in industry are presented.

Applications of the AI is a sub-area of computer science dealing with the automation of intelligent behavior. In general, it is a question of mapping human intelligence. Methods of artificial intelligence are presented in various areas such as, for example, question answering systems, speech recognition and image recognition.

The lecture gives an introduction to the basic concepts of artificial intelligence. Essential theoretical foundations, methods and their applications are presented and explained.

This lecture aims to provide students with a basic knowledge and understanding of the structure, analysis and application of selected methods and technologies on artificial intelligence. The topics include, among others, knowledge modeling, machine learning, text mining, uninformed search, and intelligent agents.

Learning objectives:

The students

- consider current research topics in the field of artificial intelligence and in particular learn about the topics of knowledge modeling, machine learning, text mining and uninformed search.
- interdisciplinary thinking.
- technological approaches to current problems.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preparation and postprocessing: 60 hours
- Exam and exam preparation: 30 hours

**Exercises to Applied Informatics – Applications of Artificial Intelligence**

2511315, WS 19/20, 1 SWS, Language: German, [Open in study portal](#)

Practice (Ü)

Content

The exercises are oriented on the lecture applications of AI.

Multiple exercises are held that capture the topics, held in the lecture Applications of AI and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

This lecture aims to provide students with a basic knowledge and understanding of the structure, analysis and application of selected methods and technologies on artificial intelligence. The topics include, among others, knowledge modeling, machine learning, text mining, uninformed search, and intelligent agents.

Learning objectives:

The students

- consider current research topics in the field of artificial intelligence and in particular learn about the topics of knowledge modeling, machine learning, text mining and uninformed search.
- interdisciplinary thinking.
- technological approaches to current problems.

T

7.11 Course: Applied Informatics – Information Security [T-WIWI-110342]

Responsible: Prof. Dr. Melanie Volkamer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104069 - Information Security](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2020	2511550	Applied Informatics - Information Security	2 SWS	Lecture (V)	Volkamer
SS 2020	2511551	Exercise Applied Informatics - Information Security	1 SWS	Practice (Ü)	Volkamer, Reinheimer
Exams					
WS 19/20	7900074	Applied Informatics - Information Security		Prüfung (PR)	Volkamer
SS 2020	7900064	Applied Informatics - Information Security (Registration until 13 July 2020)		Prüfung (PR)	Volkamer

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation or an oral exam (30 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

Annotation

Replaces from summer term 2020 T-WIWI-108387 "Information Security".

Below you will find excerpts from events related to this course:

V

Applied Informatics - Information Security

2511550, SS 2020, 2 SWS, [Open in study portal](#)

Lecture (V)

Content

- Basics and concepts of information security
- Understanding the protection objectives of information security and various attack models (including associated assumptions)
- introduction of measures to achieve the respective protection goals, taking into account different attack models
- Note: In contrast to the IT Security lecture, measures such as encryption algorithms are treated only abstractly, i. e. the idea of the measure, assumptions to the attacker and the deployment environment.
- Presentation and analysis of problems of information security arising from human-machine interaction and presentation of the Human Centered Security by Design approach.
- Introduction into organisational protective measures and standards to be observed for companies

Learning objectives:

The student

- can explain the basics of information security
- knows suitable measures to achieve different protection goals
- can assess the quality of organisational protective measures, i. e. among other things knows what has to be taken into account when using the individual measures
- understands the differences between information security in the organisational and in the private context
- knows the areas of application of different standards and knows their weaknesses
- knows and can explain the problems of information security that which arise from human-machine interaction
- is able to deal with messages concerning found security problems in a critical way.

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php.

Literature

- P. Gerber, M. Ghiglieri, B. Henhapl, O. Kulyk, K. Marky, P. Mayer, B. Reinheimer, and M. Volkamer, *Human Factors in Security*. Springer, Jan. 2018, pp. 83–98.
- C. Eckert, *IT-Sicherheit: Konzepte-Verfahren-Protokolle*. Walter de Gruyter, 2013

**Exercise Applied Informatics - Information Security**

2511551, SS 2020, 1 SWS, [Open in study portal](#)

Practice (Ü)

Content

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php.

T

7.12 Course: Applied Informatics – Modelling [T-WIWI-110338]

Responsible: Prof. Dr. Andreas Oberweis
Prof. Dr. York Sure-Vetter

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101430 - Applied Informatics](#)

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2511030	Applied Informatics - Modelling	2 SWS	Lecture (V)	Oberweis, Sure-Vetter, Schiefer
WS 19/20	2511031	Exercises to Applied Informatics - Modelling	1 SWS	Practice (Ü)	Oberweis, Sure-Vetter, Schiefer, Käfer
Exams					
WS 19/20	7900003	Applied Informatics - Modelling		Prüfung (PR)	Oberweis, Sure-Vetter
SS 2020	7900018	Applied Informatics - Modelling (Registration until 13 July 2020)		Prüfung (PR)	Oberweis, Sure-Vetter

Competence Certificate

The assessment consists of a written examination (60 min) in the first week after lecture period (according to Section 4 (2),1 of the examination regulation).

Prerequisites

None

Annotation

Replaces from winter semester 2019/2020 T-WIWI-102652 "Applied Informatics I - Modeling".

Below you will find excerpts from events related to this course:

V

Applied Informatics - Modelling

2511030, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

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 together with their respective analysis techniques will be introduced.

Learning objectives:

Students

- explain the strengths and weaknesses of various modeling approaches for Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- model given problems in Description Logics and apply description logic rules,
- describe the main ontology concepts and languages and explain SPARQL queries,
- create and evaluate a relational database schema and express queries in relational algebra.

Workload:

- Total effort: 120-150 hours
- Presence time: 45 hours
- Self study: 75-105 hours

Literature

- Bernhard Rumpe. Modellierung mit UML, Springer-Verlag, 2004.
- R. Elmasri, S. B. Navathe. Fundamentals of Database Systems. Pearson Education 2009.
- W. Reisig. Petrinetze, Springer-Verlag, 2010.

Weiterführende Literatur:

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web - Grundlagen, Springer, 2008 (ISBN 978-3-540-33993-9)
- Staab, Studer: Handbook on Ontologies, Springer, 2003
- J.L. Peterson: Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
- Franz Baader, Diego Calvanese, Deborah McGuinness, Daniele Nardi, Peter Patel-Schneider. The Description Logic Handbook - Theory, Implementation and Applications, Cambridge 2003.

**Exercises to Applied Informatics - Modelling**

2511031, WS 19/20, 1 SWS, Language: German, [Open in study portal](#)

Practice (Ü)

Content

The exercises are related to the lecture Applied Informatics I - Modelling.

Multiple exercises are held that capture the topics, held in the lecture Applied Informatics I - Modelling, and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

The lecture sets out with a definition of modelling and the advantages of modelling. After that, advanced aspects of UML, the Entity Relationship model (ER model) and description logics as a means of modelling static aspects will be explained. This will be complemented by the relational data model and the systematic design of databases based on ER models. For modelling dynamic aspects, different types of petri-nets together with their respective analysis techniques will be introduced.

Learning objectives:

Students

- explain the strengths and weaknesses of various modeling approaches for Information Systems and choose an appropriate method for a given problem,
- create UML models, ER models and Petri nets for given problems,
- model given problems in Description Logics and apply description logic rules,
- describe the main ontology concepts and languages and explain SPARQL queries,
- create and evaluate a relational database schema and express queries in relational algebra.

Literature

- Bernhard Rumpe. Modellierung mit UML, Springer-Verlag, 2004.
- R. Elmasri, S. B. Navathe. Fundamentals of Database Systems. Pearson Education 2009.
- W. Reisig. Petrinetze, Springer-Verlag, 2010.

Weiterführende Literatur:

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web - Grundlagen, Springer, 2008 (ISBN 978-3-540-33993-9)
- Staab, Studer: Handbook on Ontologies, Springer, 2003
- J.L. Peterson: Petri Net Theory and Modeling of Systems, Prentice Hall, 1981.
- Franz Baader, Diego Calvanese, Deborah McGuinness, Daniele Nardi, Peter Patel-Schneider. The Description Logic Handbook - Theory, Implementation and Applications, Cambridge 2003.

T

7.13 Course: Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services [T-WIWI-110339]

Responsible: Prof. Dr. Ali Sunyaev
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101430 - Applied Informatics](#)

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2020	2511032	Applied Informatics - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services	2 SWS	Lecture (V)	Sunyaev
SS 2020	2511033	Übungen zu Angewandte Informatik - Internet Computing	1 SWS	Practice (Ü)	Sunyaev
Exams					
WS 19/20	7900004	Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services		Prüfung (PR)	Sunyaev
SS 2020	7900025	Applied Informatics - Internet Computing (Registration until 13 July 2020)		Prüfung (PR)	Sunyaev

Competence Certificate

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is recommended for the written exam, which is offered at the end of the winter semester and at the end of the summer semester.

By successful processing the exercises a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites

None

Recommendation

Knowledge of content of the modules Basic Notions of Computer Science and Algorithms I is expected.

Annotation

Replaces from winter semester 2019/2020 T-WIWI-109445 "Applied Informatics - Internet Computing".

Below you will find excerpts from events related to this course:

V

Applied Informatics - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services

Lecture (V)

2511032, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Content

The lecture Applied Computer Science II provides insights into fundamental concepts and future technologies of distributed systems and Internet computing. Students should be able to select, design and apply the presented concepts and technologies. The course first introduces basic concepts of distributed systems (e.g. design of architectures for distributed systems, internet architectures, web services, middleware).

In the second part of the course, emerging technologies of Internet computing will be examined in depth. These include, among others:

- Cloud Computing
- Edge & Fog Computing
- Internet of Things
- Blockchain
- Artificial Intelligence

Learning objectives:

The student learns about basic concepts and emerging technologies of distributed systems and internet computing. Practical topics will be deepened in lab classes.

Recommendations:

Knowledge of content of the module [WI1INFO].

Workload:

The total workload for this course is approximately 135-150 hours.

Literature

Wird in der Vorlesung bekannt gegeben

**7.14 Course: Auction & Mechanism Design [T-WIWI-102876]**

Responsible: Prof. Dr. Nora Szech
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Applied Microeconomics](#)
[M-WIWI-101501 - Economic Theory](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2560550	Auction and Mechanism Design	2 SWS	Lecture (V)	Szech
SS 2020	2560551	Übung zu Auction and Mechanism Design	1 SWS	Practice (Ü)	Szech, Huber

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be earned through successful participation in the exercise. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites

None

Recommendation

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Annotation

The lecture will be held in English.

Below you will find excerpts from events related to this course:

**Auction and Mechanism Design**

2560550, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

The course starts with the basic theory of equilibrium behavior and revenue management in one object standard auctions. The revenue equivalence theorem for standard auctions is introduced. Thereafter, the course focuses on mechanism design and its applications to one object auctions and bilateral trade.

The students

- learn to analyze strategic behavior in auctions;
- learn to compare auction formats with regard to efficiency and revenue;
- are familiarized with the basic theory of (Bayesian) mechanism design;
- learn to master the revenue equivalence theorem for standard auctions;
- learn to apply mechanism design to one object auctions and bilateral trade.

The lecture will be held in English.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Through successful participation in the Exercise, students can earn a bonus. If the grade on the written exam is between 4,0 and 1,3 the bonus improves the grade by one step (0,3 or 0,4). Details will be announced during the lecture.

The total workload for this course is approximately 135.0 hours. For further information see German version.

Recommendations:

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Literature

Krishna, V.: Auction Theory, Academic Press, 2009.

Milgrom, P.: Putting Auction Theory to Work, Cambridge University Press, 2010.

Mathews, S.: A Technical Primer on Auction Theory I: Independent Private Values No. 1096. Northwestern University, Center for Mathematical Studies in Economics and Management Science, 1995.

T 7.15 Course: Bachelor Thesis [T-INFO-109907]

Organisation: KIT Department of Informatics

Part of: [M-INFO-104875 - Module Bachelor Thesis](#)

Type	Credits	Recurrence	Version
Final Thesis	15	Each term	1

Final Thesis

This course represents a final thesis. The following periods have been supplied:

Submission deadline	4 months
Maximum extension period	1 months
Correction period	6 weeks

T

7.16 Course: Basic Notions of Computer Science [T-INFO-101964]

Responsible: Dr. Sebastian Stüker
Thomas Worsch

Organisation: KIT Department of Informatics

Part of: [M-INFO-101170 - Basic Notions of Computer Science](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24001	Grundbegriffe der Informatik	3 SWS	Lecture (V)	Worsch
Exams					
WS 19/20	75400100	Basic Notions of Computer Science		Prüfung (PR)	Worsch

T

7.17 Course: Basic Notions of Computer Science Pass [T-INFO-101965]

Responsible: Dr. Sebastian Stüker
Thomas Worsch

Organisation: KIT Department of Informatics

Part of: [M-INFO-101170 - Basic Notions of Computer Science](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each winter term	1

Events					
WS 19/20	24002	Übungen zu Grundbegriffe der Informatik	1 SWS	Practice (Ü)	Worsch
Exams					
WS 19/20	7500191	Basic Notions of Computer Science I Pass		Prüfung (PR)	Worsch

T

7.18 Course: Basic Practical Course for the ICPC-Programming Contest [T-INFO-101991]

Responsible: Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [M-INFO-101230 - Basic Practical Course for the ICPC-Programming Contest](#)

Type	Credits	Recurrence	Version
Completed coursework	4	Each summer term	2

Events					
SS 2020	24872	Basispraktikum zum ICPC Programmierwettbewerb	2 SWS	Practical course (P)	Jungeblut, Zeitz, Ueckerdt, Sanders, Tillmann

T

7.19 Course: Basic Principles of Economic Policy [T-WIWI-103213]

Responsible: Prof. Dr. Ingrid Ott
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101668 - Economic Policy I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2560280	Basic Principles of Economic Policy	2 SWS	Lecture (V)	Ott
SS 2020	2560281	Exercises of Basic Principles of Economic Policy	1 SWS	Practice (Ü)	Ott, Scheu, Bälz

Competence Certificate

The assessment consists of a written exam (60 min) according to Section 4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

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

Annotation**Description:**

Theory of general economic policy and discussion of current economic policy topics:

- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning objectives:

Students learn:

- To apply basic concepts of micro- and macroeconomic theories to economic policy issues.
- to develop arguments on how state intervention in the market can be legitimized from a welfare economic perspective
- to derive theory-based policy recommendations.

Learning content:

- Market interventions: microeconomic perspective
- Market interventions: macroeconomic perspective
- Institutional economic aspects
- Economic policy and welfare economics
- Economic policy makers: Political-economic aspects

Workload:

- Total effort at 4.5 LP: approx. 135 hours
- Presence time: approx. 30 hours
- Self-study: approx. 105 hours

Media:

See course announcement

References:

See course announcement

Below you will find excerpts from events related to this course:



Basic Principles of Economic Policy

2560280, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The lecture deals with theories of general economic policy and discussion of current economic policy topics:

- Goals of economic policy,
- Instruments and institutions of economic policy,
- Triad of regional, national and European economic policies,
- special fields of economic policy, in particular growth, employment, provision of public infrastructure and climate policy.

Learning objectives:

Students shall be given the ability to

- apply basic concepts of micro- and macroeconomic theories to economic policy issues
- develop arguments on how state intervention in the market can be legitimized from a welfare economic perspective
- derive theory-based policy recommendations

Recommendations:

Basic micro- and macroeconomic knowledge is required, especially as taught in the courses Economics I [2610012] and Economics II [2600014].

Workload:

Total effort at 4.5 LP is approx. 135 hours and consists of:

- Presence time: approx. 30 hours
- Self-study: approx. 105 hours

Assessment:

The examination takes place in the form of a written examination (60min) (according to §4(2), 1 SPO). The examination is offered every semester and can be repeated at any regular examination date.

Literature

- Klump, Rainer (2013): Wirtschaftspolitik. Pearson Studium
- Baldwin, Richard und Charles Wyplosz (2019): The Economics of European Integration, 6. Edition, McGraw-Hill Education, London
- Foliensatz zur Vorlesung
- Übungsaufgaben



Exercises of Basic Principles of Economic Policy

2560281, SS 2020, 1 SWS, Language: German, [Open in study portal](#)

Practice (Ü)

Literature

- Klump, Rainer (2013): Wirtschaftspolitik. Pearson Studium
- Baldwin, Richard und Charles Wyplosz (2019): The Economics of European Integration, 6. Edition, McGraw-Hill Education, London
- Foliensatz zur Vorlesung
- Übungsaufgaben

T

7.20 Course: Basics of German Company Tax Law and Tax Planning [T-WIWI-108711]

Responsible: Gerd Gutekunst
Prof. Dr. Berthold Wigger

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101403 - Public Finance](#)
[M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2560134	Basics of German Company Tax Law and Tax Planning	3 SWS	Lecture (V)	Wigger, Gutekunst

Competence Certificate

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

Prerequisites

None

Recommendation

Knowledge of the collection of public revenues is assumed. Therefore it is recommended to attend the course "Öffentliche Einnahmen" beforehand.

Below you will find excerpts from events related to this course:

V

Basics of German Company Tax Law and Tax Planning

2560134, WS 19/20, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content**Workload:**

The total workload for this course is approximately 135.0 hours. For further information see German version.

T

7.21 Course: Big Data Analytics [T-INFO-101305]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101235 - Introduction to Data and Information Management](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

Events					
WS 19/20	24114	Big Data Analytics	3 SWS	Lecture (V)	Böhm
Exams					
WS 19/20	7500087	Big Data Analytics		Prüfung (PR)	Böhm

T

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

Responsible: Prof. Dr. Martin Ruckes
 Prof. Dr. Marliese Uhrig-Homburg
 Prof. Dr. Marcus Wouters

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-105267 - Business Administration](#)

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2610026	Business Administration: Finance and Accounting	2 SWS	Lecture (V)	Ruckes, Wouters
WS 19/20	2610027		2 SWS	Tutorial (Tu)	Strych
WS 19/20	2610029		2 SWS	Tutorial (Tu)	Strych
Exams					
WS 19/20	7900305	Business Administration: Finance and Accounting		Prüfung (PR)	Ruckes, Wouters

Competence Certificate

The assessment consists of a written exam (90 min.) according to Section 4(2), 1 of the examination regulation.
 The assessment takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Business Administration: Finance and Accounting

2610026, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature

Ausführliche Literaturhinweise werden in den Materialien zur Vorlesung gegeben.

T

7.23 Course: Business Administration: Production Economics and Marketing [T-WIWI-102818]

Responsible: Prof. Dr. Wolf Fichtner
 Prof. Dr. Martin Klarmann
 Prof. Dr.-Ing. Thomas Lützkendorf
 Prof. Dr. Martin Ruckes
 Prof. Dr. Frank Schultmann

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-105267 - Business Administration](#)

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2020	2500025	Tutorien zu BWL PM	2 SWS	Tutorial (Tu)	Klarmann, Strych, Assistenten
SS 2020	2600024	Business Administration: Production Economics and Marketing	2 SWS	Lecture (V)	Klarmann, Schultmann
Exams					
WS 19/20	7900246	Business Administration: Production Economics and Marketing		Prüfung (PR)	Klarmann, Schultmann

Competence Certificate

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

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Business Administration: Production Economics and Marketing

2600024, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course is composed of the sub-areas:

1. Marketing:

Marketing aims at the optimal design of situations that arise in the context of economic activity in the satisfaction of needs and desires (e.g. marketing of company services, soliciting understanding of group interests, distribution of public funds, implementation of economic policy goals).

Topics dealt with in detail:

- Market research (e.g. product positioning, market segmentation)
- behavioural research (e.g. influence of socio-cultural and physical environmental aspects)
- Marketing policy instruments (e.g. product, price, communication and distribution policy),
- Special features of international marketing activities (e.g. advantages and risks in international exchange relations),
- Entrepreneurship and intrapreneurship (e.g. marketing of innovations by company founders vs. established companies)

2. Production Economy:

This subfield provides an initial introduction to all operational tasks related to the production of tangible and intangible goods. In addition to the manufacturing industry (basic and capital goods, capital goods and consumer goods, food and beverages, i.e. production industry in the broadest sense), the energy industry, construction and real estate industry and labour sciences are also considered.

Topics dealt with in detail:

- Introduction to the subfield (system theoretical classification, general tasks, cross-sectional topics)
- Industrial production (location planning, transport planning, procurement, plant management, production management)
- Electricity industry (energy demand and supply, energy system planning, technological foresight, cost structures)
- Construction and real estate industry

3. Information Systems:

Information represents a competitive factor in today's economy, which requires an interdisciplinary view of the research fields of economics, information technology and law. In this subfield, selected fundamentals of Business Information Systems and their role in today's competition are presented.

Examples from practice motivate and complement the topics.

Treated topics in detail:

- Trends in Information Systems
- Definition of terms data, information, knowledge
- Information in companies: Production and competitive factor
- Information processing: from agent to corporate network
- Company networks
- Service Value Networks
- market engineering
- social networks and services

Literature

Ausführliche Literaturhinweise werden gegeben in den Materialien zur Vorlesung.

**7.24 Course: Business Process Modelling [T-WIWI-102697]**

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101438 - Semantic Knowledge Management](#)
[M-WIWI-101476 - Business Processes and Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2511210	Business Process Modelling	2 SWS	Lecture (V)	Oberweis
WS 19/20	2511211	Exercise Business Process Modelling	1 SWS	Practice (Ü)	Oberweis, Schüler, Schreiber
Exams					
WS 19/20	7900015	Business Process Modelling		Prüfung (PR)	Oberweis
SS 2020	7900047	Business Process Modelling (Registration until 13 July 2020)		Prüfung (PR)	Oberweis

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites

None

Below you will find excerpts from events related to this course:

**Business Process Modelling**

2511210, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

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.

Learning objectives:

Students

- describe goals of business process modeling and apply different modeling languages,
- choose the appropriate modeling language according to a given context,
- use suitable tools for modeling business processes,
- apply methods for analysing and assessing process models to evaluate specific quality characteristics of the process model.

Recommendations:

Knowledge of course Applied Informatics I - Modelling is expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer 2012.
- F. Schönthaler, G.Vossen, A. Oberweis, T. Karl: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T

7.25 Course: Business Strategies of Banks [T-WIWI-102626]

Responsible: Prof. Dr. Wolfgang Müller
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 19/20	2530299	Business Strategies of Banks	2 SWS	Lecture (V)	Müller
Exams					
WS 19/20	7900064	Business Strategies of Banks		Prüfung (PR)	Müller, Ruckes

Competence Certificate
See German version.

Prerequisites
None

Recommendation
None

Below you will find excerpts from events related to this course:

V

Business Strategies of Banks

2530299, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Weiterführende Literatur:**

- Ein Skript wird im Verlauf der Veranstaltung kapitelweise ausgeteilt.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2014, Bankbetriebslehre, 6. Auflage, Springer

T

7.26 Course: Civil Law for Beginners [T-INFO-103339]

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101190 - Introduction to Civil Law](#)

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	3

Events					
WS 19/20	24012	Civil Law for Beginners	4 SWS	Lecture (V)	Matz
Exams					
WS 19/20	7500012	Civil Law for Beginners		Prüfung (PR)	Matz, Dreier
SS 2020	7500041	Civil Law for Beginners		Prüfung (PR)	Dreier, Matz

T 7.27 Course: Cognitive Systems [T-INFO-101356]

Responsible: Prof. Dr. Gerhard Neumann
Prof. Dr. Alexander Waibel

Organisation: KIT Department of Informatics

Part of: [M-INFO-100819 - Cognitive Systems](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	24572	Kognitive Systeme	4 SWS	Lecture / Practice (VÜ)	Waibel, Stüker, Meißner, Neumann
Exams					
WS 19/20	7500332	Cognitive Systems examination		Prüfung (PR)	Waibel, Dillmann

T

7.28 Course: Competition in Networks [T-WIWI-100005]

Responsible: Prof. Dr. Kay Mitusch
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Applied Microeconomics](#)
[M-WIWI-101668 - Economic Policy I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 19/20	2561204	Competition in Networks	2 SWS	Lecture (V)	Mitusch
WS 19/20	2561205	Übung zu Wettbewerb in Netzen	1 SWS	Practice (Ü)	Wisotzky, Mitusch, Corbo
Exams					
WS 19/20	7900292	Competition in Networks		Prüfung (PR)	Mitusch

Competence Certificate

Result of success is made by a 60 minutes written examination during the semester break (according to §4(2), 1 ERSC). Examination is offered every semester and can be retried at any regular examination date.

Prerequisites

None.

Recommendation

Basics of microeconomics obtained within the undergraduate programme (B.Sc) of economics are required.

Below you will find excerpts from events related to this course:

V

Competition in Networks

2561204, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature

Literatur und Skripte werden in der Veranstaltung angegeben.

T

7.29 Course: Computer Architecture [T-INFO-101355]

Responsible: Prof. Dr.-Ing. Jörg Henkel
 Prof. Dr. Wolfgang Karl

Organisation: KIT Department of Informatics

Part of: [M-INFO-100818 - Computer Architecture](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	2424570	Computer structures	3 SWS	Lecture (V)	Karl

T

7.30 Course: Computer Graphics [T-INFO-101393]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: [M-INFO-100856 - Computer Graphics](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24081	Computergrafik	4 SWS	Lecture (V)	Schudeiske, Dachsbacher
Exams					
WS 19/20	7500430	Computer Graphics		Prüfung (PR)	Dachsbacher

T

7.31 Course: Computer Graphics Pass [T-INFO-104313]

Responsible: Prof. Dr.-Ing. Carsten Dachsbacher
Organisation: KIT Department of Informatics
Part of: [M-INFO-100856 - Computer Graphics](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each winter term	1

Events					
WS 19/20	24083	Übungen zu Computergrafik	SWS	Lecture / Practice (VÜ)	Zirr, Rapp, Schrade
Exams					
WS 19/20	7500508	Computer Graphics		Prüfung (PR)	Dachsbacher

T

7.32 Course: Computer Organization [T-INFO-103531]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [M-INFO-103179 - Computer Organization](#)

Type	Credits	Version
Written examination	6	1

Events					
WS 19/20	24502	Computer Organization	3 SWS	Lecture (V)	Henkel, Bauer, Lehmann
WS 19/20	24505	Übungen zu Rechnerorganisation	2 SWS	Practice (Ü)	Henkel, Lehmann
Exams					
WS 19/20	7500228	Computer Organization		Prüfung (PR)	Karl

**7.33 Course: Consulting in Practice [T-INFO-101975]**

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101235 - Introduction to Data and Information Management](#)

Type	Credits	Recurrence	Version
Completed coursework	1,5	Irregular	1

Events					
WS 19/20	24664	Praxis der Unternehmensberatung	2 SWS	Lecture (V)	Böhm, Lang
Exams					
WS 19/20	7500258	Consulting in Practice		Prüfung (PR)	Böhm

Below you will find excerpts from events related to this course:

**Praxis der Unternehmensberatung**

24664, WS 19/20, 2 SWS, [Open in study portal](#)

Lecture (V)

Content

The market for consulting services grows annually by 20% and is therefore one of the leading growth sectors and professional fields in the future. This trend is in particular driven by the IT industry. Here, widely used standard software moves the focus of the future professional field from software development to consulting. In this context, consulting services have usually a broad definition, reaching from pure IT-focused consulting (e.g., deployment of SAP) to strategic consulting (strategy, organisation etc). In contrast to common rumors, a qualification in business studies is not a must. This opens up a diversified and exciting field with exceptional development perspectives for computer science students. The course deals thematically with the two fields consulting in general and function-specific consulting (with IT consulting as an example).

The structure of the course is oriented along the phases of a consulting project:

- Diagnosis: The consultant as an analytic problem solver.
- Strategic adjustment/redesign of the core processes: Optimisation/redesign of essential business functionality to solve the diagnosed problems in cooperation with the client.
- Implementation: Installation of the solutions in the clients` organisation for assuring the implementation.

Emphasised topics in the course are:

- Elementary problem solving: Problem definition, structuring of problems and focussing through the usage of tools (e.g., logic and hypothesis trees), creative techniques, solution systems etc.
- Obtaining information effectively: Access of information sources, interview techniques etc.
- Effective communication of findings/recommendations. Analysis/planning of communication (media, audience, formats), communication styles (e.g., top-down vs. bottom-up), special topics (e.g., arrangement of complex information) etc.
- Efficient teamwork: Tools for optimising efficient work, collaboration with clients, intellectual and process leadership in the team etc.

At the end of the course, the participants

- have gained knowledge and understanding for the activities of the consulting process in general,
- have gained function-specific knowledge and understanding of IT consulting,
- have an overview about consulting companies,
- know concrete consulting examples,
- have experienced how effective teams work and
- have got an insight into the professional field "consulting".

T

7.34 Course: Consumer Behavior [T-WIWI-106569]

Responsible: Benjamin Scheibehenne
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104911 - Information Systems & Digital Business: Interaction](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Once	2

Events					
SS 2020	2572174	Consumer Behavior	3 SWS	Lecture (V)	Scheibehenne
SS 2020	2572175	Introduction to Bayesian Statistics for Analyzing Data	2 SWS	Lecture (V)	Scheibehenne

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None.

Annotation

For further information, please contact the research group Marketing and Sales (<http://marketing.iism.kit.edu/>).

Below you will find excerpts from events related to this course:

V

Consumer Behavior

2572174, SS 2020, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**Goal**

The goal of the class is to gain a better understanding of the situational, biological, cognitive, and evolutionary factors that drive consumer behavior. We will address these questions from an interdisciplinary perspective, including relevant theories and empirical research findings from Psychology, Marketing, Cognitive Science, Biology, and Economics.

Description

Consumer decisions are ubiquitous in daily life and they can have long-ranging and important consequences for individual (financial) well-being and health but also for societies and the planet as a whole. To help people making better choices it is important to understand the factors that influence their behavior. Towards this goal, we will explore how consumer behavior is shaped by social influences, situational and cognitive constraints, as well as by emotions, motivations, evolutionary forces, neuronal processes, and individual differences. Across all topics covered in class, we will engage with basic theoretical work as well as with groundbreaking empirical research and current scientific debates.

The lecture will be held in English.

Grading

There will be a written exam at the last day of class. The exam will cover the content of the lecture and the literature listed in the required reading list that will be made available to enrolled students on the first day of class. The exam questions will be in English. You are allowed to bring a language dictionary into the exam but you are not allowed to bring notes.

Workload

The total workload for this course is approximately 135 hours.

Presence time: 30 hours

Preparation and wrap-up of the course: 45 hours

Exam and exam preparation: 60 hours

Comment

This lecture features a “double down” format: There will be two lecture sessions in a row during the first half of the semester. Thus, you will be finished with this class after 7 weeks.

Literature

Will be made available to enrolled students on the first day of class.

**Introduction to Bayesian Statistics for Analyzing Data**

2572175, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**Goal**

The goal of this class is to introduce Bayesian statistics as a viable alternative to conventional Null-Hypothesis significance testing (NHST) and the calculation of p-values. The class introduces the theoretical background of Bayesian statistics and its advantages over NHST. Based on this, students will work through hands-on approaches for analyzing various empirical data using Bayesian statistics. These analyses will mainly be conducted with the statistics software R and JASP. The class provides participants with the necessary skills to evaluate and interpret the results of published Bayesian analyses and to use the method for testing hypotheses and estimating model parameters based on empirical data. There will be regular reading and homework assignments.

Requirements

Participants should already have a basic knowledge of R and standard frequentist statistical tests. Please bring your own Laptop with you as we will be using R for several hands-on examples and exercises during the class. We will mainly work with the book "Statistical Rethinking. A Bayesian Course with Examples in R and Stan" by Richard McElrath. Students are advised to obtain the book before the class starts.

Schedule

The class will consist of three day-long sessions from 9:00 (s.t.) to 18:00. The first session will be held on Thursday, the 7th of May 2020. The second session will be on Thursday, the 28th of May. The third session will be on Thursday, the 18th of June. The classroom will be communicated to registered students in advance. In case classrooms will be closed due to the Corona virus, the class will be taught online and the schedule will be adapted.

Grading

Grades will be based on active participation (50%) and homework assignments (50%).

Registration and number of participants

Due to its interactive nature, participation will be limited to 10 students. If you want to participate, please send a short email to scheibehenne@kit.edu until Thursday, the 23rd of April in which you outline why you are interested in this class and what your expectations are.

Literature

McElrath, R. (2016). Statistical Rethinking. A Bayesian Course with Examples in R and Stan. Taylor & Francis Group. (main literature)

Kruschke, J. (2014). Doing Bayesian Data Analysis: A Tutorial Introduction with R. Academic Press. (additional literature)

T

7.35 Course: Curves in CAD [T-INFO-102067]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101248 - Curves in CAD](#)

Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Exams				
WS 19/20	7500272	Curves in CAD	Prüfung (PR)	Prautzsch

T

7.36 Course: Data and Storage Management [T-INFO-101276]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: [M-WIWI-101440 - Information Services in Networks](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each winter term	1

Events					
WS 19/20	24074	Data and Storage Management	2 SWS	Lecture (V)	Neumair
Exams					
WS 19/20	7500112	Data and Storage Management		Prüfung (PR)	Neumair

T

7.37 Course: Data Mining and Applications [T-WIWI-103066]

Responsible: Rheza Nakhaeizadeh
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101599 - Statistics and Econometrics](#)

Type	Credits	Recurrence	Version
Oral examination	4,5	Each summer term	2

Events					
SS 2020	2520375	Data Mining and Applications	2/4 SWS	Lecture (V)	Nakhaeizadeh

Competence Certificate

- Conduction of a larger empirical study in groups
- reporting of milestones
- final presentation (app. 45 minutes)

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Data Mining and Applications

2520375, SS 2020, 2/4 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

Learning objectives:

Students

- know the definition of Data Mining
- are familiar with the CRISP-DM
- are familiar with the most important Data Mining Algorithms like Decision Tree, K-Means, Artificial Neural Networks, Association Rules, Regression Analysis
- will be able to use a DM-Tool

Content:

Part one: Data Mining:

What is Data Mining?; History of Data Mining; Conferences and Journals on Data Mining; Potential Applications; Data Mining Process; Business Understanding; Data Understanding; Data Preparation; Modeling; Evaluation; Deployment; Interdisciplinary aspects of Data Mining; Data Mining tasks; Data Mining Algorithms (Decision Trees, Association Rules, Regression, Clustering, Neural Networks); Fuzzy Mining; OLAP and Data Warehouse; Data Mining Tools; Trends in Data Mining

Part two: Examples of application of Data Mining

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

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Exam preparation: 40 hours

Literature

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

Jiawei Han, Micheline Kamber, *Data Mining : Concepts and Techniques*, 2nd edition, Morgan Kaufmann, ISBN 1558609016 , 2006.

David J. Hand, Heikki Mannila and Padhraic Smyth, *Principles of Data Mining* , MIT Press, Fall 2000

Trevor Hastie, Robert Tibshirani, Jerome Friedman, *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*, Springer Verlag, 2001.

Pang-Ning Tan, Michael Steinbach, Vipin Kumar, *Introduction to Data Mining*, Pearson Addison wesley (May, 2005). Hardcover: 769 pages. ISBN: 0321321367

Ripley, B.D. (1996) *Pattern Recognition and Neural Networks*, Cambridge: Cambridge University Press.

Ian Witten and Eibe Frank, *Data Mining: Practical Machine Learning Tools and Techniques*, 2nd Edition, Morgan Kaufmann, ISBN 0120884070 , 2005.

T

7.38 Course: Database Systems [T-INFO-101497]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101235 - Introduction to Data and Information Management](#)
[M-INFO-104921 - Database Systems](#)

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2020	24516	Datenbanksysteme	2 SWS	Lecture (V)	Böhm, Mülle
SS 2020	24522	Übungen zu Datenbanksysteme	1 SWS	Practice (Ü)	Böhm, Mülle
Exams					
WS 19/20	7500189	Database Systems		Prüfung (PR)	Böhm

T 7.39 Course: Decision Theory [T-WIWI-102792]

Responsible: Prof. Dr. Karl-Martin Ehrhart
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Applied Microeconomics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Exams			
WS 19/20	7900291	Decision Theory	Prüfung (PR) Ehrhart

Competence Certificate

The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
 The exam is offered each semester.

Prerequisites

None

Recommendation

Knowledge in mathematics and statistics is required.

T

7.40 Course: Deployment of Database Systems [T-INFO-101317]

Responsible: Prof. Dr.-Ing. Klemens Böhm**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101235 - Introduction to Data and Information Management](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

Events					
WS 19/20	2400020	Datenbankeinsatz	3 SWS	Lecture (V)	Schäler
Exams					
WS 19/20	7500007	Deployment of Database Systems		Prüfung (PR)	Böhm

T 7.41 Course: Derivatives [T-WIWI-102643]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101402 - eFinance](#)
[M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2530550	Derivatives	2 SWS	Lecture (V)	Uhrig-Homburg, Thimme
SS 2020	2530551	Übung zu Derivate	1 SWS	Practice (Ü)	Uhrig-Homburg, Eska
Exams					
WS 19/20	7900051	Derivatives		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

The assessment takes place in the form of a written examination (75 minutes) according to §4(2), 1 SPO. The examination takes place during the semester break. The examination is offered every semester and can be repeated at any regular examination date. A bonus can be acquired through successful participation in the exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V Derivatives
 2530550, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

Weiterführende Literatur:

Cox/Rubinstein (1985): Option Markets, Prentice Hall

T

7.42 Course: Design, Construction and Sustainability Assessment of Buildings I [T-WIWI-102742]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101467 - Design, Construction and Sustainability Assessment of Buildings](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2586404	Design and Construction of Buildings	2 SWS	Lecture (V)	Lützkendorf
WS 19/20	2586405	Übung zu Bauökologie I	1 SWS	Practice (Ü)	Worschech, Jungmann
Exams					
WS 19/20	7900247	Design, Construction and Sustainability Assessment of Buildings I		Prüfung (PR)	Lützkendorf
WS 19/20	7900248	Design, Construction and Sustainability Assessment of Buildings I		Prüfung (PR)	Lützkendorf

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

A combination with the module *Real Estate Management* and with engineering science modules in the area of building physics and structural design is recommended.

Below you will find excerpts from events related to this course:

V

Design and Construction of Buildings

2586404, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

Taking low-energy buildings as an example the course is an introduction to cheap, energy-efficient, resource-saving and health-supporting design, construction and operation of buildings. Questions of the implementation of the principles of a sustainable development within the building sector are discussed on the levels of the whole building, its components, building equipment as well as the materials. Besides technical interrelationships basics dimensioning and various approaches to ecological and economical assessment play a role during the lectures, as well as the different roles of people involved into the building process. Topics are the integration of economical and ecological aspects into the design process, strategies of energy supply, low-energy and passive buildings, active and passive use of solar energy, selection and assessment of construction details, selection and assessment of insulation materials, greened roofs plus health and comfort.

Recommendations:

A combination with the module *Real Estate Management* [WW3BWL01] and with engineering science modules in the area of building physics and structural design is recommended.

The student

- has an in-depth knowledge of aspects of energy-saving, resource-saving and health-oriented design, construction and operation of buildings (design for environment)
- has a critical understanding of the essential requirements, concepts and technical solutions for green buildings
- is able to integrate aspects of energy-saving, resource-saving and health-conscious construction into a holistic environmental design approach and to assess the advantages and disadvantages of different individual solutions.

The total workload for this course is approximately 135.0 hours. For further information see German version.

The **assessment** consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Literature**Weiterführende Literatur:**

- Umweltbundesamt (Hrsg.): "Leitfaden zum ökologisch orientierten Bauen". C.F.Müller 1997
- IBO (Hrsg.): "Ökologie der Dämmstoffe". Springer 2000
- Feist (Hrsg.): "Das Niedrigenergiehaus – Standard für energiebewusstes Bauen". C.F.Müller 1998
- Bundesarchitektenkammer (Hrsg.): "Energiegerechtes Bauen und Modernisieren". Birkhäuser 1996
- Schulze-Darup: "Bauökologie". Bauverlag 1996

T

7.43 Course: Design, Construction and Sustainability Assessment of Buildings II [T-WIWI-102743]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101467 - Design, Construction and Sustainability Assessment of Buildings](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2585403	Übung zu Bauökologie II	1 SWS	Practice (Ü)	Jungmann
SS 2020	2585404	Sustainability Assessment of Buildings	2 SWS	Lecture (V)	Lützkendorf

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

A combination with the module *Real Estate Management* and with engineering science modules from the areas building physics and structural designis recommended.

Below you will find excerpts from events related to this course:

V

Sustainability Assessment of Buildings

2585404, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course identifies problems concerning the economical and environmental assessment of buildings along their lifecycle and discusses suitable procedures and tools supporting the decision making process. For example, the course addresses topics like operating costs, heat cost allocation, comparisons of heating costs, applied economical assessment methods, life cycle assessment as well as related design and assessment tools (e.g. element catalogues, databases, emblems, tools) and assessment procedures (e.g. carbon footprint, MIPS, KEA), which are currently available.

Recommendations:

A combination with the module *Real Estate Management* [WW3BWLOOW2] and with engineering science modules from the areas building physics and structural designis recommended.

The student

- has an in-depth knowledge of the classification of environmental design and construction of buildings within the overall context of sustainability
- has a critical understanding of the main theories and methods of assessing the environmental performance of buildings
- is able to use methods and tools to evaluate the environmental performance in design and decision processes or to interpret existing results

The total workload for this course is approximately 135.0 hours. For further information see German version.

The **assessment** consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Re-examinations are offered at every ordinary examination date.

Literature**Weiterführende Literatur:**

- Schmidt-Bleek: "Das MIPS-Konzept". Droemer 1998
- Wackernagel et.al: "Unser ökologischer Fußabdruck". Birkhäuser 1997
- Braunschweig: "Methode der ökologischen Knappheit". BUWAL 1997
- Hohmeyer et al.: "Social Costs and Sustainability". Springer 1997
- Hofstetter: "Perspectives in Life Cycle Impact Assessment". Kluwer Academic Publishers 1998

T

7.44 Course: Digital Circuits Design [T-INFO-103469]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [M-INFO-102978 - Digital Circuits Design](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	24007	Digital Circuits Design	3 SWS	Lecture (V)	Hanebeck
Exams					
WS 19/20	7500254	Digital Circuits Design		Prüfung (PR)	Henkel, Karl, Tahoori

**7.45 Course: Digital Services [T-WIWI-109938]**

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101434 - eBusiness and Service Management](#)
[M-WIWI-102752 - Fundamentals of Digital Service Systems](#)
[M-WIWI-104912 - Information Systems & Digital Business: Platforms](#)
[M-WIWI-104913 - Information Systems & Digital Business: Servitization](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	4

Events					
SS 2020	2595466	Digital Services	2 SWS	Lecture (V)	Satzger, Weinhardt, Kühl
SS 2020	2595467	Exercise Digital Services	1 SWS	Practice (Ü)	Kühl, Schöffer, Badewitz
Exams					
WS 19/20	7900232	Digital Services		Prüfung (PR)	Satzger

Competence Certificate

The assessment consists of a written exam (60 min) (§4(2), 1 of the examination regulations). By successful completion of the exercises (§4(2), 3 SPO 2007 respectively §4(3) SPO 2015) a bonus can be obtained. If the grade of the written exam is at least 4.0 and at most 1.3, the bonus will improve it by one grade level (i.e. by 0.3 or 0.4).

Prerequisites

see below

Annotation

This course replaces T-WIWI-105771 "Foundations of Digital Services A" as of winter semester 2019/2020.

Students who wish to register for the examination in the summer semester 2019 please select the examination "Foundations of Digital Services A".

Below you will find excerpts from events related to this course:

**Digital Services**

2595466, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

The world is moving more and more towards "service-led" economies: in developed countries services already account for around 70% of gross value added. In order to design, engineer, and manage services, traditional "goods-oriented" models are often inappropriate. In addition, the rapid development of information and communication technology (ICT) pushes the economic importance of services that are rendered electronically (eServices) and, thus, drives competitive changes: increased interaction and individualization open up new dimensions of "value co-creation" between providers and customers; dynamic and scalable service value networks replace static value chains; digital services can be globally delivered and exchanged across today's geographic boundaries. Building on a systematic categorization of (e)Services and on the general notion of "value co-creation", we cover concepts and foundations for engineering and managing IT-based services, allowing for further specialization in subsequent KSRI courses. Topics include service innovation, service economics, service modeling as well as the transformation and coordination of service value networks. In addition, case studies, hands-on exercises and guest lectures will illustrate the applicability of the concepts. English language is used throughout the course to acquaint students with international environments.

Literature

- Anderson, J./Nirmalya, K. / Narus, J. (2007), Value Merchants.
- Lovelock, C. / Wirtz, J. (2007) Services Marketing, 6th ed.
- Meffert, H./Bruhn, M. (2006), Dienstleistungsmarketing, 5. Auflage,
- Spohrer, J. et al. (2007), Steps towards a science of service systems. In: IEEE Computer, 40 (1), p. 70-77
- Stauss, B. et al. (Hrsg.) (2007), Service Science – Fundamentals Challenges and Future Developments.
- Teboul, (2007), Services is Front Stage.
- Vargo, S./Lusch, R. (2004) Evolving to a New Dominant Logic for Marketing, in: Journal of Marketing 68(1): 1-17.
- Shapiro, C. / Varian, H. (1998), Information Rules - A Strategic Guide to the Network Economy

T

7.46 Course: Economics and Behavior [T-WIWI-102892]

Responsible: Prof. Dr. Nora Szech
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Applied Microeconomics](#)
[M-WIWI-101501 - Economic Theory](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2560137	Economics and Behavior	2 SWS	Lecture (V)	Ehrlich, Puppe
WS 19/20	2560138	Übung zu Economics and Behavior	1 SWS	Practice (Ü)	Ehrlich
Exams					
WS 19/20	7900134	Exam Economics and Behavior		Prüfung (PR)	Puppe, Szech
WS 19/20	7900135	Exam Economics and Behavior (2)		Prüfung (PR)	Szech, Puppe

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be earned through successful participation in the exercise. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

Prerequisites

None

Recommendation

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Annotation

The lecture will be held in English.

Below you will find excerpts from events related to this course:

V

Economics and Behavior

2560137, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

The course covers topics from behavioral economics with regard to contents and methods. In addition, the students gain insight into the design of economic experiments. Furthermore, the students will become acquainted with reading and critically evaluating current research papers in the field of behavioral economics.

The students

- gain insight into fundamental topics in behavioral economics;
- get to know different research methods in the field of behavioral economics;
- learn to critically evaluate experimental designs;
- get introduced to current research papers in behavioral economics;
- become acquainted with the technical terminology in English.

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

The grade will be determined in a final written exam. Students can earn a bonus to the final grade by successfully participating in the exercises.

The total workload for this course is approximately 135.0 hours. For further information see German version.

The lecture will be held in English.

Recommendations:

Basic knowledge of microeconomics and statistics are recommended. A background in game theory is helpful, but not absolutely necessary.

Literature

Kahnemann, Daniel: Thinking, Fast and Slow. Farrar, Straus and Giroux, 2011.

Ariely, Dan: Predictably Irrational. New York: HarperCollins, 2008.

Ariely, Dan: The Upside of Irrationality. New York: HarperCollins 2011.

T

7.47 Course: Economics I: Microeconomics [T-WIWI-102708]

Responsible: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101431 - Economics](#)

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	1

Events					
WS 19/20	2610012	Economics I: Microeconomics	3 SWS	Lecture (V)	Puppe
Exams					
WS 19/20	7900276	Economics I: Microeconomics		Prüfung (PR)	Puppe
WS 19/20	7900277	Economics I: Microeconomics		Prüfung (PR)	Puppe

Competence Certificate

The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation.

There may be offered a practice exam in the middle of the semester. The results of this exam may be used to improve the grade of the main exam. If the grade of the written exam is between 4.0 and 1.3, the bonus improves the grade by one grade (0.3 or 0.4). A detailed description of the examination modalities will be given by the respective lecturer.

The main exam takes place subsequent to the lectur. The re-examination is offered at the same examination period. As a rule, only repeating candidates are entitled for taking place the re-examination. For a detailed description on the exam regulations see the information of the respective chair.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Economics I: Microeconomics

2610012, WS 19/20, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The students learn the basic concepts in Microeconomics and some basics in game theory. The student will understand the working of markets in modern economies and the role of decision making. Furthermore, she should be able to understand simple game theoretic argumentation in different fields of Economics.

In the two main parts of the course problems of microeconomic decision making (household behavior, firm behavior) and problems of commodity allocation on markets (market equilibria and efficiency of markets) as well are discussed. In the final part of the course basics of imperfect competition (oligopolistic markets) and of game theory are presented.

It is the main aim of this course to provide basic knowledge in economic modelling. In particular, the student should be able to analyze market processes and the determinants of market results. Furthermore, she should be able to evaluate the effects of economic policy measures on market behavior and propose alternative, more effective policy measures.

In particular, the student should learn

- to apply simple microeconomic concepts,
- to analyze the structure of real world economic phenomena,
- to judge the possible effects of economic policy measures on the behavior of economic agents (in simple decision problems),
- to suggest alternative policy measures,
- to analyze as a participant of a tutorial simple economic problems by solving written exercises and to present the results of the exercises on the blackboard,
- to become familiar with the basic literature on microeconomics.

The student should gain basic knowledge in order to help in practical problems

- to analyze the structure of microeconomics relationships and to present own problem solutions,
- solve simple economic decision problems.

The assessment consists of a written exam (120 min) following §4, Abs. 2, 1 of the examination regulation. The main exam takes place subsequent to the lecture.

The re-examination is offered at the same examination period. Usually, only repeating candidates are entitled for taking place the re-examination. For a detailed description on the exam regulations see the information of the respective chair.

The total workload for this course is approximately 150 hours.

Literature

- H. Varian, Grundzüge der Mikroökonomik, 5. Auflage (2001), Oldenburg Verlag
- Pindyck, Robert S./Rubinfeld, Daniel L., Mikroökonomie, 6. Aufl., Pearson. München, 2005
- Frank, Robert H., Microeconomics and Behavior, 5. Aufl., McGraw-Hill, New York, 2005

T

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

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Applied Microeconomics](#)
[M-WIWI-101599 - Statistics and Econometrics](#)

Type	Credits	Recurrence	Version
Written examination	5	Each summer term	1

Events					
SS 2020	2520016	Economics III: Introduction to Econometrics	2 SWS	Lecture (V)	Schienle
SS 2020	2520017	Übungen zu VWL III	2 SWS	Practice (Ü)	Schienle, Buse

Competence Certificate

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

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Economics III: Introduction to Econometrics

2520016, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

Learning objectives:

- Familiarity with the basic concepts and methods of econometrics
- Preparation of simple econometric surveys

Content:

- Simple and multiple linear regression (estimating parameters, confidence interval, testing, prognosis, testing assumptions)
- Model assessment

Requirements:

Knowledge of the lectures Statistics I + II is required.

Workload:

Total workload for 5 CP: approx. 150 hours

Attendance: 30 hours

Preparation and follow-up: 120 hours

Literature

Von Auer: Ökonometrie ISBN 3-540-00593-5

Goldberger: A course in Econometrics ISBN 0-674-17544-1

Gujarati. Basic Econometrics ISBN 0-07-113964-8

Schneeweiß: Ökonometrie ISBN 3-7908-0008-2

T

7.49 Course: eFinance: Information Systems for Securities Trading [T-WIWI-110797]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101402 - eFinance](#)
[M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101434 - eBusiness and Service Management](#)
[M-WIWI-101465 - Topics in Finance I](#)
[M-WIWI-104912 - Information Systems & Digital Business: Platforms](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2540454	eFinance: Information Systems for Securities Trading	2 SWS	Lecture (V)	Weinhardt, Notheisen
WS 19/20	2540455	Übungen zu eFinance: Wirtschaftsinformatik für den Wertpapierhandel	1 SWS	Practice (Ü)	Jaquart, Soufi
Exams					
WS 19/20	7900182	eFinance: Information Engineering and Management for Securities Trading		Prüfung (PR)	Weinhardt
WS 19/20	7900309	eFinance: Information Systems for Securities Trading		Prüfung (PR)	Weinhardt

Competence Certificate

Success is monitored by means of ongoing elaborations and presentations of tasks and an examination (60 minutes) at the end of the lecture period. The scoring scheme for the overall evaluation will be announced at the beginning of the course.

Prerequisites

see below

Below you will find excerpts from events related to this course:

V

eFinance: Information Systems for Securities Trading

2540454, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature

- Picot, Arnold, Christine Bortenlänger, Heiner Röhr (1996): "Börsen im Wandel". Knapp, Frankfurt
- Harris, Larry (2003): "Trading and Exchanges - Market Microstructure for Practitioners". Oxford University Press, New York

Weiterführende Literatur:

- Gomber, Peter (2000): "Elektronische Handelssysteme - Innovative Konzepte und Technologien". Physika Verlag, Heidelberg
- Schwartz, Robert A., Reto Francioni (2004): "Equity Markets in Action - The Fundamentals of Liquidity, Market Structure and Trading". Wiley, Hoboken, NJ

T

7.50 Course: Empirical Finance [T-WIWI-110216]

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105035 - Empirical Finance](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	2500001	Empirical Finance	4 SWS	Lecture (V)	Ulrich
Exams					
WS 19/20	7900008	Empirical Finance		Prüfung (PR)	Ulrich

Competence Certificate

The assessment consists of a written exam (90 minutes) according to §4(2) of the examination regulation.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Empirical Finance

2500001, WS 19/20, 4 SWS, Language: English, [Open in study portal](#)

Lecture (V)**Content**

The aim of this course is to introduce the student to empirical data work in financial economics and investments. Students will learn and implement modern portfolio theory and the most important concepts to estimate expected returns and volatility.

The course covers several topics, among them:

Mean-Variance Portfolio Optimization

Modeling Distribution of Asset Returns: Factor Models, ARMA-GARCH

Monte-Carlo Simulation

Parameter Estimation with Maximum Likelihood and Regressions

At the core of this lecture is the work on modern portfolio theory of Markowitz. Students will learn how to allocate investment opportunities to an optimal portfolio under investment constraints. To obtain the necessary inputs to this framework, students will revisit statistical concepts such as linear regression and maximum likelihood estimation to estimate expected returns and volatilities with econometric time series models.

The total workload for this course is approximately 180 hours.

T

7.51 Course: Energy Policy [T-WIWI-102607]

Responsible: Prof. Dr. Martin Wietschel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101464 - Energy Economics](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each summer term	3

Events					
SS 2020	2581959	Energy Policy	2 SWS	Lecture (V)	Wietschel
Exams					
WS 19/20	7981959	Energy Policy		Prüfung (PR)	Fichtner

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Energy Policy

2581959, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)**Content**

The availability of cheap, environmentally friendly and secure energy is crucial for human welfare. However, the increasing scarcity of resources and increasing environmental pressures, with a particular focus on climate change, threaten human welfare through economic action. Energy contributes significantly to environmental pollution. The energy industry is characterised by high regulation and a significant influence of political decisions.

At the beginning of the lecture different perspectives on energy policy will be presented and the analysis of political decision-making processes will be discussed. Then the current energy policy challenges in the area of environmental pollution, regulation and the role of energy for households and industry will be discussed. Then the actors of energy policy and energy responsibilities in Europe will be discussed. The economic approaches from traditional environmental economics and sustainability as a new policy approach will then be discussed. Finally, energy policy instruments such as the promotion of renewable energies or energy efficiency are discussed in detail and how they can be evaluated.

The lecture emphasizes the relationship between theory and practice and presents some case studies.

Literature

Wird in der Vorlesung bekannt gegeben.

**7.52 Course: Enterprise Architecture Management [T-WIWI-102668]**

Responsible: Thomas Wolf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101476 - Business Processes and Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2511600	Enterprise Architecture Management	2 SWS	Lecture (V)	Wolf
WS 19/20	2511601	Exercises to Enterprise Architecture Management	1 SWS	Practice (Ü)	Wolf
Exams					
WS 19/20	7900010	Enterprise Architecture Management		Prüfung (PR)	Oberweis
SS 2020	7900043	Enterprise Architecture Management (Registration until 13 July 2020)		Prüfung (PR)	Wolf

Competence Certificate

Please note that the exam for first writers will be offered for the last time in winter semester 2019/2020. A last examination possibility exists in the summer semester 2020 (only for repeaters).

The assessment of this course is a written (60 min.) or (if necessary) oral examination (30 min.) according to §4(2) of the examination regulation.

Prerequisites

None

Below you will find excerpts from events related to this course:

**Enterprise Architecture Management**

2511600, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

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).

Learning objectives:

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.

Literature

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

T 7.53 Course: Exercises in Civil Law [T-INFO-102013]

Responsible: Prof. Dr. Thomas Dreier
Dr. Yvonne Matz

Organisation: KIT Department of Informatics

Part of: [M-INFO-101191 - Commercial Law](#)

Type	Credits	Recurrence	Version
Examination of another type	9	Each term	2

Events					
WS 19/20	24011	Commercial and Corporate Law	2 SWS	Lecture (V)	Wiele
SS 2020	24504	Advanced Civil Law	2 SWS	Lecture (V)	Matz
SS 2020	24506	Exercises in Civil Law	2 SWS	Lecture (V)	Dreier
SS 2020	24926	Case Studies in Civil Law	2 SWS	Practice (Ü)	Käde, Hägle
Exams					
WS 19/20	7500108	Commercial Law		Prüfung (PR)	Dreier, Matz
SS 2020	7500099	Wirtschaftsprivatrecht		Prüfung (PR)	Dreier, Matz

T

7.54 Course: Facility Location and Strategic Supply Chain Management [T-WIWI-102704]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Applications of Operations Research](#)
[M-WIWI-101421 - Supply Chain Management](#)
[M-WIWI-101936 - Methodical Foundations of OR](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	4

Competence Certificate

Due to a research semester of Professor Nickel in WS 19/20, the course "Facility Location and Strategic Supply Chain Management" does NOT take place in WS 19/20. In particular, neither WS 19/20 nor SS 20 will offer an exam for the lecture. The follow-up exam to the lecture in WS 18/19 takes place in SS 19 and is exclusively for students in the second examination.

The assessment consists of a written exam (60 min) according to Section 4 (2), 1 of the examination regulation.

The exam takes place in every semester.

Prerequisite for admission to examination is the successful completion of the online assessments.

Prerequisites

Prerequisite for admission to examination is the successful completion of the online assessments.

Recommendation

None

Annotation

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

T

7.55 Course: Financial Accounting for Global Firms [T-WIWI-107505]

Responsible: Dr. Torsten Luedecke
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2530242	Financial Accounting for Global Firms	2 SWS	Lecture (V)	Luedecke
WS 19/20	2530243	Übung zu Financial Accounting for Global Firms	SWS	Practice (Ü)	Luedecke
Exams					
WS 19/20	7900142	Financial Accounting for Global Firms		Prüfung (PR)	Luedecke

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None

Recommendation

Basic knowledge in corporate finance and accounting.

Annotation

New lecture in the winter term 2017/18.

Below you will find excerpts from events related to this course:

V

Financial Accounting for Global Firms

2530242, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature

Alexander, D. and C. Nobes (2017): Financial Accounting – An International Introduction, 6th ed., Pearson.

Coenberg, A.G., Haller, A. und W. Schultze (2016): Jahresabschluss und Jahresabschlussanalyse, 24. Auflage. Schäffer-Poeschel Verlag Stuttgart.

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

Responsible: Prof. Dr. Melanie Schienle
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101599 - Statistics and Econometrics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	2

Events					
SS 2020	2520022	Financial Econometrics	2 SWS	Lecture (V)	Schienle
SS 2020	2520023	Übungen zu Financial Econometrics I	2 SWS	Practice (Ü)	Schienle, Görden

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics"[2520016]

Annotation

The course takes place each second summer term: 2018/2020....

Below you will find excerpts from events related to this course:

**Financial Econometrics**

2520022, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content**Learning objectives:**

The student

- shows a broad knowledge of financial econometric estimation and testing techniques
- is able to apply his/her technical knowledge using software in order to critically assess empirical problems

Content:

ARMA, ARIMA, ARFIMA, (non)stationarity, causality, cointegration, ARCH/GARCH, stochastic volatility models, computer based exercises

Requirements:

It is recommended to attend the course *Economics III: Introduction to Econometrics* [2520016] prior to this course.

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

Exam preparation: 40 hours

Literature

Taylor, S. J. (2005): "Asset Price Dynamics, Volatility, and Prediction", Princeton University Press.

Tsay, R. S. (2005): "Analysis of Financial Time Series: Financial Econometrics", Wiley, 2nd edition.

Cochrane, J. H. (2005): "Asset Pricing", revised edition, Princeton University Press.

Campbell, J. Y., A. W. Lo, and A. C. MacKinlay (1997): "The Econometrics of Financial Markets", Princeton University Press.

Hamilton, J. D. (1994): "Time Series Analysis", Princeton University Press.

Additional literature will be discussed in the lecture.

T

7.57 Course: Financial Intermediation [T-WIWI-102623]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2530232	Financial Intermediation	2 SWS	Lecture (V)	Ruckes
WS 19/20	2530233	Übung zu Finanzintermediation	1 SWS	Practice (Ü)	Ruckes, Hoang, Benz
Exams					
WS 19/20	7900063	Financial Intermediation		Prüfung (PR)	Ruckes

Competence Certificate

The assessment of this course is a written examination (following §4(2), 1 SPO) of 60 mins.
 The exam is offered each semester.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Financial Intermediation

2530232, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Weiterführende Literatur:**

- Hartmann-Wendels/Pfingsten/Weber (2014): Bankbetriebslehre, 6. Auflage, Springer Verlag.
- Freixas/Rochet (2008): Microeconomics of Banking, 2. Auflage, MIT Press.

T

7.58 Course: Financial Management [T-WIWI-102605]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101435 - Essentials of Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2530216	Financial Management	2 SWS	Lecture (V)	Ruckes
SS 2020	2530217	Übung zu Financial Management	1 SWS	Practice (Ü)	Ruckes, Schubert
Exams					
WS 19/20	7900060	Financial Management		Prüfung (PR)	Ruckes

Competence Certificate

The assessment consists of a written exam (60 min.) according to Section 4 (2), 1 of the examination regulation. The exam takes place at every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

Knowledge of the content of the course Business Administration: Finance and Accounting [25026/25027] is recommended.

Below you will find excerpts from events related to this course:

V

Financial Management

2530216, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Weiterführende Literatur:**

- Ross, Westerfield, Jaffe, Jordan (2009): Modern Financial Management, McGraw-Hill International Edition
- Berk, De Marzo (2016): Corporate Finance, 4. Edition, Pearson Addison Wesley

T 7.59 Course: Formal Systems [T-INFO-101336]

Responsible: Prof. Dr. Bernhard Beckert
Organisation: KIT Department of Informatics
Part of: [M-INFO-100799 - Formal Systems](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24086	Formale Systeme	4 SWS	Lecture / Practice (VÜ)	Beckert, Ulbrich
Exams					
WS 19/20	7500036	Formal Systems		Prüfung (PR)	Beckert
SS 2020	7500009	Formal Systems		Prüfung (PR)	Beckert

T

7.60 Course: Foundations of Interactive Systems [T-WIWI-109816]

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101434 - eBusiness and Service Management](#)
[M-WIWI-102752 - Fundamentals of Digital Service Systems](#)
[M-WIWI-104911 - Information Systems & Digital Business: Interaction](#)
[M-WIWI-104913 - Information Systems & Digital Business: Servitization](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	2

Events					
SS 2020	2540560	Foundations of Interactive Systems	3 SWS	Lecture (V)	Mädche, Loewe
Exams					
WS 19/20	7900326	Foundations of Interactive Systems		Prüfung (PR)	Mädche

Competence Certificate

Alternative exam assessment. The assessment is carried out in the form of a one-hour written examination and by carrying out a Capstone project.

Details on the assessment will be announced during the lecture.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

V

Foundations of Interactive Systems

2540560, SS 2020, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Computers have evolved from batch processors towards highly interactive systems. This offers new possibilities but also challenges for the successful design of the interaction between human and computer. Interactive systems are socio-technical systems in which users perform tasks by interacting with technology in a specific context in order to achieve specified goals and outcomes.

This lecture introduces key concepts and principles of interactive systems from a human and computer perspective. Furthermore, it describes core development processes for interactive systems as well as provides insights on the use & contexts of interactive systems with a specific focus on selected application areas in organizations and society. With this lecture, students acquire foundational knowledge to successfully design of the interaction between human and computers in business and private life.

The course is complemented with a design capstone project, where students in a team apply design methods & techniques in order to create an interactive prototype

Learning Objectives

The students

- have a basic understanding of key conceptual and theoretical foundations of interactive systems from a human and computer perspective
- are aware of important design principles for the design of important classes of interactive systems
- know design processes and techniques for developing interactive systems
- know how to apply the knowledge and skills gathered in the lecture for a real-world problem (as part of design-oriented capstone project)

Prerequisites

No specific prerequisites are required for the lecture

Literature

Alan Dix, Janet E. Finlay, Gregory D. Abowd, and Russell Beale. 2003. Human-Computer Interaction (3rd Edition). Prentice-Hall, Inc., USA.

Further literature will be made available in the lecture.

T

7.61 Course: Foundations of Mobile Business [T-WIWI-104679]

Responsible: Prof. Dr. Andreas Oberweis

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101476 - Business Processes and Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	4

Exams				
WS 19/20	7900118	Foundations of mobile Business	Prüfung (PR)	Oberweis
SS 2020	7900001	Foundations of mobile Business (Registration until 13 July 2020)	Prüfung (PR)	Oberweis

Competence Certificate

Please note that the lecture will not take place in summer semester 2020 and can only be offered again in summer semester 2021.

The assessment of this course is a written (60 min.) or (if necessary) oral examination according to §4(2) of the examination regulation.

Prerequisites

None

Annotation

Lecture and exercises are integrated.

**7.62 Course: Fundamentals of Production Management [T-WIWI-102606]**

Responsible: Prof. Dr. Frank Schultmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101437 - Industrial Production I](#)

Type	Credits	Recurrence	Version
Written examination	5,5	Each summer term	1

Events					
SS 2020	2581950	Fundamentals of Production Management	2 SWS	Lecture (V)	Schultmann
SS 2020	2581951	Übungen Grundlagen der Produktionswirtschaft	2 SWS	Practice (Ü)	Stallkamp, Steins
Exams					
WS 19/20	7981950	Fundamentals of Production Management		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of a written exam (90 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Below you will find excerpts from events related to this course:

**Fundamentals of Production Management**

2581950, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

This lecture focuses on strategic production management with respect to various economic aspects. Interdisciplinary approaches of systems theory will be used to describe the challenges of industrial production. This course will emphasize the importance of R&D as the central step in strategic corporate planning to ensure future long-term success. In the field of site selection and planning for firms and factories, attention will be drawn upon individual aspects of existing and greenfield sites as well as existing distribution and supply centres. Students will obtain knowledge in solving internal and external transport and storage problems.

Literature

Wird in der Veranstaltung bekannt gegeben.

T

7.63 Course: Geometric Basics for Geometry Processing [T-INFO-101293]

Responsible: Prof. Dr. Hartmut Prautzsch**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100756 - Geometric Basics for Geometry Processing](#)

Type
Oral examination

Credits
5

Recurrence
Irregular

Version
1

Events					
SS 2020	24175	Geometrische Grundlagen der Geometrieverarbeitung	2+1 SWS	Lecture / Practice (VÜ)	Prautzsch, Eifried
Exams					
WS 19/20	7500246	Geometric Basics for Geometry Processing		Prüfung (PR)	Prautzsch

T

7.64 Course: Geometric Optimization [T-INFO-101267]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-100730 - Geometric Optimization](#)

Type	Credits	Recurrence	Version
Oral examination	3	Irregular	1

Events					
SS 2020	2400029	Geometrische Optimierung	2 SWS	Lecture (V)	Prautzsch

T

7.65 Course: Global Optimization I [T-WIWI-102726]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Applications of Operations Research](#)
[M-WIWI-101936 - Methodical Foundations of OR](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Exams				
WS 19/20	7900005_WS1920_NK	Global Optimization I	Prüfung (PR)	Stein

Competence Certificate

Please note: due to the research semester of Prof. Dr. Stein the lecture will not be offered in summer semester 2020.

Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO).

The exam is offered in the lecture of semester and the following semester.

The success check can be done also with the success control for "Global optimization II". In this case, the duration of the written exam is 120 min.

Prerequisites

None

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

T

7.66 Course: Global Optimization I and II [T-WIWI-103638]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101936 - Methodical Foundations of OR](#)

Type	Credits	Recurrence	Version
Written examination	9	Each summer term	1

Exams				
WS 19/20	7900007_WS1920_NK	Global Optimization I and II	Prüfung (PR)	Stein

Competence Certificate

Please note: due to the research semester of Prof. Dr. Stein the lectures will not be offered in summer semester 2020.

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.

Prerequisites

None

Recommendation

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

T

7.67 Course: Global Optimization II [T-WIWI-102727]

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101936 - Methodical Foundations of OR](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Exams				
WS 19/20	7900006_WS1920_NK	Global Optimization II	Prüfung (PR)	Stein

Competence Certificate

Please note: due to the research semester of Prof. Dr. Stein the lecture will not be offered in summer semester 2020.

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation.

The examination is held in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of "Global optimization I". In this case, the duration of the written examination takes 120 minutes.

Prerequisites

None

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

**7.68 Course: Human Resource Management [T-WIWI-102909]**

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101513 - Human Resources and Organizations](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2573005	Human Resource Management	2 SWS	Lecture (V)	Nieken
WS 19/20	2573006	Übung zu Human Resource Management	1 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
WS 19/20	7900200	Human Resource Management		Prüfung (PR)	Nieken

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites

None

Recommendation

Completion of module Business Administration is recommended.

Basic knowledge of microeconomics, game theory, and statistics is recommended.

Below you will find excerpts from events related to this course:

**Human Resource Management**

2573005, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The students acquire basic knowledge in the fields of human resource planning, selection and talent management. Different processes and instruments and their link to corporate strategy are evaluated based on microeconomic and behavioral approaches. The results are tested and discussed based on empirical data.

Aim

The student

- understands the processes and instruments of human resource management.
- analyzes different methods of human resource planning and selection and evaluates their usefulness.
- analyzes different processes of talent management and evaluates the strengths and weaknesses.
- understands the challenges of human resource management and its link to corporate strategy.

Workload

The total workload for this course is approximately 135 hours.

Lecture: 32h

Preparation of lecture: 52h

Exam preparation: 51h.

Literature

- Personnel Economics in Practice, Lazear & Gibbs, John Wiley & Sons, 2014
- Strategic Human Resources. Frameworks for General Managers, Baron & Kreps, John Wiley & Sons, 1999

T

7.69 Course: Human-Machine-Interaction [T-INFO-101266]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-100729 - Human Computer Interaction](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	2

Events					
SS 2020	24659	Human-Computer-Interaction	2 SWS	Lecture (V)	Exler, Beigl
Exams					
WS 19/20	7500076	Human-Machine-Interaction		Prüfung (PR)	Beigl
SS 2020	7500048	Human-Machine-Interaction		Prüfung (PR)	Beigl

T

7.70 Course: Human-Machine-Interaction Pass [T-INFO-106257]

Responsible: Prof. Dr.-Ing. Michael Beigl
Organisation: KIT Department of Informatics
Part of: [M-INFO-100729 - Human Computer Interaction](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each summer term	1

Events					
SS 2020	2400095	Human-Computer-Interaction	1 SWS	Practice (Ü)	Beigl, Exler
SS 2020	24659	Human-Computer-Interaction	2 SWS	Lecture (V)	Exler, Beigl
Exams					
SS 2020	7500121	Human-Machine-Interaction		Prüfung (PR)	Beigl

T

7.71 Course: Industrial Organization [T-WIWI-102844]

Responsible: Prof. Dr. Johannes Philipp Reiß
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101499 - Applied Microeconomics](#)
[M-WIWI-101501 - Economic Theory](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Irregular	1

Events					
SS 2020	2560238	Industrial Organization	2 SWS	Lecture (V)	Reiß, Peters
SS 2020	2560239	Übung zu Industrieökonomie	2 SWS	Practice (Ü)	Peters, Reiß
Exams					
WS 19/20	7900310	Industrial Organization		Prüfung (PR)	Reiß

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

Completion of the module Economics [WW1VWL] is assumed.

Annotation

This course is not given in summer 2017.

Below you will find excerpts from events related to this course:

V

Industrial Organization

2560238, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Verpflichtende Literatur:**

H. Bester (2012): Theorie der Industrieökonomik, Springer-Verlag.

Ergänzende Literatur:

J. Tirole (1988): Theory of Industrial Organization, MIT Press.

D. Carlton / J. Perloff (2005): Modern Industrial Organization, Pearson.

P. Belleflamme / M. Peitz (2010): Industrial Organization

**7.72 Course: Information Systems 1 [T-WIWI-109817]**

Responsible: Prof. Dr. Alexander Mädche
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104820 - Information Systems I](#)
[M-WIWI-104843 - Orientation Exam](#)

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2540425	Wirtschaftsinformatik I	SWS	Lecture (V)	Mädche, Weinhardt, Abeck

Competence Certificate

The assessment is monitored

- in the form of a written test (60 minutes) at the end of the lecture period, and by
- editing a Capstone project.

The scoring scheme for the evaluation of the assessment will be announced at the beginning of the course.

Prerequisites

None

Recommendation

None

Below you will find excerpts from events related to this course:

**Wirtschaftsinformatik I**

2540425, WS 19/20, SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

In the lecture Information Systems I of the module central basics of information systems are introduced as a scientific discipline. For this purpose, the objects of knowledge, basic terms, scientific character and goals as well as methods in science and practice of information systems are introduced. Concepts, methods and theories as well as systems and their technical design are discussed along the analysis units individual, group, organization and market. The lecture focuses on the analysis units individual and group. Within the framework of the lecture, a Capstone project is worked on in a team, which takes up a real social question and develops a concrete problem solution.

Learning objectives:

The student

- can describe the subject area of the discipline information systems in science and practice knows the central terms as well as goals, core tasks and objects of knowledge of information systems
- understands the interplay of subject area, method and theory in information systems
- can define the central analysis units individual, group, organisation and market and obtain a basic understanding of the targeted use of information systems and infrastructures
- develops an understanding of the importance of interdisciplinary, systemic thinking and develops in a team a solution to a real social problem

Workload:

Total effort for 4 credit points: approx. 120 hours. Presence time: 40 hours Preparation/postprocessing: 40 hours Examination and exam preparation: 40 hours

T

7.73 Course: Information Systems 2 [T-WIWI-109818]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-104821 - Information Systems II](#)

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None

Recommendation

None

Annotation

New course starting summer term 2020.

T

7.74 Course: Integrated Network and Systems Management [T-INFO-101284]

Responsible: Prof. Dr. Bernhard Neumair
Organisation: KIT Department of Informatics
Part of: [M-WIWI-101440 - Information Services in Networks](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each summer term	1

Events					
SS 2020	2400004	Integrated Network and Systems Management	2 SWS	Lecture (V)	Neumair

T

7.75 Course: Intellectual Property and Data Protection [T-INFO-109840]

Responsible: Dr. Yvonne Matz**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101253 - Intellectual Property and Data Protection](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24018	Datenschutzrecht	2 SWS	Lecture (V)	Barczak
WS 19/20	24070	Industrial Property and Copyright Law	2 SWS	Lecture (V)	Dreier
Exams					
WS 19/20	7500006	Industrial Property and Copyright Law		Prüfung (PR)	Dreier, Matz
WS 19/20	7500162	Data Protection Law		Prüfung (PR)	Barczak

T

7.76 Course: International Finance [T-WIWI-102646]

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101402 - eFinance](#)
[M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)

Type	Credits	Recurrence	Version
Written examination	3	Each summer term	1

Events					
SS 2020	2530570	International Finance	2 SWS	Lecture (V)	Walter, Uhrig-Homburg
Exams					
WS 19/20	7900052	International Finance		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

See German version.

Prerequisites

None

Recommendation

None

Annotation

See German version.

Below you will find excerpts from events related to this course:

V

International Finance2530570, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Weiterführende Literatur:**

- Eiteman, D. et al., Multinational Business Finance, 13. Auflage, 2012.
- Solnik, B. und D. McLeavey, Global Investments, 6. Auflage, 2008.

T

7.77 Course: International Marketing [T-WIWI-102807]

Responsible: Dr. Sven Feurer
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101424 - Foundations of Marketing](#)

Type	Credits	Recurrence	Version
Written examination	1,5	Each winter term	1

Events					
WS 19/20	2572155	International Marketing	1 SWS	Lecture (V)	Feurer
Exams					
WS 19/20	7900123	International Marketing		Prüfung (PR)	Klarmann
WS 19/20	7900128	International Marketing		Prüfung (PR)	Klarmann

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Annotation

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

Below you will find excerpts from events related to this course:

V

International Marketing

2572155, WS 19/20, 1 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Doing marketing abroad creates a number of significant new challenges for firms. This class is intended to prepare you for meeting these challenges. In the first session, we will discuss the peculiarities of international marketing. The next five sessions will then be dedicated to methods that can be used to address them. For instance, we will look at the following issues:

- Internationalization strategies
- Market entry strategies
- Standardization vs. individualization (e.g. regarding products, prices, and communication)
- Measurement equivalence in international market research

In the final session, we will apply this knowledge to the case of Wal Mart. In particular, Wal Mart, despite being the largest retailing company worldwide, failed to successfully enter the German Market. We will discuss Wal Mart's failure using the methods taught in the weeks before.

Students

- know the characteristics of international marketing
- are familiar with the Hofstede's cultural dimensions theory
- understand basic concepts of cultural learning (the concept of acculturation, the psychic distance paradox)
- know different concepts that explain international buying behavior (e.g. country-of-origin effects)
- comprehend different concepts for market entries in an international context ("waterfall"-strategy, "sprinkler"-strategy, method of analogy, chain ratio method)
- understand what needs to be considered regarding international market research (dealing with ethical dilemmas, challenges regarding primary and secondary data sources, testing measurement equivalence, linguistic equivalence, differences in the response styles of questionnaires)
- know the particularities of international product policy (standardization vs. differentiation, challenge of branding, fight against product plagiarism, brand counterfeiting and product piracy, protection of intellectual property)
- are familiar with the particularities in the international price policy (BigMac Index, how to deal with price demand functions to achieve profit maximization, arbitrage, price corridor, standardization vs. differentiation of prices, how to deal with currency risks, inflation, exchange rates and different willingness to pay)
- know the characteristics of the international communication policy (different laws, problems regarding international standardized campaigns)
- know particularities of the international sales policy (international channels, differences of contract negotiations)
- are able to organize international marketing departments and subsidiaries
- know the problems of marketing in emerging markets

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

The total workload for this course is approximately 45.0 hours. For further information see German version.

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

Literature

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T

7.78 Course: Introduction in Computer Networks [T-INFO-102015]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-103455 - Introduction in Computer Networks](#)

Type	Credits	Recurrence	Version
Written examination	4	Each summer term	1

Events					
SS 2020	24519	Einführung in Rechnernetze	2 SWS	Lecture (V)	Friebe, Jung, Schneider, Zitterbart
SS 2020	24521	Übung zu Einführung in Rechnernetze	1 SWS	Practice (Ü)	Friebe, Jung, Schneider, Zitterbart
Exams					
WS 19/20	7500201	Introduction to Computer Networking		Prüfung (PR)	Zitterbart

**7.79 Course: Introduction to Energy Economics [T-WIWI-102746]**

Responsible: Prof. Dr. Wolf Fichtner
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101464 - Energy Economics](#)

Type	Credits	Recurrence	Version
Written examination	5,5	Each summer term	3

Events					
SS 2020	2581010	Introduction to Energy Economics	2 SWS	Lecture (V)	Fichtner
SS 2020	2581011	Übungen zu Einführung in die Energiewirtschaft	2 SWS	Practice (Ü)	Lehmann, Sandmeier, Ardone
Exams					
WS 19/20	7981010	Introduction to Energy Economics		Prüfung (PR)	Fichtner

Competence Certificate

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

Prerequisites

None.

Below you will find excerpts from events related to this course:

**Introduction to Energy Economics**

2581010, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

1. Introduction: terms, units, conversions
2. The energy carrier gas (reserves, resources, technologies)
3. The energy carrier oil (reserves, resources, technologies)
4. The energy carrier hard coal (reserves, resources, technologies)
5. The energy carrier lignite (reserves, resources, technologies)
6. The energy carrier uranium (reserves, resources, technologies)
7. The final carrier source electricity
8. The final carrier source heat
9. Other final energy carriers (cooling energy, hydrogen, compressed air)

The student is able to

- characterize and judge the different energy carriers and their peculiarities,
- understand contexts related to energy economics.

Literature**Weiterführende Literatur:**

Pfaffenberger, Wolfgang. Energiewirtschaft. ISBN 3-486-24315-2
 Feess, Eberhard. Umweltökonomie und Umweltpolitik. ISBN 3-8006-2187-8
 Müller, Leonhard. Handbuch der Elektrizitätswirtschaft. ISBN 3-540-67637-6
 Stoft, Steven. Power System Economics. ISBN 0-471-15040-1
 Erdmann, Georg. Energieökonomik. ISBN 3-7281-2135-5

**7.80 Course: Introduction to Game Theory [T-WIWI-102850]**

Responsible: Prof. Dr. Clemens Puppe
Prof. Dr. Johannes Philipp Reiß

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101499 - Applied Microeconomics](#)
[M-WIWI-101501 - Economic Theory](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2520525	Introduction to Game Theory	2 SWS	Lecture (V)	Puppe
SS 2020	2520526	Übungen zu Einführung in die Spieltheorie	1 SWS	Practice (Ü)	Puppe
Exams					
WS 19/20	7900311	Introduction to Game Theory		Prüfung (PR)	Reiß

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2),1 of the examination regulation. The exam takes place in the recess period and can be resited at every ordinary examination date.

Prerequisites

None

Recommendation

Basic knowledge of mathematics and statistics is assumed.

Below you will find excerpts from events related to this course:

**Introduction to Game Theory**

2520525, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course focusses on non-cooperative game theory. It discusses models, solution concepts, and applications for simultaneous games as well as sequential games. Various solution concepts, e.g., Nash equilibrium and subgame-perfect equilibrium, are introduced along with more advanced concepts. A short introduction to cooperative game theory is given if there is sufficient time.

The assessment consists of a written exam (60 minutes) according to Section 4(2),1 of the examination regulation.

The exam takes place in the recess period and can be resited at every ordinary examination date.

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

Recommendations:

Basic knowledge of mathematics and statistics is assumed.

The total workload for this course is approximately 135.0 hours. For further information see German version.

This course offers an introduction to the theoretical analysis of strategic interaction situations. At the end of the course, students shall be able to analyze situations of strategic interaction systematically and to use game theory to predict outcomes and give advice in applied economics settings.

Compulsory textbook:

Gibbons (1992): *A Primer in Game Theory*, Harvester-Wheatsheaf.

Additional Literature:

Berninghaus/Ehrhart/Güth (2010): *Strategische Spiele*, Springer Verlag.

Binmore (1991): *Fun and Games*, DC Heath.

Fudenberg/Tirole (1991): *Game Theory*, MIT Press.

Heifetz (2012): *Game Theory*, Cambridge Univ. Press.

Literature

Verpflichtende Literatur:

Gibbons (1992): A Primer in Game Theory, Harvester-Wheatsheaf.

Ergänzende Literatur:

Berninghaus/Ehrhart/Güth (2010): Strategische Spiele, Springer Verlag.

Binmore (1991): Fun and Games, DC Heath.

Fudenberg/Tirole (1991): Game Theory, MIT Press.

Heifetz (2012): Game Theory, Cambridge Univ. Press.

T

7.81 Course: Introduction to Operations Research I and II [T-WIWI-102758]

Responsible: Prof. Dr. Stefan Nickel
 Prof. Dr. Steffen Rebennack
 Prof. Dr. Oliver Stein

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101418 - Introduction to Operations Research](#)

Type	Credits	Recurrence	Version
Written examination	9	see Annotations	1

Events					
WS 19/20	2530043	Introduction to Operations Research II	2 SWS	Lecture (V)	Stein
WS 19/20	2530044		SWS	Tutorial (Tu)	Assistenten, Stein
SS 2020	2550040	Introduction to Operations Research I	2 SWS	Lecture (V)	Rebennack
Exams					
WS 19/20	7900001_WS1920_HK	Introduction to Operations Research I and II		Prüfung (PR)	Stein

Competence Certificate

The assessment of the module is carried out by a written examination (120 minutes) according to Section 4(2), 1 of the examination regulation.

In each term (usually in March and July), one examination is held for both courses.

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

Prerequisites

None

Recommendation

Mathematics I und II. Programming knowledge for computing exercises.

It is strongly recommended to attend the course *Introduction to Operations Research I* [2550040] before attending the course *Introduction to Operations Research II* [2530043].

Below you will find excerpts from events related to this course:

V

Introduction to Operations Research II

2530043, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

Integer and Combinatorial Programming: Basic notions, cutting plane methods, branch and bound methods, branch and cut methods, heuristics.

Nonlinear Programming: Basic notions, optimality conditions, solution methods for convex and nonconvex optimization problems.

Dynamic and stochastic models and methods: dynamical programming, Bellman method, lot sizing models, dynamical and stochastic inventory models, queuing theory.

Learning objectives:

The student

- names and describes basic notions of integer and combinatorial optimization, nonlinear programming, and dynamic programming,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve optimization problems independently,
- validates, illustrates and interprets the obtained solutions.

Literature

- Nickel, Stein, Waldmann: Operations Research, 2. Auflage, Springer, 2014
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

**Introduction to Operations Research I**2550040, SS 2020, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)****Content**

Examples for typical OR problems.

Linear Programming: Basic notions, simplex method, duality, special versions of the simplex method (dual simplex method, three phase method), sensitivity analysis, parametric optimization, game theory.

Graphs and Networks: Basic notions of graph theory, shortest paths in networks, project scheduling, maximal and minimal cost flows in networks.

Learning objectives:

The student

- names and describes basic notions of linear programming as well as graphs and networks,
- knows the indispensable methods and models for quantitative analysis,
- models and classifies optimization problems and chooses the appropriate solution methods to solve optimization problems independently,
- validates, illustrates and interprets the obtained solutions.

Literature

- Nickel, Stein, Waldmann: Operations Research, 2. Auflage, Springer, 2014
- Hillier, Lieberman: Introduction to Operations Research, 8th edition. McGraw-Hill, 2005
- Murty: Operations Research. Prentice-Hall, 1995
- Neumann, Morlock: Operations Research, 2. Auflage. Hanser, 2006
- Winston: Operations Research - Applications and Algorithms, 4th edition. PWS-Kent, 2004

T

7.82 Course: Introduction to Public Finance [T-WIWI-102877]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101403 - Public Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2560131	Introduction to Public Finance	3 SWS	Lecture (V)	Wigger

Competence Certificate

The assessment consists of a written exam (60 min.).

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Introduction to Public Finance

2560131, WS 19/20, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course *Introduction to Public Finance* provides an overview of the fundamental issues in public economics. The first part of the course deals with normative theories about the economic role of the state in a market economy. Welfare economics theory is offered as a base model, with which alternative normative theories are compared and contrasted. Within this theoretical framework, arguments concerning efficiency and equity are developed as justification for varying degrees of economic intervention by the state. The second part of the course deals with the positivist theory of public economics. Processes of public decision making are examined and the conditions that lead to market failures resulting from collective action problems are discussed. The third part of the course examines a variety of public spending programs, including social security systems, the public education system, and programs aimed at reducing poverty. The fifth part of the course addresses the key theoretical and political issues associated with fiscal federalism.

Learning goals:

Students are able to:

- critically assess the economic role of the state in a market economy
- explain and discuss key concepts in public finance, including: public goods; economic externalities; and market failure
- explain and critically discuss competing theoretical approaches to public finance, including welfare economics and public choice theory
- explain the theory of bureaucracy according to Weber and critically assess its strengths and weaknesses
- evaluate the incentives inherent in the bureaucratic model, as well as the more recent introduction of market-oriented incentives associated with public-sector reform

Workload:

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Literatur:

Wigger, B. U. 2006. *Grundzüge der Finanzwissenschaft*. Springer: Berlin.

T

7.83 Course: Introduction to Stochastic Optimization [T-WIWI-106546]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-103278 - Optimization under Uncertainty](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2550470	Einführung in die Stochastische Optimierung	2 SWS	Lecture (V)	Rebennack
SS 2020	2550471	Übung zur Einführung in die Stochastische Optimierung	1 SWS	Practice (Ü)	Rebennack, Sinske
SS 2020	2550474	Rechnerübung zur Einführung in die Stochastische Optimierung	SWS	Practice (Ü)	Rebennack, Sinske
Exams					
WS 19/20	7900242	Introduction to Stochastic Optimization		Prüfung (PR)	Rebennack

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites

None.

**7.84 Course: Investments [T-WIWI-102604]**

Responsible: Prof. Dr. Marliese Uhrig-Homburg
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101435 - Essentials of Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2530575	Investments	2 SWS	Lecture (V)	Uhrig-Homburg, Thimme
SS 2020	2530576	Übung zu Investments	1 SWS	Practice (Ü)	Uhrig-Homburg, Eberbach
Exams					
WS 19/20	7900054	Investments		Prüfung (PR)	Uhrig-Homburg

Competence Certificate

The assessment consists of a written exam (75 min) according to Section 4(2), 1 of the examination regulation. The examination takes place in every semester. Re-examinations are offered at every ordinary examination date. A bonus can be acquired through successful participation in the practice. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by up to one grade level (0.3 or 0.4). Details will be announced in the lecture.

Prerequisites

None

Recommendation

Knowledge of Business Administration: Finance and Accounting [2610026] is recommended.

Below you will find excerpts from events related to this course:

**Investments**

2530575, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature**Weiterführende Literatur:**

Bodie/Kane/Marcus (2010): Essentials of Investments, 8. Aufl., McGraw-Hill Irwin, Boston

T

7.85 Course: Lab Protocol Engineering [T-INFO-102066]

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-101247 - Lab Protocol Engineering](#)

Type	Credits	Recurrence	Version
Examination of another type	4	Each winter term	2

Events					
WS 19/20	2400107	Basispraktikum Protocol Engineering	4 SWS	Practical course (P)	Bauer, Zitterbart
Exams					
WS 19/20	7500023	Lab Protocol Engineering		Prüfung (PR)	Zitterbart

T

7.86 Course: Lab: Working with Database Systems [T-INFO-103552]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101235 - Introduction to Data and Information Management](#)
[M-INFO-101865 - Lab: Working with Database Systems](#)

Type	Credits	Recurrence	Version
Completed coursework	4	Each winter term	2

Events					
WS 19/20	24317	Arbeiten mit Datenbanksystemen	2 SWS	Practical course (P)	Böhm
Exams					
WS 19/20	7500146	Lab: Working with Database Systems		Prüfung (PR)	Böhm

T

7.87 Course: Logistics and Supply Chain Management [T-WIWI-102870]

Responsible: Prof. Dr. Frank Schultmann
Dr. Marcus Wiens

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101437 - Industrial Production I](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each summer term	1

Events					
SS 2020	2581996	Logistics and Supply Chain Management	2 SWS	Lecture (V)	Wiens, Schultmann
SS 2020	2581997	Übung zu Logistics and Supply Chain Management	1 SWS	Practice (Ü)	Diehlmann, Lüttenberg
Exams					
WS 19/20	7981996	Logistics and Supply Chain Management		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Logistics and Supply Chain Management2581996, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

Students are introduced to the methods and tools of logistics and supply chain management. They students learn the key terms and components of supply chains together with key economic trade-offs. In detail, students gain knowledge of decisions in supply chain management, such as facility location, supply chain planning, inventory management, pricing and supply chain cooperation. In this manner, students will gain knowledge in analyzing, designing and steering of decisions in the domain of logistics and supply chain management.

- Introduction: Basic terms and concepts
- Facility location and network optimization
- Supply chain planning I: flexibility
- Supply chain planning II: forecasting
- Inventory management & pricing
- Supply chain coordination I: the Bullwhip-effect
- Supply chain coordination II: double marginalization
- Supply chain risk management

Literature

Wird in der Veranstaltung bekannt gegeben.

T

7.88 Course: Macroeconomic Theory [T-WIWI-109121]

Responsible: Prof. Dr. Johannes Brumm
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101501 - Economic Theory](#)
[M-WIWI-101668 - Economic Policy I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2560404	Macroeconomic Theory	2 SWS	Lecture (V)	Scheffel
WS 19/20	2560405	Übung zu Macroeconomic Theory	1 SWS	Practice (Ü)	Pegorari
Exams					
WS 19/20	7900264	Macroeconomic Theory		Prüfung (PR)	Scheffel

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Macroeconomic Theory

2560404, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Literature

Literatur und Skripte werden in der Veranstaltung angegeben.

T

7.89 Course: Management and Strategy [T-WIWI-102629]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101425 - Strategy and Organization](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each summer term	1

Events					
SS 2020	2577900	Management and Strategy	2 SWS	Lecture (V)	Lindstädt
Exams					
WS 19/20	7900199	Management and Strategy		Prüfung (PR)	Lindstädt

Competence Certificate

The assessment consists of a written exam (60 min) taking place at the beginning of the recess period (according to §4 (2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Management and Strategy

2577900, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The participants learn about central concepts of strategic management along the ideal-typical strategy process: internal and external strategic analysis, concept and sources of competitive advantages, their importance when establishing competitive and corporate strategies as well as strategy assessment and implementation. This aims in particular to provide a summary of the basic concepts and models of strategic management, i.e. to provide in particular an action-oriented integration. Thereby a focus is on imparting knowledge about how price developments in oligopolistic markets can be understood, modeled and forecasted based on game theory.

Content in brief:

- 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

Learning Objectives:

After passing this course students are able to

- prepare strategic decisions along the ideal-typical strategy process in practice ("strategic analysis").
- assess strategic options.
- explain the portfolio management (Parental advantage and best owner of business entities).
- discuss price and capacity decisions in oligopolies and explain them in examples.

Recommendations:

None.

Workload:

The total workload for this course is approximately 105.0 hours. For further information see German version.

Assessment:

The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Literature

- Grant, R.M.: *Moderne strategische Unternehmensführung*. 1. Aufl., Weinheim 2014.
- Lindstädt, H.; Hauser, R.: *Strategische Wirkungsbereiche des Unternehmens*. Wiesbaden 2004.

Die relevanten Auszüge und zusätzliche Quellen werden in der Veranstaltung bekannt gegeben.

T

7.90 Course: Managing Organizations [T-WIWI-102630]

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101425 - Strategy and Organization](#)
[M-WIWI-101513 - Human Resources and Organizations](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	3

Events					
WS 19/20	2577902	Managing Organizations	2 SWS	Lecture (V)	Lindstädt
Exams					
WS 19/20	7900049	Managing Organizations		Prüfung (PR)	Lindstädt

Competence Certificate

The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Below you will find excerpts from events related to this course:

V

Managing Organizations

2577902, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course should enable the participants to assess the strengths and weaknesses of existing organisational structures and rules using systematic criteria. Here concepts and models for designing organisation structures, regulating organizational processes and managing organisational changes are presented and discussed using case studies. The course is structured to relate to actions and aims to give students a realistic view of the opportunities and limits of rational design approaches.

Content in brief:

- 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

Learning Objectives:

After passing this course students are able to

- evaluate strengths and weaknesses of existing organisational structures and rules.
- compare alternatives of organisational structure in practice and assess and interpret them regarding their effectiveness and efficiency.
- assess the management of organisational changes.

Recommendations:

None.

Workload:

The total workload for this course is approximately 105.0 hours. For further information see German version.

Assessment:

The assessment will consist of a written exam (60 min) taking place at the beginning of the recess period (according to Section 4 (2), 2 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

A bonus can be acquired through successful participation in the exercises. If the grade of the written examination is between 4.0 and 1.3, the bonus improves the grade by one grade level (0.3 or 0.4). The exact criteria for the award of a bonus will be announced at the beginning of the lecture.

Literature

- Laux, H.; Liermann, F.: *Grundlagen der Organisation*, Springer. 6. Aufl. Berlin 2005.
- Lindstädt, H.: *Organisation*, in Scholz, C. (Hrsg.): *Vahlens Großes Personallexikon*, Verlag Franz Vahlen. 1. Aufl. München, 2009.
- Schreyögg, G.: *Organisation. Grundlagen moderner Organisationsgestaltung*, Gabler. 4. Aufl. Wiesbaden 2003.

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

**7.91 Course: Managing the Marketing Mix [T-WIWI-102805]**

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101424 - Foundations of Marketing](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	2

Events					
SS 2020	2571152	Managing the Marketing Mix	2 SWS	Lecture (V)	Klarmann
SS 2020	2571153	Übung zu Marketing Mix (Bachelor)	1 SWS	Practice (Ü)	Moosbrugger, Halbauer
Exams					
WS 19/20	7900185	Managing the Marketing Mix		Prüfung (PR)	Klarmann

Competence Certificate

The assessment is carried out by the preparation and presentation of a case study (max 30 points) as well as a written exam (max 60 points). In total, a maximum of 90 points can be achieved in the event.

Prerequisites

None

Annotation

The course is compulsory in the module "Foundations of Marketing".
 For further information please contact Marketing & Sales Research Group (marketing.iism.kit.edu).

Below you will find excerpts from events related to this course:

**Managing the Marketing Mix**

2571152, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The content of this course concentrates on the elements of the marketing mix. Therefore the main chapters are:

- Brand management
- Pricing
- Promotion

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

This course is compulsory within or the module "Foundations of Marketing" and must be examined.

Learning objectives:

student

- know the meaning of the branding, the brand positioning and the possibilities of the brand value calculation
- understand the price behavior of customers and can apply this knowledge to the practice
know different methods for price determination (conjoint analysis, cost-plus determination, target costing, customer surveys, value-in-use) and price differentiation
- are able to name and explain the relevant communication theories
- can name and judge different possibilities of the Intermediaplanung
- know various design elements of advertising communication
- understand the measurement of advertising impact and can apply it

Workload:

The total workload for this course is approximately 135.0 hours.

Literature

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T

7.92 Course: MARS Basis Lab [T-INFO-102053]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101245 - MARS-Based Internship](#)

Type	Credits	Version
Examination of another type	4	1

Events					
WS 19/20	2400025	Praktikum	2 SWS	Practical course (P)	Xu, Prautzsch
SS 2020	2400036	MARS-Basispraktikum	4 SWS	Practical course (P)	Prautzsch, Xu
Exams					
WS 19/20	7500170	MARS Basis Lab		Prüfung (PR)	Prautzsch

T

7.93 Course: Mathematics I for Information Systems - Exam [T-MATH-109942]

Responsible: Prof. Dr. Andreas Rieder
 Dr. Daniel Weiß
 Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: [M-MATH-104914 - Mathematics I](#)
[M-WIWI-104843 - Orientation Exam](#)

Type	Credits	Version
Written examination	7	1

Exams				
WS 19/20	7700054	Mathematics I for Information Systems - Exam	Prüfung (PR)	Rieder

Annotation

This exam is part of the orientation exam.

T

7.94 Course: Mathematics I for Information Systems - Exercise [T-MATH-109943]

Responsible: Prof. Dr. Andreas Rieder
 Dr. Daniel Weiß
 Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: [M-MATH-104914 - Mathematics I](#)
[M-WIWI-104843 - Orientation Exam](#)

Type	Credits	Version
Completed coursework	1	2

Exams				
WS 19/20	7700053	Mathematics I for Information Systems - Exercise	Prüfung (PR)	Rieder

Annotation

This exam is part of the orientation exam.

T**7.95 Course: Mathematics II for Information Systems - Exam [T-MATH-109944]**

Responsible: Prof. Dr. Andreas Rieder
Dr. Daniel Weiß
Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: [M-MATH-104915 - Mathematics II](#)

Type	Credits	Version
Written examination	7	1

T**7.96 Course: Mathematics II for Information Systems - Exercise [T-MATH-109945]**

Responsible: Prof. Dr. Andreas Rieder
Dr. Daniel Weiß
Prof. Dr. Christian Wieners

Organisation: KIT Department of Mathematics

Part of: [M-MATH-104915 - Mathematics II](#)

Type	Credits	Version
Completed coursework	1	2

T

7.97 Course: Mechanisms and Applications of Workflow Systems [T-INFO-101257]

Responsible: Jutta Mülle**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101235 - Introduction to Data and Information Management](#)

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	1

Events					
WS 19/20	24111	Konzepte und Anwendungen von Workflowsystemen	3 SWS	Lecture (V)	Mülle
Exams					
WS 19/20	7500089	Mechanisms and Applications of Workflow Systems		Prüfung (PR)	Böhm, Mülle

T

7.98 Course: Mechano-Informatics and Robotics [T-INFO-101294]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-100757 - Mechano-Informatics and Robotics](#)

Type	Credits	Recurrence	Version
Written examination	4	Each winter term	1

Events					
WS 19/20	2400077	Mechano-Informatics and Robotics	2 SWS	Lecture (V)	Asfour
Exams					
WS 19/20	7500176	Mechano-Informatics and Robotics		Prüfung (PR)	Asfour
SS 2020	7500217	Nachprüfung: Mechano-Informatics and Robotics		Prüfung (PR)	Asfour

Below you will find excerpts from events related to this course:

V

Mechano-Informatics and Robotics

2400077, WS 19/20, 2 SWS, Language: German/English, [Open in study portal](#)

Lecture (V)

Content

The lecture addresses various engineering and algorithmic aspects and topics in robotics which are illustrated and explained based on examples originating from current research conducted in the field of humanoid robotics. First, this lecture gives an introduction into the mathematical fundamentals which are needed to describe a robotic system as well as the basic algorithms commonly applied in motion planning.

Subsequently, models and methods are introduced with which dynamical systems can be formalized and which can be used to encode and represent robot actions. To do so, we will discuss linear time-invariant systems in state.

Learning Objectives:

Based on the example of robotics students understand the synergistic effects and interdisciplinarity of mechatronics and informatics, the embedded systems, the control, and the methods and the algorithms. They are acquainted with the basic terminology and the methods which are common in robotics, signal processing, action representation, machine learning and cognitive systems. They are capable of applying fundamental state-of-the-art methods and tools for the development and programming of robots. Based on

examples originating from current research conducted in the fields of humanoid robotics, the students interactively learn how to identify and formalize problems and tasks and how to develop solutions in an analytical and goal-directed way.

T

7.99 Course: Microprocessors I [T-INFO-101972]

Responsible: Prof. Dr. Wolfgang Karl
Organisation: KIT Department of Informatics
Part of: [M-INFO-101183 - Microprocessors I](#)

Type	Credits	Recurrence	Version
Oral examination	3	Each summer term	1

Events					
SS 2020	2424688	Microprocessors I	2 SWS	Lecture (V)	Karl
Exams					
WS 19/20	7500271	VL: Microprocessors I		Prüfung (PR)	Karl

T

7.100 Course: Mobile Computing and Internet of Things [T-INFO-102061]

Responsible: Prof. Dr.-Ing. Michael Beigl

Organisation: KIT Department of Informatics

Part of: [M-INFO-101249 - Mobile Computing and Internet of Things](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

Events					
WS 19/20	2400051	Mobile Computing and Internet of Things	2+1 SWS	Lecture / Practice (VÜ)	Beigl, Exler
Exams					
WS 19/20	7500042_03-03-20	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
WS 19/20	7500042_05-05-20	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
WS 19/20	7500042_09-04-20	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
WS 19/20	7500042_11-02-20	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
WS 19/20	7500042_11-05-20	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
WS 19/20	7500042_19-11-19	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
WS 19/20	7500042_20-01-20	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
WS 19/20	7500042_20-02-20	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
WS 19/20	7500042-02-04-20	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl
SS 2020	7500107	Mobile Computing and Internet of Things		Prüfung (PR)	Beigl

T

7.101 Course: Mobile Robots – Practical Course [T-INFO-101992]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-101184 - Mobile Robots – Practical Course](#)

Type	Credits	Recurrence	Version
Completed coursework	4	Each summer term	2

Events					
SS 2020	24624	Mobile Robots - Practical Course	4 SWS	Practical course (P)	Asfour, Beil, Weiner
Exams					
SS 2020	7500264	Mobile Robots – Practical Course		Prüfung (PR)	Asfour

Below you will find excerpts from events related to this course:

V

Mobile Robots - Practical Course

24624, SS 2020, 4 SWS, Language: German, [Open in study portal](#)

Practical course (P)**Content**

In this practical course, students assemble an ASURO robot in groups of two. Each student will be provided with his own robot, which he has to put into operation. While using the robots, a new set of problems will be solved each week. The students will need to prepare for each week given the provided material. Sets of problem be solved using the C language and focus on controlling the robot's sensors and actuators as well as on the generation of reflex-based behavior. The course ends with a race, where the robots have to tackle an obstacle course.

Learning Objectives:

The student is able to understand circuit diagrams and can assemble, test and debug complex PCBs. The student is familiar with programming microcontroller-based embedded systems using the C language and cross compilers. The student is able to use methods for controlling robotic sensors and actuators, can conduct experiments with robots and solve tasks in this context independently and in small groups.

T

7.102 Course: Modeling and OR-Software: Introduction [T-WIWI-106199]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Applications of Operations Research](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	2

Events					
SS 2020	2550490	Modellieren und OR-Software: Einführung	3 SWS	Practical course (P)	Nickel, Pomes

Competence Certificate

The assessment is a 120 minutes examination, including a written and a practical part (according to §4(2), 1 of the examination regulation).

The examination is held in the term of the software laboratory and the following term.

Prerequisites

None

Recommendation

Firm knowledge of the contents from the lecture *Introduction to Operations Research I* [2550040] of the module *Operations Research*.

Annotation

Due to capacity restrictions, registration before course start is required. For further information see the webpage of the course.

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

Below you will find excerpts from events related to this course:

V

Modellieren und OR-Software: Einführung

2550490, SS 2020, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)

Content

After an introduction to general concepts of modelling tools (implementation, data handling, result interpretation, ...), the software IBM ILOG CPLEX Optimization Studio and the corresponding modeling language OPL will be discussed which can be used to solve OR problems on a computer-aided basis. Subsequently, a broad range of exercises will be discussed. The main goals of the exercises from literature and practical applications are to learn the process of modeling optimization problems as linear or mixed-integer programs, to efficiently utilize the presented tools for solving these optimization problems and to implement heuristic solution procedures for mixed-integer programs.

**7.103 Course: Nonlinear Optimization I [T-WIWI-102724]**

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101936 - Methodical Foundations of OR](#)
[M-WIWI-103278 - Optimization under Uncertainty](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	4

Events					
WS 19/20	2550111	Nonlinear Optimization I	2 SWS	Lecture (V)	Stein
WS 19/20	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü)	Stein
Exams					
WS 19/20	7900002_WS1920_HK	Nonlinear Optimization I		Prüfung (PR)	Stein

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation.

The exam takes place in the semester of the lecture and in the following semester.

The examination can also be combined with the examination of *Nonlinear Optimization II* [2550113]. In this case, the duration of the written examination takes 120 minutes.

Prerequisites

The module component exam T-WIWI-103637 "Nonlinear Optimization I and II" may not be selected.

Annotation

Part I and II of the lecture are held consecutively in the *same* semester.

Below you will find excerpts from events related to this course:

**Nonlinear Optimization I**

2550111, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)**Content**

The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality conditions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, SpringerSpektrum, 2018

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

**7.104 Course: Nonlinear Optimization I and II [T-WIWI-103637]**

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101936 - Methodical Foundations of OR](#)

Type	Credits	Recurrence	Version
Written examination	9	Each winter term	6

Events					
WS 19/20	2550111	Nonlinear Optimization I	2 SWS	Lecture (V)	Stein
WS 19/20	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü)	Stein
WS 19/20	2550113	Nonlinear Optimization II	2 SWS	Lecture (V)	Stein
Exams					
WS 19/20	7900004_WS1920_HK	Nonlinear Optimization I and II		Prüfung (PR)	Stein

Competence Certificate

The assessment consists of a written exam (120 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The exam takes place in the semester of the lecture and in the following semester.

Prerequisites

None.

Annotation

Part I and II of the lecture are held consecutively in the **same** semester.

Below you will find excerpts from events related to this course:

**Nonlinear Optimization I**

2550111, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The lecture treats the minimization of smooth nonlinear functions without constraints. For such problems, which occur very often in economics, engineering, and natural sciences, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- First and second order optimality conditions
- Algorithms (line search, steepest descent method, variable metric methods, Newton method, Quasi Newton methods, CG method, trust region method)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *with* constraints forms the contents of the lecture "Nonlinear Optimization II". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of unconstrained nonlinear optimization,
- is able to choose, design and apply modern techniques of unconstrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, SpringerSpektrum, 2018

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

V

Nonlinear Optimization II

2550113, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

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, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, SpringerSpektrum, 2018

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

**7.105 Course: Nonlinear Optimization II [T-WIWI-102725]**

Responsible: Prof. Dr. Oliver Stein
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101936 - Methodical Foundations of OR](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 19/20	2550112	Exercises Nonlinear Optimization I + II	SWS	Practice (Ü)	Stein
WS 19/20	2550113	Nonlinear Optimization II	2 SWS	Lecture (V)	Stein
Exams					
WS 19/20	7900003_WS1920_HK	Nonlinear Optimization II		Prüfung (PR)	Stein

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation and possibly of a compulsory prerequisite.

The exam takes place in the semester of the lecture and in the following semester.

The exam can also be combined with the examination of *Nonlinear Optimization I* [2550111]. In this case, the duration of the written exam takes 120 minutes.

Prerequisites

None.

Annotation

Part I and II of the lecture are held consecutively in the same semester.

Below you will find excerpts from events related to this course:

**Nonlinear Optimization II**

2550113, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

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, optimality conditions are derived and, based on them, solution algorithms are developed. The lecture is structured as follows:

- Topology and first order approximations of the feasible set
- Theorems of the alternative, first and second order optimality conditions
- Algorithms (penalty method, multiplier method, barrier method, interior point method, SQP method, quadratic optimization)

The lecture is accompanied by exercises which, amongst others, offers the opportunity to implement and to test some of the methods on practically relevant examples.

Remark:

The treatment of optimization problems *without* constraints forms the contents of the lecture "Nonlinear Optimization I". The lectures "Nonlinear Optimization I" and "Nonlinear Optimization II" are held consecutively *in the same semester*.

Learning objectives:

The student

- knows and understands fundamentals of constrained nonlinear optimization,
- is able to choose, design and apply modern techniques of constrained nonlinear optimization in practice.

Literature

O. Stein, Grundzüge der Nichtlinearen Optimierung, SpringerSpektrum, 2018

Weiterführende Literatur:

- W. Alt, Nichtlineare Optimierung, Vieweg, 2002
- M.S. Bazaraa, H.D. Sherali, C.M. Shetty, Nonlinear Programming, Wiley, 1993
- O. Güler, Foundations of Optimization, Springer, 2010
- H.Th. Jongen, K. Meer, E. Triesch, Optimization Theory, Kluwer, 2004
- J. Nocedal, S. Wright, Numerical Optimization, Springer, 2000

T

7.106 Course: Optimization under Uncertainty [T-WIWI-106545]

Responsible: Prof. Dr. Steffen Rebennack
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Applications of Operations Research](#)
[M-WIWI-103278 - Optimization under Uncertainty](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2550464	Optimierungsansätze unter Unsicherheit	SWS	Lecture (V)	Rebennack
WS 19/20	2550465	Übungen zu Optimierungsansätze unter Unsicherheit	SWS	Practice (Ü)	Rebennack, Füllner
WS 19/20	2550466		2 SWS	Practice (Ü)	Rebennack, Füllner
Exams					
WS 19/20	7900240	Optimization under Uncertainty		Prüfung (PR)	Rebennack
WS 19/20	7900330	Optimization under Uncertainty		Prüfung (PR)	Rebennack

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The exam takes place in every the semester.

Prerequisites

None.

T

7.107 Course: Personnel Policies and Labor Market Institutions [T-WIWI-102908]

Responsible: Prof. Dr. Petra Nieken
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101513 - Human Resources and Organizations](#)
[M-WIWI-101668 - Economic Policy I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2573001	Personnel Policies and Labor Market Institutions	2 SWS	Lecture (V)	Nieken
SS 2020	2573002	Übungen zu Personalpolitik und Arbeitsmarktinstitutionen	1 SWS	Practice (Ü)	Nieken, Mitarbeiter
Exams					
WS 19/20	7900202	Personnel Policies and Labor Market Institutions		Prüfung (PR)	Nieken

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation. The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

In case of a small number of registrations, we might offer an oral exam instead of a written exam.

Prerequisites

None

Recommendation

Completion of module Business Administration is recommended.

Basic knowledge of microeconomics, game theory, and statistics is recommended.

Below you will find excerpts from events related to this course:

V

Personnel Policies and Labor Market Institutions

2573001, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The students acquire knowledge about the process and the strategic aspects of collective bargaining about wages. They analyze selected aspects of corporate governance and co-determination in Germany. The lecture also addresses questions of personnel politics and labor market discrimination. Microeconomic and behavioral approaches as well as empirical data is used and evaluated critically.

Aim

The student

- understands the process and role of agents in collective wage bargaining.
- analyzes strategic decisions in the context of corporate governance.
- understands the concept of co-determination in Germany.
- challenges statements that evaluate certain personnel politics.

Workload

The total workload for this course is approximately 135 hours.

Lecture 32h

Preparation of lecture 52h

Exam preparation 51h

Literature

Arbeitsmarktökonomik, W. Franz, Springer, 2013

T

7.108 Course: Platform Economy [T-WIWI-109936]

Responsible: Dr. Verena Dorner
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101421 - Supply Chain Management](#)
[M-WIWI-101434 - eBusiness and Service Management](#)
[M-WIWI-104911 - Information Systems & Digital Business: Interaction](#)
[M-WIWI-104912 - Information Systems & Digital Business: Platforms](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	3

Events					
WS 19/20	2540468	Platform Economy	2 SWS	Lecture (V)	Weinhardt, Dann
WS 19/20	2540469	Übung zu Platform Economy	SWS	Practice (Ü)	Dann, Richter
Exams					
WS 19/20	7900213	Platform Economy		Prüfung (PR)	Weinhardt

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. Details of the grades will be announced at the beginning of the course.

Prerequisites

see below

Recommendation

None

Below you will find excerpts from events related to this course:

V

Platform Economy

2540468, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Literature

- Bundesministerium für Wirtschaft und Energie (2017). „Kompetenzen für eine digitale Souveränität“ (abrufbar unter <https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/kompetenzen-fuer-eine-digitale-souveraenitaet.html>)
- Bundesministerium für Wirtschaft und Energie (2017). „Weißbuch Digitale Plattformen.“ (abrufbar unter https://www.bmwi.de/Redaktion/DE/Publikationen/Digitale-Welt/weissbuch-digitale-plattformen.pdf?__blob=publicationFile&v=8)
- Chuen, D.L.K., ed. 2015. “Handbook of digital currency: Bitcoin, innovation, financial instruments, and big data,” Academic Press.
- Easley, D., and Kleinberg, J. 2010. “Network Effects,” in Networks, Crowds, and Markets: Reasoning about a Highly Connected World, Cambridge University Press, pp. 509–542.
- Eisenmann, T., Parker, G., and Van Alstyne, M. W. 2006. “Strategies for two-sided markets,” Harvard Business Review 84(10), pp. 1–11.
- Gassmann, O., Frankenberger, K., and Csik, M. 2013. Geschäftsmodelle entwickeln: 55 innovative Konzepte mit dem St. Galler Business Model Navigator, Hanser.
- Wattenhofer, R. 2016. “The science of the blockchain.” CreateSpace Independent Publishing Platform.
- Roth, A. 2002. “The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools for Design Economics,” Econometrica 70(4): 1341-1378, 2002.
- Weinhardt, C., Holtmann, C., Neumann, D., Market Engineering. Wirtschaftsinformatik, 2003.
- Wolfstetter, E., 1999. “Topics in Microeconomics - Industrial Organization, Auctions, and Incentives,” Cambridge, Cambridge University Press.
- Teubner, T., and Hawlitschek, F. (in press). “The economics of P2P online sharing,” in The Sharing Economy: Possibilities, Challenges, and the way forward, Praeger Publishing.

T

7.109 Course: Practical Course Computer Engineering: Hardware Design [T-INFO-102011]

Responsible: Prof. Dr. Wolfgang Karl

Organisation: KIT Department of Informatics

Part of: [M-INFO-101219 - Practical Course Computer Engineering: Hardware Design](#)

Type	Credits	Recurrence	Version
Examination of another type	4	Each winter term	1

Events					
SS 2020	2424309	Basispraktikum TI: Hardwarenaher Systementwurf - findet nur noch im WS statt	4 SWS	Practical course (P)	Karl

T

7.110 Course: Practical Course Computer Engineering: Hardware Design Pass [T-INFO-105983]**Responsible:** Prof. Dr. Wolfgang Karl**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101219 - Practical Course Computer Engineering: Hardware Design](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each winter term	1

T

7.111 Course: Practical Course Web Applications and Service-Oriented Architectures (I) [T-INFO-103119]

Responsible: Prof. Dr. Sebastian Abeck

Organisation: KIT Department of Informatics

Part of: [M-INFO-101633 - Practical Course Web Applications and Service-Oriented Architectures \(I\)](#)

Type	Credits	Recurrence	Version
Examination of another type	5	Each winter term	2

Events					
WS 19/20	24312	Basispraktikum Web-Anwendungen und Serviceorientierte Architekturen (I)	2 SWS	Practical course (P)	Abeck, Schneider
Exams					
WS 19/20	7500029	Practical Course Web Applications and Service-oriented Architectures (I)		Prüfung (PR)	Abeck

**7.112 Course: Practical Course: Lego Mindstorms [T-INFO-107502]**

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-102557 - Lego Mindstorms - Practical Course](#)

Type	Credits	Recurrence	Version
Completed coursework	4	Each winter term	1

Events					
WS 19/20	24306	Lego Mindstorms - Laboratory	3 SWS	Practical course (P)	Asfour, Weiner, Starke, Pohl, Klas
Exams					
WS 19/20	7500179	Lego Mindstorms - Practical Course		Prüfung (PR)	Asfour

Recommendation

Basic knowledge in JAVA is necessary for successful completion of this course.

Below you will find excerpts from events related to this course:

**Lego Mindstorms - Laboratory**

24306, WS 19/20, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)**Content**

In this practical course, teams of three students build and program a mobile robot using Lego Mindstorms and the Java programming language. The robots are challenged to complete a versatile parkour including sections like the traversal of a maze, following a line, crossing a bridge or avoiding obstacle. After initial building of the robots, a section of the parkour will be set up each week and tackled by the robots, for which the students have to prepare their code beforehand. A final race of the robots on the entire parkour will be held at the end of the semester.

Learning Objectives:

The participants are able to design and construct a robot with motors and sensors using the Lego Mindstorms kit. The students are familiar with programming the Lego EV3 components using the Java programming language. They are able to understand and solve several key problems in mobile robotics, such as autonomous navigation, detection of landmarks and objects as well as obstacle avoidance. The students know how to efficiently and independently solve problems in a small group in a given time frame and are able to systematically document their work and results.

Literature

Wird in der Veranstaltung bekannt gegeben.

T

7.113 Course: Practical Seminar Interaction [T-WIWI-109935]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-104911 - Information Systems & Digital Business: Interaction](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	2

Events					
WS 19/20	2540555	Practical Seminar: Digital Services (Ba)	3 SWS	Lecture (V)	Mädche

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites

None.

T

7.114 Course: Practical Seminar Platforms [T-WIWI-109937]

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-104912 - Information Systems & Digital Business: Platforms](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	2

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites

None.

T

7.115 Course: Practical Seminar Servitization [T-WIWI-109939]

Responsible: Prof. Dr. Alexander Mädche
Prof. Dr. Gerhard Satzger

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-104913 - Information Systems & Digital Business: Servitization](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	1

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class. Please take into account that, beside the written documentation, also a practical component (e.g. implementation of a prototype) is part of the course. Please examine the course description for the particular tasks. The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class). In the winter terms, the course is only offered as a seminar.

Prerequisites

None.

T

7.116 Course: Practical Seminar: Digital Services [T-WIWI-110888]

Responsible: Prof. Dr. Gerhard Satzger
Prof. Dr. Christof Weinhardt

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-102752 - Fundamentals of Digital Service Systems](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each summer term	1

Events					
WS 19/20	2540555	Practical Seminar: Digital Services (Ba)	3 SWS	Lecture (V)	Mädche

Competence Certificate

The assessment consists of a seminar paper, a presentation of the results and the contribution to the discussion (according to §4(2), 3 of the examination regulation). The final grade is based on the evaluation of each component (seminar paper, oral presentation, and active participation).

Prerequisites

None

Recommendation

None

Annotation

The current range of seminar topics is announced on the KSRI website www.ksri.kit.edu.

**7.117 Course: Problem Solving, Communication and Leadership [T-WIWI-102871]**

Responsible: Prof. Dr. Hagen Lindstädt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101425 - Strategy and Organization](#)
[M-WIWI-101513 - Human Resources and Organizations](#)

Type	Credits	Recurrence	Version
Written examination	2	Each summer term	1

Events					
WS 19/20	2577910	Problem solving, communication and leadership	1 SWS	Lecture (V)	Lindstädt
SS 2020	2577910	Problem solving, communication and leadership	1 SWS	Lecture (V)	Lindstädt
Exams					
WS 19/20	7900070	Problem Solving, Communication and Leadership		Prüfung (PR)	Lindstädt

Competence Certificate

The assessment consists of a written exam (30 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Below you will find excerpts from events related to this course:

**Problem solving, communication and leadership**

2577910, WS 19/20, 1 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course deals with various aspects of problem solving and communication processes and is divided into two parts. The first part of the course addresses the fundamental steps in the problem-solving process; namely, problem identification, problem structuring, problem analysis and communication of solution. Ideas for structuring problem solving processes will be discussed and the prerequisites for and principles of structured communication based on charts and presentations will be explained. The second part of the course addresses important concepts in leadership, including the context-specificity of influence, the choice of leader and the characteristics of employees. The course content reflects current issues in management and communication practice and is oriented toward the practical application of theoretical insights to these issues. In this respect, the course aims to develop interdisciplinary skills.

Learning Objectives:

After passing this course students are able to

- structure problem solving processes.
- apply the principles of focused communication based on charts and presentations.
- understand leadership in the context of situation and personality.

Recommendations:

None.

Workload:

The total workload for this course is approximately 60 hours. For further information see German version.

Assessment:

The assessment consists of a written exam (30 minutes) (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Literature**Verpflichtende Literatur:**

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

Ergänzende Literatur:

- Hungenberg, Harlad: Problemlösung und Kommunikation, 3. Aufl. München 2010
- Zelazny, Gene; Delker, Christel: Wie aus zahlen Bilder werden, 6. Aufl. Wiesbaden 2008
- Minto, Barbara: Das Prinzip der Pyramide: Ideen klar, verständlich und erfolgreich kommunizieren. 2005

**Problem solving, communication and leadership**

2577910, SS 2020, 1 SWS, Language: German, [Open in study portal](#)

Lecture (V)**Literature****Verpflichtende Literatur:**

Die relevanten Auszüge und zusätzlichen Quellen werden in der Veranstaltung bekannt gegeben.

Ergänzende Literatur:

- Hungenberg, Harlad: Problemlösung und Kommunikation, 3. Aufl. München 2010
- Zelazny, Gene; Delker, Christel: Wie aus zahlen Bilder werden, 6. Aufl. Wiesbaden 2008
- Minto, Barbara: Das Prinzip der Pyramide: Ideen klar, verständlich und erfolgreich kommunizieren. 2005

T

7.118 Course: Process Mining [T-WIWI-109799]

Responsible: Prof. Dr. Andreas Oberweis
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101476 - Business Processes and Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Events					
SS 2020	2511204	Process Mining	2 SWS	Lecture (V)	Oberweis
SS 2020	2511205	Exercise Process Mining	1 SWS	Practice (Ü)	Oberweis, Schreiber
Exams					
WS 19/20	7900033	Process Mining		Prüfung (PR)	Oberweis
SS 2020	7900048	Process Mining (Registration until 13 July 2020)		Prüfung (PR)	Oberweis

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation in the first week after lecture period.

Prerequisites

None

Annotation

Former name (up to winter semester 2018/1019) "Workflow Management".

Below you will find excerpts from events related to this course:

V

Process Mining

2511204, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The area of process mining covers approaches which aim at deducting new knowledge on the basis of logfiles generated by information systems. Such information systems are e.g., workflow-management-systems which are used for an efficient control of processes in enterprises and organisations. The lecture introduces the foundations of processes and respective modeling and analysis techniques. In the following, the foundations of process mining and the three classical types of approaches - discovery, conformance and enhancement - will be taught. In addition to the theoretical basics, tools, application scenarios in practice and open research questions are covered as well.

Learning objectives:

Students

- understand the concepts and approaches of process mining and know how they are applied,
- create and evaluate business process models,
- analyze static and dynamic properties of workflows,
- apply approaches and tools of process mining.

Recommendations:

Knowledge of course Applied Informatics - Modelling is expected.

Workload:

- Lecture 30h
- Exercise 15h
- Preparation of lecture 24h
- Preparation of exercises 25h
- Exam preparation 40h
- Exam 1h

Literature

- W. van der Aalst, H. van Kees: Workflow Management: Models, Methods and Systems, Cambridge, The MIT Press, 2002.
- W. van der Aalst: Process Mining: Data Science in Action. Springer, 2016.
- J. Carmona, B. van Dongen, A. Solti, M. Weidlich: Conformance Checking: Relating Processes and Models. Springer, 2018.
- A. Drescher, A. Koschmider, A. Oberweis: Modellierung und Analyse von Geschäftsprozessen: Grundlagen und Übungsaufgaben mit Lösungen. De Gruyter Studium, 2017.
- A. Oberweis: Modellierung und Ausführung von Workflows mit Petri-Netzen. Teubner-Reihe Wirtschaftsinformatik, B.G. Teubner Verlag, 1996.
- R. Peters, M. Nauroth: Process-Mining: Geschäftsprozesse: smart, schnell und einfach, Springer, 2019.
- F. Schönthaler, G. Vossen, A. Oberweis, T. Karle: Business Processes for Business Communities: Modeling Languages, Methods, Tools. Springer, 2012.
- M. Weske: Business Process Management: Concepts, Languages, Architectures. Springer, 2012.

Weitere Literatur wird in der Vorlesung bekannt gegeben.

T

7.119 Course: Production Economics and Sustainability [T-WIWI-102820]

Responsible: Prof. Dr. Frank Schultmann
Dr.-Ing. Rebekka Volk

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101437 - Industrial Production I](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	1

Events					
WS 19/20	2581960	Production Economics and Sustainability	2 SWS	Lecture (V)	Volk
Exams					
WS 19/20	7981960	Production Economics and Sustainability		Prüfung (PR)	Schultmann

Competence Certificate

The assessment consists of an oral (30 minutes) or a written (60 minutes) exam (following §4(2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

Below you will find excerpts from events related to this course:

V

Production Economics and Sustainability

2581960, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The analysis and management of material flows on the company level and above will be the focus of this lecture. Herein, the discussion will be about cost-effective and environmentally acceptable steps to avoid, abate and recycle emissions and waste as well as ways of efficient resources handling. As methods material flow analysis (MFA), life cycle assessment (LCA) and OR methods, e.g. for decision support, are introduced.

Topics:

- regulations related to materials and substances
- raw materials, reserves and their availabilities/lifetimes
- material and substance flow analysis (MFA/SFA)
- material related ecoprofiles, e.g. Carbon Footprint
- LCA
- resource efficiency
- emission abatement
- waste management and closed-loop recycling
- raw material oriented production systems
- environmental management (EMAS, ISO 14001, Ecoprofit), eco-controlling

Literature

wird in der Veranstaltung bekannt gegeben

T 7.120 Course: Programming [T-INFO-101531]

Responsible: Prof. Dr.-Ing. Anne Koziolk
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: [M-INFO-101174 - Programming](#)
[M-WIWI-104843 - Orientation Exam](#)

Type	Credits	Recurrence	Version
Examination of another type	5	Each winter term	1

Events					
WS 19/20	24004	Programming	4 SWS	Lecture / Practice (VÜ)	Koziolk
Exams					
WS 19/20	7500075	Programming		Prüfung (PR)	Reussner
SS 2020	7500195	Programming		Prüfung (PR)	Reussner

T

7.121 Course: Programming Pass [T-INFO-101967]

Responsible: Prof. Dr.-Ing. Anne Koziolk
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: [M-INFO-101174 - Programming](#)
[M-WIWI-104843 - Orientation Exam](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each term	1

Events					
WS 19/20	24004	Programming	4 SWS	Lecture / Practice (VÜ)	Koziolk
Exams					
WS 19/20	7500074	Programming Pass		Prüfung (PR)	Reussner
SS 2020	7500022	Programming Pass		Prüfung (PR)	Reussner

T

7.122 Course: Project Management in Practice [T-INFO-101976]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101235 - Introduction to Data and Information Management](#)

Type	Credits	Recurrence	Version
Completed coursework	1,5	Irregular	1

Events					
SS 2020	2400019	Project Management in Practice	2 SWS	Lecture (V)	Böhm, Schnober

Below you will find excerpts from events related to this course:

V

Project Management in Practice

2400019, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

At the end of the course, the participants:

- Know the principles of project management and are able to make use of them in real-world case studies.
- Have profound knowledge about project phases, principles of project planning, fundamental elements such as project charter & scope definitions, descriptions of project goals, activity planning, milestones, project-structure plans, agenda and cost planning and risk management. Further, they know principle elements of project implementation, crisis management, escalation and, last but not least, project-termination activities.
- Understand and are able to adopt the fundamentals of planning as well as the subjective factors which are relevant in a project. This includes topics such as communication, group processes, teambuilding, leadership, creative solution methods and risk-assessment methods.

The following key skills are taught:

- Project planning
- Project control
- Communication
- Leadership behavior
- Crisis management
- Identification of and solutions of difficult situations
- Team building
- Motivation (of oneself and of others)

T 7.123 Course: Public Law I & II [T-INFO-110300]

Responsible: Prof. Dr. Nikolaus Marsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-105247 - Constitutional and Administrative Law](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
WS 19/20	24016	Öffentliches Recht I - Grundlagen	2 SWS	Lecture (V)	Barczak
SS 2020	24520	Öffentliches Recht II - Öffentliches Wirtschaftsrecht	2 SWS	Lecture (V)	Eichenhofer
Exams					
WS 19/20	7500138	Public Law I & II		Prüfung (PR)	Barczak
SS 2020	7500298	Public Law I & II		Prüfung (PR)	Eichenhofer

T

7.124 Course: Public Revenues [T-WIWI-102739]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101403 - Public Finance](#)
[M-WIWI-101499 - Applied Microeconomics](#)
[M-WIWI-101668 - Economic Policy I](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2560120	Public Revenues	2 SWS	Lecture (V)	Wigger
SS 2020	2560121	Übung zu Öffentliche Einnahmen	1 SWS	Practice (Ü)	Wigger

Competence Certificate

The assessment consists of an 1h written exam following Art. 4, para. 2, clause 1 of the examination regulation. The grade for this course equals the grade of the written exam.

Prerequisites

None

Recommendation

Basic knowledge of Public Finance is required.

Below you will find excerpts from events related to this course:

V

Public Revenues

2560120, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The *Public Revenues* lecture is concerned with the theory and policy of taxation and public dept. In the first chapter, fundamental concepts of taxation theory are introduced, whereas the second chapter deals with key elements of the German taxation system. The allocative and distributive effects of different taxation types are examined in chapter three and four. Chapter five integrates both allocative and distributive components in order to derive a theory of optimal taxation. The core of the sixth chapter is represented by international aspects of taxation. The debt part begins with a description of the extent and structure of public dept in chapter seven. In the following chapter, macroeconomic theories of national dept are evolved, while chapter nine is concerned with its long term consequences when employed as a regular instrument of budgeting. Finally, the tenth chapter deals with constitutional limits to public debt-incurring.

Learning goals:

See German version.

Workload:

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

Literatur:

- Homburg, S.(2000): *Allgemeine Steuerlehre*, Vahlen
- Rosen, H.S.(1995): *Public Finance*; 4. Aufl., Irwin
- Wellisch, D.(2000): *Finanzwissenschaft I und Finanzwissenschaft III*, Vahlen
- Wigger, B. U.(2006): *Grundzüge der Finanzwissenschaft*; 2. Aufl., Springer

T

7.125 Course: Public Sector Finance [T-WIWI-109590]

Responsible: Prof. Dr. Berthold Wigger
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101403 - Public Finance](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	2

Events					
WS 19/20	2560136		3 SWS	Lecture (V)	Wigger, Groh

Competence Certificate

The assessment consists of a written exam (60 min.).

Prerequisites

None

Annotation

Previous title until winter semester 2018/19 "Municipal Finance".

Below you will find excerpts from events related to this course:

V

2560136, WS 19/20, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course *Municipal Finance* addresses the theory and policy of municipal revenues and spending including grants, municipal revenue equalisation, taxation as well as municipal and public enterprises.

At the beginning of the course, fundamental concepts of taxation theory as well as key elements of the German taxation system are introduced. The allocative and distributive effects of different taxation methods are examined thereafter and are combined within the theory of optimal taxation. The following chapter is concerned with municipal borrowing and illustrates ways to acquire additional funding. After addressing the extent, structure and variety of municipal borrowing, macroeconomic theories are introduced and applied to the municipal sector. In the course of this final chapter, special attention will be paid to the long term consequences and the sustainability of municipal borrowing as a means of budgeting.

Learning goals:

The students:

- are familiar with the theory and policy of municipal revenues and spending.
- are able to evaluate the allocative and distributive effects of different kinds of municipal revenues and spending.
- understand the extent, structure and variety of municipal budgeting and are able to assess long term consequences of municipal revenues and spending.

Workload:

The total workload for this course is approximately 135.0 hours. For further information see German version.

Literature

- Ade, K., Notheis, K. & Schmid, H. (2011). *Kommunales Wirtschaftsrecht in Baden Württemberg*. Boorberg-Verlag.
- Aker, B., Hafner, W. & Notheis, K. (2012). *Gemeindeordnung Baden-Württemberg(Kommentar)*. Boorberg-Verlag.
- Groh, M. (1994). Kommunalleasing und Investorenfinanzierung als Private Public Partnership. *Stadt und Gemeinde*, 49. Jahrgang, 09/94.
- Wigger, B. U. (2006). *Grundzüge der Finanzwissenschaft*. Springer-Verlag.
- Diverse Veröffentlichungen des Innenministeriums und Finanzministeriums Baden-Württemberg.

T

7.126 Course: Python for Empirical Finance [T-WIWI-110217]

Responsible: Prof. Dr Maxim Ulrich
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-105035 - Empirical Finance](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each winter term	1

Events					
WS 19/20	2500014	Python for Empirical Finance	2 SWS	Practical course (P)	Ulrich
Exams					
WS 19/20	00174	Python for Empirical Finance		Prüfung (PR)	Ulrich

Competence Certificate

The assessment is carried out in form of six biweekly Python programming tasks and offered each winter term. The grade of this course is determined by the points achieved in the programming tasks.

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Python for Empirical Finance

2500014, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Practical course (P)**Content**

The aim of this course is to provide students with strong knowledge in Python to independently solve real-world data problems related to computational risk and asset management.

The course covers several topics from a programming perspective, among them:

Mean-Variance Portfolio Optimization

Modeling Distribution of Asset Returns with Factor Models and ARMA-GARCH

Monte-Carlo Simulation

Parameter Estimation with Maximum Likelihood and Regressions

The course introduces students to Python, one of the most popular high-level programming languages in data analytics. After an introduction to the basic concepts, students will soon begin to solve problems related to the agenda of the lecture 'Empirical Finance'. This enables them to work with financial data, perform various statistical analysis and estimate their own time series models.

T

7.127 Course: Real Estate Management I [T-WIWI-102744]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101466 - Real Estate Management](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2586400	Real Estate Management I	2 SWS	Lecture (V)	Lützkendorf, Worschech
WS 19/20	2586401	Übungen zu Real Estate Management I	2 SWS	Practice (Ü)	Worschech
Exams					
WS 19/20	7900249	Real Estate Management I		Prüfung (PR)	Lützkendorf

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (winter semester). Re-examinations are offered at every ordinary examination date.

Prerequisites

None

Annotation

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

Below you will find excerpts from events related to this course:

V

Real Estate Management I

2586400, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course Real Estate Management I deals with questions concerning the economy of a single building throughout its lifecycle. Among other topics this includes project development, location and market studies, German federal building codes as well as finance and assessment of economic efficiency.

The tutorial recaps the contents of the course by means of practical examples and, in addition to that, goes into the possible use of software tools.

The course Real Estate Management I deals with questions concerning the economy of a single building throughout its lifecycle. Among other topics this includes project development, location and market studies, German federal building codes as well as finance and assessment of economic efficiency.

The tutorial recaps the contents of the course by means of practical examples and, in addition to that, goes into the possible use of software tools.

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

Recommendations:

A combination with the module *Design Construction and Assessment of Green Buildings I* [WW3BWLOOW1] is recommended.

Furthermore it is recommended to choose courses of the following fields

- Finance and Banking
- Insurance
- Civil Engineering and Architecture (building physics, structural design, facility management)

The **total workload** for this course is approximately 135.0 hours. For further information see German version.

The **assessment** consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is taken place (winter semester). Re-examinations are offered at every ordinary examination date.

Literature**Weiterführende Literatur:**

- Gondring (Hrsg.): "Immobilienwirtschaft: Handbuch für Studium und Praxis". ISBN 3-8006-2989-5. Vahlen 2004
- Kühne-Büning (Hrsg.): "Grundlagen der Wohnungs- und Immobilienwirtschaft". ISBN 3-8314-0706-1. Knapp & Hammonia-Verlag 2005
- Schulte (Hrsg.): "Immobilienökonomie Bd. I". ISBN 3-486-25430-8. Oldenbourg 2000

T

7.128 Course: Real Estate Management II [T-WIWI-102745]

Responsible: Prof. Dr.-Ing. Thomas Lützkendorf
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101466 - Real Estate Management](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2585400	Real Estate Management II	2 SWS	Lecture (V)	Lützkendorf, Worschech
SS 2020	2585401	Übung zu Real Estate Management II	2 SWS	Practice (Ü)	Worschech

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is takes place (summer semester). Reexaminations are offered at every ordinary examination date.

Prerequisites

None

Recommendation

A combination with the module *Design Construction and Assessment of Green Buildings* is recommended. Furthermore it is recommended to choose courses of the following fields

- Finance and Banking
- Insurance
- Civil Engineering and Architecture (building physics, structural design, facility management)

Annotation

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

Below you will find excerpts from events related to this course:

V

Real Estate Management II

2585400, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The course Real Estate Management II gives special attention to topics in connection to the management of large real estate portfolios. This especially includes property valuation, market and object rating, maintenance and modernization, as well as real estate portfolio and risk management. The tutorial provides examples in order to practice the application of theoretical knowledge to practical problems.

The course is replenished by excursions and guest lectures by practitioners out of the real estate business.

The student

- has an in-depth knowledge on the economic classification and significance of the real estate industry
- has a critical understanding of essential theories, methods and instruments of the real estate industry
- is able to analyze and evaluate activity areas and functions in real estate companies as well as to prepare or to take decisions

Recommendations:

A combination with the module *Design Construction and Assessment of Green Buildings I* [WW3BWLOOW1] is recommended.

Furthermore it is recommended to choose courses of the following fields

- Finance and Banking
- Insurance
- Civil Engineering and Architecture (building physics, structural design, facility management)

The total workload for this course is approximately 135.0 hours. For further information see German version.

The **assessment** consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation). The exam takes place two times only in the semester in which the lecture is taken place (summer semester). Reexaminations are offered at every ordinary examination date.

Literature**Weiterführende Literatur:**

- Gondring (Hrsg.): "Immobilienwirtschaft: Handbuch für Studium und Praxis". ISBN 3-8006-2989-5. Vahlen 2004
- Kühne-Büning (Hrsg.): "Grundlagen der Wohnungs- und Immobilienwirtschaft". ISBN 3-8314-0706-1. Knapp & Hammonia-Verlag 2005
- Schulte (Hrsg.): "Immobilienökonomie Bd. I". ISBN 3-486-25430-8. Oldenbourg 2000

T

7.129 Course: Real-Time Systems [T-INFO-101340]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Prof. Dr.-Ing. Thomas Längle

Organisation: KIT Department of Informatics

Part of: [M-INFO-100803 - Real-Time Systems](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	24576	Real-Time Systems	4 SWS	Lecture / Practice (VÜ)	Längle, Ledermann
Exams					
WS 19/20	750002	Real-Time Systems		Prüfung (PR)	Längle

T

7.130 Course: Renewable Energy-Resources, Technologies and Economics [T-WIWI-100806]

Responsible: PD Dr. Patrick Jochem
Prof. Dr. Russell McKenna

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101464 - Energy Economics](#)

Type	Credits	Recurrence	Version
Written examination	3,5	Each winter term	3

Events					
WS 19/20	2581012	Renewable Energy – Resources, Technologies and Economics	2 SWS	Lecture (V)	McKenna, Jochem
Exams					
WS 19/20	7981012	Renewable Energy-Resources, Technologies and Economics		Prüfung (PR)	Fichtner

Competence Certificate

The assessment consists of a written exam (60 min., in English, answers in English or German).

Prerequisites

None.

Below you will find excerpts from events related to this course:

V

Renewable Energy – Resources, Technologies and Economics

2581012, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

1. General introduction: Motivation, Global situation
2. Basics of renewable energies: Energy balance of the earth, potential definition
3. Hydro
4. Wind
5. Solar
6. Biomass
7. Geothermal
8. Other renewable energies
9. Promotion of renewable energies
10. Interactions in systemic context
11. Excursion to the "Energieberg" in Mühlburg

Learning Goals:

The student

- understands the motivation and the global context of renewable energy resources.
- gains detailed knowledge about the different renewable resources and technologies as well as their potentials.
- understands the systemic context and interactions resulting from the increased share of renewable power generation.
- understands the important economic aspects of renewable energies, including electricity generation costs, political promotion and marketing of renewable electricity.
- is able to characterize and where required calculate these technologies.

Literature**Weiterführende Literatur:**

- Kaltschmitt, M., 2006, Erneuerbare Energien : Systemtechnik, Wirtschaftlichkeit, Umweltaspekte, aktualisierte, korrigierte und ergänzte Auflage Berlin, Heidelberg : Springer-Verlag Berlin Heidelberg.
- Kaltschmitt, M., Streicher, W., Wiese, A. (eds.), 2007, Renewable Energy: Technology, Economics and Environment, Springer, Heidelberg.
- Quaschnig, V., 2010, Erneuerbare Energien und Klimaschutz : Hintergründe - Techniken - Anlagenplanung - Wirtschaftlichkeit München : Hanser, Ill.2., aktualis. Aufl.
- Harvey, D., 2010, Energy and the New Reality 2: Carbon-Free Energy Supply, Earthscan, London/Washington.
- Boyle, G. (ed.), 2004, Renewable Energy: Power for a Sustainable Future, 2nd Edition, Open University Press, Oxford.

T

7.131 Course: Robotics I - Introduction to Robotics [T-INFO-108014]

Responsible: Prof. Dr.-Ing. Tamim Asfour
Organisation: KIT Department of Informatics
Part of: [M-INFO-100893 - Robotics I - Introduction to Robotics](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	2424152	Robotics I - Introduction to Robotics	3/1 SWS	Lecture (V)	Asfour, Paus
Exams					
WS 19/20	7500106	Robotics I - Introduction to Robotics		Prüfung (PR)	Asfour
SS 2020	7500218	Robotik I - Einführung in die Robotik		Prüfung (PR)	Asfour

T 7.132 Course: Security [T-INFO-101371]

Responsible: Prof. Dr. Dennis Hofheinz
Prof. Dr. Jörn Müller-Quade

Organisation: KIT Department of Informatics

Part of: [M-INFO-100834 - Security](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	24941	Security	3 SWS	Lecture (V)	Müller-Quade, Strufe

T

7.133 Course: Selling IT-Solutions Professionally [T-INFO-101977]

Responsible: Prof. Dr.-Ing. Klemens Böhm
Organisation: KIT Department of Informatics
Part of: [M-INFO-101235 - Introduction to Data and Information Management](#)

Type	Credits	Recurrence	Version
Completed coursework	1,5	Irregular	1

**7.134 Course: Semantic Web Technologies [T-WIWI-110848]**

Responsible: Prof. Dr. York Sure-Vetter
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101438 - Semantic Knowledge Management](#)
[M-WIWI-101440 - Information Services in Networks](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	1

Events					
SS 2020	2511310	Semantic Web Technologies	2 SWS	Lecture (V)	Sure-Vetter, Acosta Deibe, Käfer
SS 2020	2511311	Exercises to Semantic Web Technologies	1 SWS	Practice (Ü)	Sure-Vetter, Acosta Deibe, Käfer
Exams					
SS 2020	7900028	Semantic Web Technologies (Registration until 13 July 2020)		Prüfung (PR)	Sure-Vetter

Competence Certificate

The assessment consists of an 1h written exam following §4, Abs. 2, 1 of the examination regulation or of an oral exam (20 min) following §4, Abs. 2, 2 of the examination regulation.

The exam takes place every semester and can be repeated at every regular examination date.

Prerequisites

None

Recommendation

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required.

Below you will find excerpts from events related to this course:

**Semantic Web Technologies**

2511310, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

Content

The aim of the Semantic Web is to make the meaning (semantics) of data on the web usable in intelligent systems, e.g. in e-commerce and internet portals

Central concepts are the representation of knowledge in form of RDF and ontologies, the access via Linked Data, as well as querying the data by using SPARQL. This lecture provides the foundations of knowledge representation and processing for the corresponding technologies and presents example applications.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Workload:

- The total workload for this course is approximately 135 hours
- Time of presentness: 45 hours
- Time of preparation and postprocessing: 60 hours
- Exam and exam preparation: 30 hours

Literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: *Semantic Web – Grundlagen*. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). *Handbook of Semantic Web Technologies*. Springer, 2011.

Weitere Literatur

- S. Staab, R. Studer (Editors). *Handbook on Ontologies*. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. *Weaving the Web*. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. *Architecture of the World Wide Web, Volume One*. W3C Recommendation 15 December 2004. <http://www.w3.org/TR/webarch/>
- Dean Allemang. *Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL*. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. *Linked Data: Evolving the Web into a Global Data Space*. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.

**Exercises to Semantic Web Technologies**

2511311, SS 2020, 1 SWS, Language: English, [Open in study portal](#)

Practice (Ü)

Content

The exercises are related to the lecture Semantic Web Technologies.

Multiple exercises are held that capture the topics, held in the lecture Semantic Web Technologies, and discuss them in detail. Thereby, practical examples are given to the students in order to transfer theoretical aspects into practical implementation.

The following topics are covered:

- Resource Description Framework (RDF) and RDF Schema (RDFS)
- Web Architecture and Linked Data
- Web Ontology Language (OWL)
- Query language SPARQL
- Rule languages
- Applications

Learning objectives:

The student

- understands the motivation and foundational ideas behind Semantic Web and Linked Data technologies, and is able to analyse and realise systems
- demonstrates basic competency in the areas of data and system integration on the web
- masters advanced knowledge representation scenarios involving ontologies

Recommendations:

Lectures on Informatics of the Bachelor on Information Systems (Semester 1-4) or equivalent are required. Knowledge of modeling with UML is required.

Literature

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure: Semantic Web – Grundlagen. Springer, 2008.
- John Domingue, Dieter Fensel, James A. Hendler (Editors). Handbook of Semantic Web Technologies. Springer, 2011.

Weitere Literatur

- S. Staab, R. Studer (Editors). Handbook on Ontologies. International Handbooks in Information Systems. Springer, 2003.
- Tim Berners-Lee. Weaving the Web. Harper, 1999 geb. 2000 Taschenbuch.
- Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation 15 December 2004. <http://www.w3.org/TR/webarch/>
- Dean Allemang. Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL. Morgan Kaufmann, 2008.
- Tom Heath and Chris Bizer. Linked Data: Evolving the Web into a Global Data Space. Synthesis Lectures on the Semantic Web: Theory and Technology, 2011.



7.135 Course: Seminar in Business Administration (Bachelor) [T-WIWI-103486]

Responsible: Professorenschaft des Fachbereichs Betriebswirtschaftslehre

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101826 - Seminar Module Economic Sciences

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
WS 19/20	2500028	Seminar in Empirical Finance	2 SWS	Seminar (S)	Ulrich
WS 19/20	2530580	Seminar in Finance	2 SWS	Seminar (S)	Uhrig-Homburg, Mitarbeiter
WS 19/20	2540473	Data Science in Service Management	2 SWS	Seminar (S)	Haubner, Frankenhauser, Gröschel
WS 19/20	2540475	Electronic Markets & User behavior	2 SWS	Seminar (S)	Dorner, Knierim, Dann, Jaquart
WS 19/20	2540477	Digital Experience and Participation	2 SWS	Seminar (S)	Straub, Peukert, Hoffmann, Kloker, Puszma, Willrich, Kloepper, Fegert, Greif-Winzrieth
WS 19/20	2540478	Smart Grids and Energy Markets	2 SWS	Seminar (S)	Dinther, Staudt, Richter, Huber, vom Scheidt, Golla, Schmidt
WS 19/20	2540524	Bachelor Seminar aus Data Science	2 SWS	Seminar (S)	Geyer-Schulz, Schweigert, Schweizer, Nazemi
WS 19/20	2540557	Literature Review Seminar: Information Systems and Service Design	3 SWS	Seminar (S)	Mädche
WS 19/20	2545010	Entrepreneurship Basics (Track 1)	2 SWS	Seminar (S)	Terzidis, Ziegler, González
WS 19/20	2545011	Entrepreneurship Basics (Track 2)	2 SWS	Seminar (S)	Böhrer, Terzidis
WS 19/20	2573010	Seminar: Human Resources and Organizations (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 19/20	2573011	Seminar: Human Resource Management (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
WS 19/20	2579919	Seminar Management Accounting - Special Topics	2 SWS	Seminar (S)	Riar
WS 19/20	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar (S)	Glöser-Chahoud, Schultmann
WS 19/20	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar (S)	Volk, Schultmann
WS 19/20	2581978	Seminar in Production and Operations Management III	2 SWS	Seminar (S)	Wiens, Schultmann
WS 19/20	2581980		2 SWS	Seminar (S)	Keles, Fett, Yilmaz
WS 19/20	2581981		2 SWS	Seminar (S)	Ardone, Ruppert, Sandmeier, Slednev
WS 19/20	2581990		2 SWS	Seminar (S)	Schultmann, Schumacher
SS 2020	2530293	Seminar in Finance (Bachelor, Prof. Ruckes)	2 SWS	Seminar (S)	Ruckes, Luedecke, Hoang, Benz, Schubert, Strych, Silbereis

SS 2020	2530374	Data-Driven Investments	2 SWS	Seminar (S)	Ulrich
SS 2020	2530580	Seminar in Finance	2 SWS	Seminar (S)	Uhrig-Homburg, Eska, Schuster, Eberbach, Reichenbacher
SS 2020	2540524	Bachelorseminar aus Data Science	2 SWS	Seminar (S)	Geyer-Schulz, Schweigert, Schweizer
SS 2020	2545010	Entrepreneurship Basics (Track 1)	2 SWS	Seminar (S)	Lau, Terzidis
SS 2020	2545011	Entrepreneurship Basics (Track 2)	2 SWS	Seminar (S)	Terzidis, Böhrer
SS 2020	2571180	Seminar in Marketing und Vertrieb (Bachelor)	2 SWS	Seminar (S)	Klarmann, Mitarbeiter, Feurer
SS 2020	2571181	Seminar in Marketing und Vertrieb (Master)	2 SWS	Seminar (S)	Klarmann, Mitarbeiter, Feurer
SS 2020	2573010	Seminar Human Resources and Organizations (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2020	2573011	Seminar Human Resource Management (Bachelor)	2 SWS	Seminar (S)	Nieken, Mitarbeiter
SS 2020	2579909	Seminar Management Accounting	2 SWS	Seminar (S)	Wouters, Hammann, Disch
SS 2020	2579919	Seminar in Management Accounting - Special Topics	2 SWS	Seminar (S)	Wouters, Ebinger
SS 2020	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar (S)	Volk, Schultmann
SS 2020	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar (S)	Keles
SS 2020	2581990		2 SWS	Seminar (S)	Schultmann, Schumacher, Baumgartner
Exams					
WS 19/20	7900017	Seminar Smart Grid and Energy Markets		Prüfung (PR)	Weinhardt
WS 19/20	7900085	Entrepreneurship Basics (Track 1)		Prüfung (PR)	Terzidis
WS 19/20	7900087	Entrepreneurship Basics (Track 2)		Prüfung (PR)	Terzidis
WS 19/20	7900157	Seminar Human Resources and Organizations (Bachelor)		Prüfung (PR)	Nieken
WS 19/20	7900161	Seminar Human Resource Management (Bachelor)		Prüfung (PR)	Nieken
WS 19/20	7900165	Seminar Digital Experience and Participation		Prüfung (PR)	Weinhardt
WS 19/20	7900168	Bachelor Seminar in Data Science		Prüfung (PR)	Geyer-Schulz
WS 19/20	7900175	Seminar in Finance (Bachelor)		Prüfung (PR)	Uhrig-Homburg
WS 19/20	7900203	Seminar in Finance		Prüfung (PR)	Uhrig-Homburg
WS 19/20	7900233	Literature Review Seminar: Information Systems and Service Design (Seminar)		Prüfung (PR)	Mädche
WS 19/20	7900250	Seminar Strategic Management (Bachelor)		Prüfung (PR)	Lindstädt
WS 19/20	7900327	Electronic Markets & User behavior (Seminar)		Prüfung (PR)	Weinhardt
WS 19/20	7900329	Seminar in Business Administration (Bachelor)		Prüfung (PR)	Ulrich
WS 19/20	79-2579919-B	Seminar Management Accounting - Special Topics (Bachelor)		Prüfung (PR)	Wouters
WS 19/20	7981976	Seminar in Production and Operations Management I		Prüfung (PR)	Schultmann
WS 19/20	7981977	Seminar in Production and Operations Management II		Prüfung (PR)	Schultmann
WS 19/20	7981978	Seminar in Production and Operations Management III		Prüfung (PR)	Schultmann
WS 19/20	7981979	Seminar in Business Administration A (Master)		Prüfung (PR)	Fichtner
WS 19/20	7981980	Seminar in Business Administration A (Master)		Prüfung (PR)	Fichtner
WS 19/20	7981981	Seminar in Business Administration (Bachelor)		Prüfung (PR)	Fichtner
SS 2020	7900093	Seminar in Business Administration A		Prüfung (PR)	Weinhardt

SS 2020	7900220	Seminar in Business Administration (Bachelor)	Prüfung (PR)	Ulrich
SS 2020	7981976	Seminar in Production and Operations Management I	Prüfung (PR)	Schultmann
SS 2020	7981977	Seminar in Production and Operations Management II	Prüfung (PR)	Schultmann
SS 2020	7981978	Seminar in Production and Operations Management III	Prüfung (PR)	Schultmann
SS 2020	7981980	Seminar Energy Economics II	Prüfung (PR)	Fichtner
SS 2020	7981981	Seminar Energy Economics III	Prüfung (PR)	Fichtner

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

Below you will find excerpts from events related to this course:

	Seminar in Empirical Finance 2500028, WS 19/20, 2 SWS, Language: English, Open in study portal	Seminar (S)
	Data Science in Service Management 2540473, WS 19/20, 2 SWS, Language: German/English, Open in study portal	Seminar (S)
Content wird auf deutsch und englisch gehalten		
	Bachelor Seminar aus Data Science 2540524, WS 19/20, 2 SWS, Language: German, Open in study portal	Seminar (S)

Literature

Weiterführende Literatur:

- W. Thomson. A Guide for the Young Economist. The MIT Press, 2001
- D.J. Brauner, H.-U. Vollmer. Erfolgreiches wissenschaftliches Arbeiten. Verlag Wissenschaft & Praxis, 2004
- University of Chicago Press. The Chicago Manual of Style. University of Chicago Press, 13th ed., 1982
- American Psychological Association. Concise of Rules of APA Style. American Psychological Association, 2005
- American Psychological Association. Publication Manual of the American Psychological Association. American Psychological Association, 2001

**Entrepreneurship Basics (Track 1)**2545010, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

The seminar introduces students to basic concepts of business planning for entrepreneurs. This involves concepts for the concretization of business ideas (development of business models), market potential estimation, resource planning, etc.) as well as the creation of an executable business plan (with or without VC financing).

The primary focus of the seminar is on working with the Business Model Canvas and developing a value proposition.

Learning objectives:

After attending, students have learned how to use a structured process to take the first steps in starting a business to identify and minimize their most important risks. In particular, they have practical experience in identifying and validating 1) relevant customer issues, 2) designing and testing solutions to these problems, 3) targeting and assessing their accessibility, and 4) their willingness to pay. In doing so, they have learned to know and apply the business model canvas, methods for developing value propositions, rapid prototyping and target group interviews. In addition, they have learned to work efficiently in a team through the use of communication strategies.

Credentials:

Registration is via the Wiwi portal.

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students

**Entrepreneurship Basics (Track 2)**2545011, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

):

The seminar introduces students to basic concepts of business planning for entrepreneurs. This involves concepts for the concretization of business ideas (development of business models), market potential estimation, resource planning, etc.) as well as the creation of an executable business plan (with or without VC financing).

The primary focus of the seminar is on working with the Business Model Canvas and developing a value proposition.

Learning objectives:

After attending, students have learned how to use a structured process to take the first steps in starting a business to identify and minimize their most important risks. In particular, they have practical experience in identifying and validating 1) relevant customer issues, 2) designing and testing solutions to these problems, 3) targeting and assessing their accessibility, and 4) their willingness to pay. In doing so, they have learned to know and apply the business model canvas, methods for developing value propositions, rapid prototyping and target group interviews. In addition, they have learned to work efficiently in a team through the use of communication strategies.

Credentials:

Registration is via the Wiwi portal.

Exam:

Presentation + active participation + paper.

Target group:

Bachelor students

**Seminar: Human Resources and Organizations (Bachelor)**2573010, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

**Seminar: Human Resource Management (Bachelor)**

2573011, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

**Seminar Management Accounting - Special Topics**

2579919, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscbed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Note:

- Maximum of 16 students.

Literature

Will be announced in the course.

**Data-Driven Investments**

2530374, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

The digitalization is not only changing today's society but also companies' business models, in particular of the financial industry. In general, the large variety of digitalized processes and connected devices (Industry 4.0) generates a huge amount of data which can be used to extract valuable (investment) insights. For this task data science skills are essential.

In this seminar we will use modern data science techniques to analyze all kinds of financial and economic data, ranging from big data intra-day option prices to alternative datasets, like textual statements. For this empirical analysis we will use the state of the art Python programming language.

In a bi-weekly schedule you and your supervisor will first learn and discuss important data science concepts and then apply it in a practical FinTech-type analysis using real-world data. As a prerequisite students should already have basic finance knowledge.

**Seminar in Finance**

2530580, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Literature

Wird jeweils am Ende des vorherigen Semesters bekanntgegeben.

**Seminar Human Resources and Organizations (Bachelor)**

2573010, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of human resources and organizations.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

**Seminar Human Resource Management (Bachelor)**

2573011, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

The topics are redefined each semester on basis of current research topics. The topics will be announced on the website of the Wiwi-Portal.

Aim

The student

- looks critically into current research topics in the fields of Human Resource Management and Personnel Economics.
- trains his / her presentation skills.
- learns to get his / her ideas and insights across in a focused and concise way, both in oral and written form, and to sum up the crucial facts.
- cultivates the discussion of research approaches.

Workload

The total workload for this course is: approximately 90 hours.

Lecture: 30h

Preparation of lecture: 45h

Exam preparation: 15h

Literature

Selected journal articles and books.

**Seminar Management Accounting**

2579909, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. You are to a large extent free to select your own topic. The seminar course is concentrated in four meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Note:

- Maximum of 16 students.

Literature

Will be announced in the course.

**Seminar in Management Accounting - Special Topics**

2579919, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

The course will be a mix of lectures, discussions, and student presentations. Students will write a paper in small groups, and present this in the final week. Topics are selectively prediscibed. The seminar course is concentrated in several meetings that are spread throughout the semester.

Learning objectives:

- Students are largely independently able to identify a distinct topic in Management Accounting,
- Students are capable to research the topic, analyze the information, to conceptualize and deduct fundamental principles and relationships from relatively unstructured information,
- Students can afterwards logically and systematically present the results in writing and as an oral presentation, following a scientific approach (structuring, terminology, sources).

Workload:

- The total workload for this course is approximately 90 hours. For further information see German version.

Examination:

- The performance review is carried out in the form of a "Prüfungsleistung anderer Art" (following § 4 (2) No. 3 of the examination regulation), which in this case is an essay the seminar participants prepare in group work.
- The final grade of the course is the grade awarded to the paper.

Required prior Courses:

- The LV "Betriebswirtschaftslehre: Finanzwirtschaft und Rechnungswesen" (2600026) must have been completed before starting this seminar.

Note:

- Maximum of 16 students.

Literature

Will be announced in the course.

T

7.136 Course: Seminar in Economics (Bachelor) [T-WIWI-103487]

Responsible: Professorenschaft des Fachbereichs Volkswirtschaftslehre

Organisation: KIT Department of Economics and Management

Part of: M-WIWI-101826 - Seminar Module Economic Sciences

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
WS 19/20	2521310	Topics in Econometrics	2 SWS	Seminar (S)	Schienle, Chen, Görden
WS 19/20	2560140	Topics in Political Economy (Bachelor)	2 SWS	Seminar (S)	Ehrlich, Huber
WS 19/20	2560141	Morals & Social Behavior (Bachelor & Master)	2 SWS	Seminar (S)	Huber, Ehrlich
WS 19/20	2560142	Topics in Political Economy (Master)	2 SWS	Seminar (S)	Ehrlich, Huber
WS 19/20	2561208	Ausgewählte Aspekte der europäischen Verkehrsplanung und -modellierung	1 SWS	Seminar (S)	Szimba
SS 2020	2560241	Digital IT Solutions and Services transforming the Field of Public Transportation	2 SWS	Prüfung (PR)	Janoshalmi
SS 2020	2560555	Fighting Climate Change, Seminar on Morals and Social Behavior (Master)	2 SWS	Seminar (S)	Szech, Zhao
SS 2020	2560556	Designing the Digital Economy, Topics on Political Economy (Bachelor)	2 SWS	Seminar (S)	Szech, Huber
SS 2020	2560557	Designing the Digital Economy, Topics on Political Economy (Master)	2 SWS	Seminar (S)	Szech, Huber
Exams					
WS 19/20	7900124	Seminar in Economics (Bachelor)		Prüfung (PR)	Szech, Puppe
WS 19/20	7900132	Seminar in Economics A (Master)		Prüfung (PR)	Fuchs-Seliger
WS 19/20	7900139	Seminar in Economics (Bachelor/Master)		Prüfung (PR)	Mitusch
WS 19/20	7900205	Seminar in Macroeconomics I		Prüfung (PR)	Scheffel
WS 19/20	7900221	Topics in Experimental Economics		Prüfung (PR)	Reiß
WS 19/20	7900255	Seminar in Macroeconomics II		Prüfung (PR)	Scheffel
WS 19/20	7900278	Seminar on Morals and Social Behavior		Prüfung (PR)	Szech, Puppe
WS 19/20	7900281	Seminar in Economics B (Master), Seminar in Economics A (Bachelor)		Prüfung (PR)	Mitusch
WS 19/20	79sefi1	Seminar in Economics (Bachelor)		Prüfung (PR)	Wigger
SS 2020	7900036	Seminar in Macroeconomics I		Prüfung (PR)	Scheffel

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

Below you will find excerpts from events related to this course:

**Topics in Econometrics**

2521310, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

**Topics in Political Economy (Bachelor)**

2560140, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

For bachelor students grades will be based on the quality of presentations in the seminar (50%) and the seminar paper (50%). Students can improve their grades by 0.3 for good and constructive discussion contributions or by 0.7 for excellent and constructive discussion contributions.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Morals & Social Behavior (Bachelor & Master)**

2560141, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Economathematics.

The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

For bachelor students grades will be based on the quality of presentations in the seminar (50%) and the seminar paper (50%).

For Master students, grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally Master students will have to hand in two abstracts with their paper – one with a maximum length of 100 words and one with a maximum length of 150 words. The quality of abstracts will reflect with 20% in the final grade.

Students can improve their grades by 0.3 for good and constructive discussion contributions or by 0.7 for excellent and constructive discussion contributions.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Topics in Political Economy (Master)**

2560142, WS 19/20, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

For Master students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Econometrics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

Seminar Papers of 8–10 pages are to be handed in.

For Master students, grades will be based on the quality of presentations in the seminar (40%) and the seminar paper (40%). Additionally students will have to hand in two abstracts with their paper – one with a maximum length of 100 words and one with a maximum length of 150 words. The quality of abstracts will reflect with 20% in the final grade. Students can improve their grades by 0.3 for good and constructive discussion contributions or by 0.7 for excellent and constructive discussion contributions.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Fighting Climate Change, Seminar on Morals and Social Behavior (Master)**

Seminar (S)

2560555, SS 2020, 2 SWS, Language: English, [Open in study portal](#)**Content**

For Bachelor students of the fields Industrial Engineering and Management, Information Engineering and Management, Economics Engineering or Econometrics.

Objective: The student develops an own idea for an economic experiment in this research direction. Students work in groups. Changing topics each semester. For current topics, see <http://polit.econ.kit.edu> or <https://portal.wiwi.kit.edu/Seminare>

The acceptance of students for the seminar is based on preferences and suitability for the topics. This includes theoretical and practical experience with Behavioral Economics as well as English skills.

Seminar Papers of 8–10 pages are to be handed in.

For bachelor students grades will be based on the quality of presentations in the seminar (50%) and the seminar paper (50%). Students can improve their grades by actively participation in the discussion.

Recommendation: Knowledge in the field of experimental economic research or behavioral economics as well as in the field of microeconomics and game theory may be helpful.

**Designing the Digital Economy, Topics on Political Economy (Bachelor)**

Seminar (S)

2560556, SS 2020, 2 SWS, Language: English, [Open in study portal](#)**Designing the Digital Economy, Topics on Political Economy (Master)**

Seminar (S)

2560557, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

T

7.137 Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]

Responsible: Professorenschaft des Fachbereichs Informatik

Organisation: KIT Department of Economics and Management

Part of: M-INFO-102058 - Seminar Module Informatics

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
WS 19/20	2512301	Linked Data and the Semantic Web	3 SWS		Sure-Vetter, Acosta Deibe, Käfer, Heling
WS 19/20	2512311	Real-World Challenges in Data Science and Analytics	3 SWS		Sure-Vetter, Nickel, Weinhardt, Zehnder, Brandt
WS 19/20	2513200	Seminar Business Information Systems: Programming 3 (Bachelor)	2 SWS	Seminar (S)	Oberweis, Zöllner, Fritsch, Frister, Struppek
WS 19/20	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar (S)	Zöllner
WS 19/20	2595470	Seminar Service Science, Management & Engineering	3 SWS	Seminar (S)	Weinhardt, Satzger, Nickel, Fromm, Fichtner, Sure-Vetter
SS 2020	2513212	Seminar Business Information Systems: Artificial Intelligence and Robotic Process Automation (Bachelor)	2 SWS	Seminar (S)	Oberweis, Alpers, Goranov
SS 2020	2513308	Seminar Knowledge Discovery and Data Mining (Bachelor)	3 SWS	Seminar (S)	Sure-Vetter, Färber, Nguyen, Nouillet, Saier
SS 2020	2513310	Seminar Data Science & Real-time Big Data Analytics (Bachelor)	2 SWS	Seminar (S)	Sure-Vetter, Riemer, Zehnder
SS 2020	2513402	Emerging Trends in Internet Technologies (Bachelor)	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
SS 2020	2513404	Emerging Trends in Digital Health (Bachelor)	2 SWS	Seminar (S)	Lins, Sunyaev, Thiebes
SS 2020	2513500	Cognitive Automobiles and Robots	2 SWS	Seminar (S)	Zöllner
SS 2020	2513554	Seminar Security, Usability and Society (Bachelor)	2 SWS	Seminar (S)	Volkamer, Aldag, Reinheimer
SS 2020	2595470	Seminar Service Science, Management & Engineering	2 SWS	Seminar (S)	Weinhardt, Nickel, Fichtner, Satzger, Sure-Vetter, Fromm
Exams					
WS 19/20	7900038	Linked Data and the Semantic Web		Prüfung (PR)	Sure-Vetter
WS 19/20	7900042	Seminar Betriebliche Informationssysteme: Programmieren 3		Prüfung (PR)	Oberweis
WS 19/20	7900044	Seminar Service Science, Management & Engineering		Prüfung (PR)	Sure-Vetter
WS 19/20	7900119	Cognitive automobiles and robots		Prüfung (PR)	Zöllner
WS 19/20	7900129	Security and Privacy Awareness		Prüfung (PR)	Volkamer
WS 19/20	7900187	Real-World Challenges in Data Science und Analytics		Prüfung (PR)	Sure-Vetter
SS 2020	7900090	Seminar Data Science & Real-time Big Data Analytics (Bachelor)		Prüfung (PR)	Sure-Vetter
SS 2020	7900092	Seminar Service Science, Management & Engineering		Prüfung (PR)	Sure-Vetter

SS 2020	7900094	Seminar Knowledge Discovery and Data Mining (Bachelor)	Prüfung (PR)	Sure-Vetter
SS 2020	7900136	Emerging Trends in Digital Health (Bachelor)	Prüfung (PR)	Sunyaev
SS 2020	7900187	Emerging Trends in Internet Technologies (Bachelor)	Prüfung (PR)	Sunyaev
SS 2020	7900194	Seminar Mathematics	Prüfung (PR)	Volkamer
SS 2020	7900197	Seminar Business Information Systems: Artificial Intelligence and Robotic Process Automation (Bachelor)	Prüfung (PR)	Oberweis
SS 2020	7900217	Seminar Security, Usability and Society (Bachelor)	Prüfung (PR)	Volkamer

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

Placeholder for seminars offered by the Institute AIFB. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

Below you will find excerpts from events related to this course:



Linked Data and the Semantic Web

2512301, WS 19/20, 3 SWS, Language: German/English, [Open in study portal](#)

Content

Linked Data is a way of publishing data on the web in a machine-understandable fashion. The aim of this practical seminar is to build applications and devise algorithms that consume, provide, or analyse Linked Data.

The Linked Data principles are a set of practices for data publishing on the web. Linked Data builds on the web architecture and uses HTTP for data access, and RDF for describing data, thus aiming towards web-scale data integration. There is a vast amount of data available published according to those principles: recently, 4.5 billion facts have been counted with information about various domains, including music, movies, geography, natural sciences. Linked Data is also used to make web-pages machine-understandable, corresponding annotations are considered by the big search engine providers. On a smaller scale, devices on the Internet of Things can also be accessed using Linked Data which makes the unified processing of device data and data from the web easy.

In this practical seminar, students will build prototypical applications and devise algorithms that consume, provide, or analyse Linked Data. Those applications and algorithms can also extend existing applications ranging from databases to mobile apps.

For the seminar, programming skills or knowledge about web development tools/technologies are highly recommended. Basic knowledge of RDF and SPARQL are also recommended, but may be acquired during the seminar. Students will work in groups. Seminar meetings will take place as 'Block-Seminar'.

Topics of interest include, but are not limited to:

- Travel Security
- Geo data
- Linked News
- Social Media

The exact dates and information for registration will be announced at the event page.

**Real-World Challenges in Data Science and Analytics**

2512311, WS 19/20, 3 SWS, Language: German/English, [Open in study portal](#)

Content

In the seminar, various Real-World Challenges in Data Science and Analytics will be worked on.

During this seminar, groups of students work on a case challenge with data provided. Here, the typical process of a data science project is depicted: integration of data, analysis of these, modeling of the decisions and visualization of the results.

During the seminar, solution concepts are worked out, implemented as a software solution and presented in an intermediate and final presentation. The seminar "Real-World Challenges in Data Science and Analytics" is aimed at students in master's programs.

The exact dates and information for registration will be announced at the course page.

**Seminar Business Information Systems: Programming 3 (Bachelor)**

2513200, WS 19/20, 2 SWS, [Open in study portal](#)

Seminar (S)

Content

Registration information and the content of the seminar will be announced on the course page. Only bachelor students are allowed to attend this seminar.

**Cognitive Automobiles and Robots**

2513500, WS 19/20, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

**Seminar Service Science, Management & Engineering**

2595470, WS 19/20, 3 SWS, Language: German, [Open in study portal](#)

Seminar (S)

Content

Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.

See the KSRI website for more information about this seminar: www.ksri.kit.edu

The assessment of this course is according to §4(2), 3 SPO in form of an examination of the written seminar thesis (15-20 pages), a presentation and active participation in class.

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.

Learning objectives:

The student

- illustrates and evaluates classic and current research questions in service science, management and engineering,
- applies models and techniques in service science, also with regard to their applicability in practical cases,
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Recommendations:

Lecture *eServices* [2595466] is recommended.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Die Basisliteratur wird entsprechend der zu bearbeitenden Themen bereitgestellt.

**Seminar Knowledge Discovery and Data Mining (Bachelor)**

2513308, SS 2020, 3 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

In this seminar different machine learning and data mining methods are implemented.

The seminar includes different methods of machine learning and data mining. Participants of the seminar should have basic knowledge of machine learning and programming skills.

Domains of interest include, but are not limited to:

- Medicine
- Social Media
- Finance Market

The exact dates and information for registration will be announced at the event page.

Literature

Detaillierte Referenzen werden zusammen mit den jeweiligen Themen angegeben. Allgemeine Hintergrundinformationen ergeben sich z.B. aus den folgenden Lehrbüchern:

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

**Seminar Data Science & Real-time Big Data Analytics (Bachelor)**

Seminar (S)

2513310, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Content

In this practical seminar, students will design applications in teams that use meaningful and creative Event Processing methods. Thereby, students have access to an existing record.

Event processing and real-time data are everywhere: financial market data, sensors, business intelligence, social media analytics, logistics. Many applications collect large volumes of data in real time and are increasingly faced with the challenge of being able to process them quickly and react promptly. The challenges of this real-time processing are currently also receiving a great deal of attention under the term "Big Data". The complex processing of real-time data requires both knowledge of methods for data analysis (data science) and their processing (real-time analytics). Seminar papers are offered on both of these areas as well as on interface topics, the input of own ideas is explicitly desired.

Further information to the practical seminar is given under the following Link:

<http://seminar-cep.fzi.de>

Questions are answered via the e-mail address sem-ep@fzi.de.

**Cognitive Automobiles and Robots**

Seminar (S)

2513500, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Content

The seminar is intended as a theoretical supplement to lectures such as "Machine Learning". The theoretical basics will be deepened in the seminar. The aim of the seminar is that the participants work individually to analyze a subsystem from the field of robotics and cognitive systems using one or more procedures from the field of AI/ML.

The individual projects require the analysis of the task at hand, selection of suitable procedures, specification and theoretical evaluation of the approach taken. Finally, the chosen solution has to be documented and presented in a short presentation.

Learning objectives:

- Students can apply knowledge from the Machine Learning lecture in a selected field of current research in robotics or cognitive automobiles for theoretical analysis.
- Students can evaluate, document and present their concepts and results.

Recommendations:

Attendance of the lecture machine learning

Workload:

The workload of 3 credit points consists of the time spent on literature research and planning/specifying the proposed solution. In addition, a short report and a presentation of the work carried out will be prepared.

**Seminar Security, Usability and Society (Bachelor)**

Seminar (S)

2513554, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Content**Seminar:**

The main topic of this seminar is security, usability, and society. The goal is to analyze these topics from different perspectives. Always important is the human, as we are interested in how humans interact with certain problems and how it might be possible to tackle it. For instance, phishing detection, how is it possible to ensure a higher detection. To tackle this problem, you can either focus on the technical side, awareness training, regulations by organizations.

Further important information:

Because of the current situation, every meeting will be held online. This might change during the semester, depending on the course of the corona situation.

Important dates:

- Kick-Off 22.04
- Final submission 01.07
- Presentation 14.07

Topics:

Will be announced on the 30.03

This course can also be credited for the KASTEL certificate. Further information about obtaining the certificate can be found on the SECUSO website https://secuso.aifb.kit.edu/Studium_und_Lehre.php.

**Seminar Service Science, Management & Engineering**

2595470, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)**Content**

Each Semester, the seminar will cover topics from a different selected subfield of Service Science, Management & Engineering. Topics include service innovation, service economics, service computing, transformation and coordination of service value networks as well as collaboration for knowledge intensive services.

See the KSRI website for more information about this seminar: www.ksri.kit.edu

Learning objectives:

The student

- illustrates and evaluates classic and current research questions in service science, management and engineering,
- applies models and techniques in service science, also with regard to their applicability in practical cases,
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Recommendations:

Lecture *eServices* [2595466] is recommended.

Workload:

The total workload for this course is approximately 90 hours.

Literature

Die Basisliteratur wird entsprechend der zu bearbeitenden Themen bereitgestellt.



7.138 Course: Seminar in Operations Research (Bachelor) [T-WIWI-103488]

Responsible: Prof. Dr. Stefan Nickel
 Prof. Dr. Steffen Rebennack
 Prof. Dr. Oliver Stein

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101826 - Seminar Module Economic Sciences](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
WS 19/20	2550131	Seminar on Methodical Foundations of Operations Research	2 SWS	Seminar (S)	Stein
WS 19/20	2550472	Seminar on Power Systems Optimization (Bachelor)	2 SWS	Seminar (S)	Rebennack, Sinske
WS 19/20	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar (S)	Nickel, Mitarbeiter
SS 2020	2550472	Seminar on Power Systems Optimization (Bachelor)	2 SWS	Seminar (S)	Rebennack
SS 2020	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar (S)	Nickel, Mitarbeiter
Exams					
WS 19/20	7900011_WS1920	Seminar in Operations Research B (Bachelor)	Prüfung (PR)		Stein
WS 19/20	7900160	Modern OR and Innovative Logistics	Prüfung (PR)		Nickel
WS 19/20	7900216	Real-World Challenges in Data Science und Analytics	Prüfung (PR)		Nickel
WS 19/20	7900313	Seminar in Operations Research (Bachelor)	Prüfung (PR)		Rebennack

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

Below you will find excerpts from events related to this course:

**Seminar on Methodical Foundations of Operations Research**

Seminar (S)

2550131, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)**Content**

The seminar aims at describing, evaluating, and discussing recent as well as classical topics in continuous optimization. The focus is on the treatment of optimization models and algorithms, also with respect to their practical application.

Bachelor students are introduced to the style of scientific work. By focused treatment of a scientific topic they deal with the basics of scientific investigation and reasoning.

For further development of a scientific work style, master students are particularly expected to critically question the seminar topics.

With regard to the oral presentations the students become acquainted with presentation techniques and basics of scientific reasoning. Also rhetoric abilities may be improved.

Remarks:

Attendance at all oral presentations is compulsory.

Preferably at least one module offered by the Institute of Operations Research should have been chosen before attending this seminar.

Assessment:

The assessment is composed of a 15-20 page paper as well as a 40-60 minute oral presentation according to §4(2), 3 of the examination regulation. The grade is composed of the equally weighted assessments of the paper and the oral presentation.

The seminar is appropriate for bachelor as well as for master students. Their differentiation results from different assessment criteria for the seminar paper and the oral presentation.

Workload:

The total workload for this course is approximately 90 hours. For further information see German version.

Literature

Die Literatur und die relevanten Quellen werden gegen Ende des vorausgehenden Semesters im Wiwi-Portal und in einer Seminarvorbereitung bekannt gegeben.

References and relevant sources are announced at the end of the preceding semester in the Wiwi-Portal and in a preparatory meeting.

**Seminar: Modern OR and Innovative Logistics**

Seminar (S)

2550491, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)**Content**

The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

**Seminar: Modern OR and Innovative Logistics**

Seminar (S)

2550491, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Content

The seminar aims at the presentation, critical evaluation and exemplary discussion of recent questions in discrete optimization. The focus lies on optimization models and algorithms, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management). The students get in touch with scientific working: The in-depth work with a special scientific topic makes the students familiar with scientific literature research and argumentation methods. As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic. Regarding the seminar presentations, the students will be familiarized with basic presentational and rhetoric skills.

The topics of the seminar will be announced at the beginning of the term in a preliminary meeting. Attendance is compulsory for the preliminary meeting as well for all seminar presentations.

Exam:

The assessment consists of a written seminar thesis of 20-25 pages and a presentation of 35-40 minutes (according to §4(2), 3 of the examination regulation).

The final mark for the seminar consists of the seminar thesis, the seminar presentation, the handout, and if applicable further material such as programming code.

The seminar can be attended both by Bachelor and Master students. A differentiation will be achieved by different valuation standards for the seminar thesis and presentation.

Requirements:

If possible, at least one module of the institute should be taken before attending the seminar.

Objectives:

The student

- illustrates and evaluates classic and current research questions in discrete optimization,
- applies optimization models and algorithms in discrete optimization, also with regard to their applicability in practical cases (especially in Supply Chain and Health Care Management),
- successfully gets in touch with scientific working by an in-depth working on a special scientific topic which makes the student familiar with scientific literature research and argumentation methods,
- acquires good rhetorical and presentation skills.

As a further aspect of scientific work, especially for Master students the emphasis is put on a critical discussion of the seminar topic.

Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

T

7.139 Course: Seminar in Statistics (Bachelor) [T-WIWI-103489]

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101826 - Seminar Module Economic Sciences](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
WS 19/20	2521310	Topics in Econometrics	2 SWS	Seminar (S)	Schienle, Chen, Görden

Competence Certificate

Alternative exam assessment (§ 4(2), 3 SPO 2015). The following aspects are included:

- Regular participation in the seminar dates
- Preparation of a seminar paper on a partial aspect of the seminar topic according to scientific methods
- Lecture on the topic of the seminar paper.

The point scheme for the assessment is determined by the lecturer of the respective course. It will be announced at the beginning of the course.

Prerequisites

None.

Recommendation

See seminar description in the course catalogue of the KIT (<https://campus.kit.edu/>)

Annotation

The listed seminar titles are placeholders. Currently offered seminars of each semester will be published on the websites of the institutes and in the course catalogue of the KIT. In general, the current seminar topics of each semester are already announced at the end of the previous semester. Furthermore for some seminars there is an application required.

The available places are listed on the internet: <https://portal.wiwi.kit.edu>.

Below you will find excerpts from events related to this course:

V

Topics in Econometrics

2521310, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

**7.140 Course: Seminar Informatics A [T-INFO-104336]**

Responsible: Prof. Dr. Sebastian Abeck
Organisation: KIT Department of Informatics
Part of: [M-INFO-102058 - Seminar Module Informatics](#)

Type	Credits	Version
Examination of another type	3	1

Events					
WS 19/20	2400078	Seminar: Neuronale Netze und künstliche Intelligenz	SWS	Seminar (S)	Waibel, Stüker, Asfour, HA
WS 19/20	24844	Seminar: Ubiquitous Systems	2 SWS	Seminar (S)	Beigl, Pescara
SS 2020	2400011	Hot Topics in Bioinformatics	2 SWS	Seminar (S)	Stamatakis
SS 2020	24344	Advanced Methods of Information Fusion	2 SWS	Seminar (S)	Hanebeck, Radtke
Exams					
WS 19/20	7500021	Advanced Methods of Information Fusion		Prüfung (PR)	Hanebeck
WS 19/20	7500096	Seminar in Cryptography		Prüfung (PR)	Geiselman, Müller-Quade, Hofheinz
WS 19/20	7500097	Seminar in Security		Prüfung (PR)	Geiselman, Müller-Quade, Hofheinz
WS 19/20	7500122	Seminar: Internet of Things in Embedded Systems		Prüfung (PR)	Henkel
WS 19/20	7500175	Seminar: Energy Informatics		Prüfung (PR)	Wagner
WS 19/20	7500220	Seminar Ubiquitous Computing		Prüfung (PR)	Beigl
WS 19/20	7500224	Seminar: Neural Networks and Artificial Intelligence		Prüfung (PR)	Stüker
WS 19/20	7500257	Seminar Big Data Tools		Prüfung (PR)	Streit
WS 19/20	7500267	Seminar Advanced Topics in Machine Translation		Prüfung (PR)	Waibel
WS 19/20	7500328	Seminar: Non-Volatile Memory Architectures		Prüfung (PR)	Henkel
SS 2020	7500013	Advanced Methods of Information Fusion		Prüfung (PR)	Hanebeck, Noack
SS 2020	7500014	Seminar: Hot Topics in Bioinformatics		Prüfung (PR)	Stamatakis
SS 2020	7500162	Seminar: Ubiquitous Systems		Prüfung (PR)	Beigl, Riedel

Below you will find excerpts from events related to this course:

**Seminar: Neuronale Netze und künstliche Intelligenz**

2400078, WS 19/20, SWS, Language: German/English, [Open in study portal](#)

Seminar (S)

Content

In many tasks that appear natural to us, the fastest computers are unable to match the performance of the human brain. Neural networks attempt to simulate the parallel and distributed architecture of the brain in order to master these skills with learning algorithms. In this context, focus is being put on neural network approaches to computer vision and speech recognition, robotics and other areas.

In this seminar students will acquaint themselves with literature from provided topics and will present their results as a talk supported by slides to the other participants of the seminar.

Recommendations:

- Finishing the module "Kognitive Systeme" prior to the seminar is recommended.
- Attending the lecture "Deep Learning und Neuronale Netze" prior to the seminar is of advantage

**Hot Topics in Bioinformatics**2400011, SS 2020, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

Content

Prerequisites: CS Master's level seminar. Participants must have attended and passed the course on "Introduction to Bioinformatics for Computer Scientists" in one of the preceding winter terms.

Task: You will need to select papers to present, give a presentation and write a report.

This main seminar allows students to understand and present the contents of current papers in Bioinformatics such as published for instance in the journals *Bioinformatics*, *BMC Bioinformatics*, *Journal of Computational Biology* etc. or at conferences such as *ISMB* or *RECOMB*.

We will provide a list of interesting papers, but students can also propose papers they are interested in. Students may also choose to cover broader topics of more general interest such as multiple sequence alignment, Bayesian phylogenetic inference, read assembly etc.

Each student will be assigned a lab member for help with understanding the article and preparing the slides as well as the report.

Students should give a 35 minute presentation on their topic of choice and write a report (Seminararbeit) comprising 8 pages.

Goals: Participants are able to understand, critically assess, and compare current research papers in Bioinformatics. They are able to present algorithms and models from current research papers in oral and written form at a level that corresponds to that of scientific publications and conference presentations. Participants are able to suggest extension to current methods.

Credits: 3 ECTS

**Advanced Methods of Information Fusion**24344, SS 2020, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)

Content

The growing spread and performance of modern information and communication technologies produces an ever-increasing amount of data. It is one of the central challenges of our time to extract meaningful information from these data sets. The approach to address these issues, often called data science, combines strategies and methods from the fields of machine learning, mathematics, state estimation, visualization and pattern recognition. During this seminar, the students will familiarize themselves with concepts and methods particularly focusing on estimation theory and its application.

The seminar targets master students in computer science and bachelor students in Information engineering and management.

**7.141 Course: Seminar: Legal Studies I [T-INFO-101997]**

Responsible: Prof. Dr. Thomas Dreier
Organisation: KIT Department of Informatics
Part of: [M-INFO-101218 - Seminar Module Law](#)

Type	Credits	Recurrence	Version
Examination of another type	3	Each term	1

Events					
WS 19/20	24389	IT-Sicherheit und Recht	2 SWS	Seminar (S)	Schallbruch
SS 2020	2400041	Governance, Risk & Compliance	2 SWS	Seminar (S)	Herzig
SS 2020	2400061	Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung	2 SWS	Seminar (S)	Bless, Boehm, Hartenstein, Madche, Sunyaev, Zitterbart
SS 2020	2400153	Online Manipulative Practices: New Technologies and Fundamental Rights Infringements	2 SWS	Seminar (S)	Boehm
SS 2020	24820	Current Issues in Patent Law	2 SWS	Seminar (S)	Melullis
Exams					
WS 19/20	7500035	Seminar: Legal Studies II		Prüfung (PR)	Barczak
WS 19/20	7500182	Seminar: Legal Studies II		Prüfung (PR)	Dreier, Boehm, Raabe
SS 2020	7500140	Seminar: Legal Studies I		Prüfung (PR)	Dreier, Boehm, Melullis, Matz
SS 2020	7500159	Seminar: Legal Studies I		Prüfung (PR)	Eichenhofer

Below you will find excerpts from events related to this course:

**Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung**

2400061, SS 2020, 2 SWS, [Open in study portal](#)

Seminar (S)

Content

Registration via <https://portal.wiwi.kit.edu/ys/2708>

**Online Manipulative Practices: New Technologies and Fundamental Rights Infringements**

2400153, SS 2020, 2 SWS, [Open in study portal](#)

Seminar (S)

Content

New science-based technologies are fostering the process of making individuals more amenable to forms of manipulation online. The more technological capabilities improve, the more surveillance expands, the life of individuals becomes transparent, easier to predict and therefore easier to manipulate. More invasive practices lead to infringements of fundamental rights, which are not always easy to detect, as surveillance and manipulation techniques are getting more sophisticated and less obvious. After the now notorious Cambridge Analytica data scandal, we have now hard evidence individuals are exposed to manipulative practices online, which are most of the time difficult to detect as they operate silently and automatically. Manipulative practices aim at covertly subverting another person's capacity for conscious decision-making by exploiting in particular his/her cognitive, emotional, or other decision-making vulnerabilities. They involve influences that (1) are hidden, (2) exploit vulnerabilities, and (3) are targeted. The seminar has the objective to discuss a series of new technologies and techniques that are and can be used in online manipulative practices and analyse their legal and ethical implications. Special attention is dedicated to the risk such practices pose to fundamental rights such as the right to privacy, the right to the protection of personal data and the right to non-discrimination.

10 sub-topics are provided below. It is a list of new technologies and techniques that can be used in manipulative practices. Students should pick one sub-topic in order to write a short paper and prepare a presentation. Students work is guided through a series of questions and a list of recommended literature. In short, papers and presentations should be generally structured in this way:

- Describe the technology/techniques.
- Describe the legal and ethical implications stemming from the use and application of the selected technology/techniques. What fundamental rights are at stake?
- Focus on one legal aspect, for example the infringement of the right to privacy, (the sub-topic title and description and list of literature already guide the student in this sense), analyse the current legal framework concerning the protection of that right and describe the legal challenges that these new technologies and methods pose.

We also encourage students to investigate possible technical solutions to the problems highlighted in their analysis.

T

7.142 Course: Services Marketing and B2B Marketing [T-WIWI-102806]

Responsible: Prof. Dr. Martin Klarmann
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101424 - Foundations of Marketing](#)

Type	Credits	Recurrence	Version
Written examination	3	Each winter term	1

Events					
WS 19/20	2572158	Services Marketing and B2B Marketing	2 SWS	Lecture (V)	Klarmann
Exams					
WS 19/20	7900081	Services Marketing and B2B Marketing		Prüfung (PR)	Klarmann
WS 19/20	7900126	Services Marketing and B2B Marketing		Prüfung (PR)	Klarmann

Competence Certificate

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

Prerequisites

None

Annotation

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

Below you will find excerpts from events related to this course:

V

Services Marketing and B2B Marketing

2572158, WS 19/20, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The aim of this course is to prepare students for two certain marketing perspectives. The service marketing is concentrated on the particularities coming up when a company sells services instead of products. Subjects in this section are for example:

- Measuring service quality
- Pricing services
- Management of service staff

The second part of the course contains a business-to-business marketing perspective. Topics are below others:

- Management of buying centers
- Competitive Bidding
- B2B-Branding

Students

- know about the characteristics of service- and B2B environments
- are able to apply different methods (SERVQUAL, Gap-model, Mystery Shopping) to measure the quality of services
- are able to design pricing systems for services
- know about queuing management
- are able to plan capacities in service environments
- are able to identify different types of B2B businesses and know about their characteristics
- know about the specifics and challenges of B2B branding
- know central theories about organizational buying
- are able to apply the concept of competitive bidding for tenders
- are able to prepare, conduct, and review price negotiations

The assessment consists of a written exam (60 minutes) (following §4(2), 1 of the examination regulation).

The total workload for this course is approximately 90 hours.

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

Literature

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T

7.143 Course: Software Engineering I [T-INFO-101968]

Responsible: Prof. Dr.-Ing. Anne Koziolk
 Prof. Dr. Ralf Reussner
 Prof. Dr. Walter Tichy

Organisation: KIT Department of Informatics

Part of: [M-INFO-101175 - Software Engineering I](#)

Type	Credits	Recurrence	Version
Written examination	6	Each summer term	1

Events					
SS 2020	24518	Softwaretechnik I	4 SWS	Lecture / Practice (VÜ)	Tichy, Weigelt, Hey

T

7.144 Course: Software Engineering I Pass [T-INFO-101995]

Responsible: Prof. Dr. Walter Tichy
Organisation: KIT Department of Informatics
Part of: [M-INFO-101175 - Software Engineering I](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each summer term	1

Events					
SS 2020	24518	Softwaretechnik I	4 SWS	Lecture / Practice (VÜ)	Tichy, Weigelt, Hey

T

7.145 Course: Software Engineering II [T-INFO-101370]

Responsible: Prof. Dr.-Ing. Anne Koziolk
 Prof. Dr. Ralf Reussner
 Prof. Dr. Walter Tichy

Organisation: KIT Department of Informatics

Part of: [M-INFO-100833 - Software Engineering II](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24076	Software Engineering II	4 SWS	Lecture (V)	Reussner
Exams					
WS 19/20	7500054	Software Engineering II		Prüfung (PR)	Reussner
WS 19/20	7500255	Software Engineering II		Prüfung (PR)	Reussner

Below you will find excerpts from events related to this course:

V

Software Engineering II

24076, WS 19/20, 4 SWS, Language: German, [Open in study portal](#)

Lecture (V)**Literature**

Craig Larman, Applying UML and Patterns, 3rd edition, Prentice Hall, 2004. Weitere Literaturhinweise werden in der Vorlesung gegeben.

T

7.146 Course: Special Topics in Information Systems [T-WIWI-109940]

Responsible: Prof. Dr. Christof Weinhardt
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101434 - eBusiness and Service Management](#)

Type	Credits	Recurrence	Version
Examination of another type	4,5	Each term	2

Exams				
WS 19/20	7900263	Special Topics in Information Systems	Prüfung (PR)	Weinhardt

Competence Certificate

The assessment of this course is according to §4(2), 3 SPO in form of a written documentation, a presentation of the outcome of the conducted practical components and an active participation in class.

Please take into account that, beside the written documentation, also a practical component (such as a survey or an implementation of an application) is part of the course. Please examine the course description for the particular tasks.

The final mark is based on the graded and weighted attainments (such as the written documentation, presentation, practical work and an active participation in class).

Prerequisites

see below

Recommendation

None

Annotation

All the practical seminars offered at the chair of Prof. Dr. Weinhardt can be chosen in the Special Topics in Information Systems course. The current topics of the practical seminars are available at the following homepage: www.iism.kit.edu/im/lehre

The Special Topics Information Systems is equivalent to the practical seminar, as it was only offered for the major in "Information Management and Engineering" so far. With this course students majoring in "Industrial Engineering and Management" and "Economics Engineering" also have the chance of getting practical experience and enhance their scientific capabilities.

The Special Topics Information Systems can be chosen instead of a regular lecture (see module description). Please take into account, that this course can only be accounted once per module.

T

7.147 Course: Statistical Modeling of Generalized Regression Models [T-WIWI-103065]

Responsible: apl. Prof. Dr. Wolf-Dieter Heller
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101599 - Statistics and Econometrics](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each winter term	1

Events					
WS 19/20	2521350	Statistical Modeling of Generalized Regression Models	2 SWS	Lecture (V)	Heller
Exams					
WS 19/20	7900146	Statistical Modeling of generalized regression models		Prüfung (PR)	Heller

Competence Certificate

The assessment of this course is a written examination (60 min) according to §4(2), 1 of the examination regulation.

Prerequisites

None

Recommendation

Knowledge of the contents covered by the course "Economics III: Introduction in Econometrics" [2520016]

Below you will find excerpts from events related to this course:

V

Statistical Modeling of Generalized Regression Models

2521350, WS 19/20, 2 SWS, [Open in study portal](#)

Lecture (V)

Content

Learning objectives:

The student has profound knowledge of generalized regression models.

Requirements:

Knowledge of the contents covered by the course *Economics III: Introduction in Econometrics* [2520016].

Workload:

Total workload for 4.5 CP: approx. 135 hours

Attendance: 30 hours

Preparation and follow-up: 65 hours

**7.148 Course: Statistics I [T-WIWI-102737]**

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101432 - Introduction to Statistics](#)

Type	Credits	Recurrence	Version
Written examination	5	Each summer term	1

Events					
SS 2020	2600008	Statistics I	4 SWS	Lecture (V)	Grothe
Exams					
WS 19/20	7900009	Statistics I		Prüfung (PR)	Schienle

Competence Certificate

The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.

The exam takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

Prerequisites

None

Below you will find excerpts from events related to this course:

**Statistics I**

2600008, SS 2020, 4 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content**Learning objectives:**

The Student understands and applies

- the basic concepts of statistical data exploration,
- the basic definitions and theorems of probability theory.

Content:

A. Descriptive Statistics: univariate und bivariate analysis

B. Probability Theory: probability space, conditional and product probabilities

C. Random variables: location and shape parameters, dependency measures, concrete distribution models

Workload:

Total workload for 5 CP: approx. 150 hours

Attendance: 60 hours

Preparation and follow-up: 90 hours

Literature

Skriptum: Kurzfassung Statistik I

Weiterführende Literatur:

Bamberg, G., Baur, F. und Krapp, M.: Statistik, 15. überarb. Auflage. Oldenbourg, München 2009, ISBN 978-3486590883.

Fahrmeir, L., Heumann, C., Künstler, R., Pigeot, I. und Tutz, G.: Statistik - Der Weg zur Datenanalyse, 8. Auflage. Springer Spektrum. Berlin 2016, ISBN 978-3-662-50371-3.

Mosler, K. und Schmid, F.: Beschreibende Statistik und Wirtschaftsstatistik, 4. akt. und verb. Auflage, Springer, Berlin 2009, ISBN 978-3642015564.

Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2011, ISBN 978-3642150098.

Stock, J.H. und Watson M.W.: Introduction to Econometrics, 3. Auflage, Prentice Hall 2014, ISBN 978-1292071312

Stocker, T.C. und Steinke I.: Statistik: Grundlagen und Methodik. De Gruyter Oldenbourg, Berlin 2016 ISBN-13: 978-3110353884.

**7.149 Course: Statistics II [T-WIWI-102738]**

Responsible: Prof. Dr. Oliver Grothe
Prof. Dr. Melanie Schienle

Organisation: KIT Department of Economics and Management

Part of: [M-WIWI-101432 - Introduction to Statistics](#)

Type	Credits	Recurrence	Version
Written examination	5	Each winter term	1

Events					
WS 19/20	2610020	Statistics II	4 SWS	Lecture (V)	Schienle
WS 19/20	2610021		2 SWS	Tutorial (Tu)	Schienle, Rüter, Zerwas
WS 19/20	2610022	PC-Praktikum zu Statistik II	2 SWS		Schienle, Görgen
Exams					
WS 19/20	7900282	Statistics II		Prüfung (PR)	Schienle
SS 2020	7900737	Statistics II		Prüfung (PR)	Schienle

Competence Certificate

The assessment consists of a written exam according to Section 4 (2), 1 of the examination regulation.

The exam takes place at the end of the lecture period or at the beginning of the recess period. The re-examination takes place in the following semester.

Prerequisites

None

Recommendation

It is recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2610020].

Below you will find excerpts from events related to this course:

**Statistics II**

2610020, WS 19/20, 4 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content**Learning objectives:**

The student

- understands and applies the basic definitions and theorems of probability theory,
- transfers these theoretical foundations to problems in parametrical mathematical statistics.

Content:

D. Sampling and Estimation Theory: Sampling distributions, estimators, point and interval estimation

E. Test Theory: General Principles of Hypothesis Testing, Concrete 1- and 2-Sampling Tests

F. Regression analysis: Simple and multiple linear regression, statistical inference

Requirements:

It is recommended to attend the course *Statistics I* [2600008] before the course *Statistics II* [2600020].

Workload:

Total workload: 150 hours (5.0 Credits).

Attendance: 30 hours

Preparation and follow-up: 90 hours

Literature

Skriptum: Kurzfassung Statistik II

Weiterführende Literatur:

Bamberg, G., Baur, F. und Krapp, M.: Statistik, 15. überarb. Auflage. Oldenbourg, München 2009, ISBN 978-3486590883.

Fahrmeir, L., Heumann, C., Künstler, R., Pigeot, I. und Tutz, G.: Statistik - Der Weg zur Datenanalyse, 8. Auflage. Springer Spektrum. Berlin 2016, ISBN 978-3-662-50371-3.

Mosler, K. und Schmid, F.: Beschreibende Statistik und Wirtschaftsstatistik, 4. akt. und verb. Auflage, Springer, Berlin 2009, ISBN 978-3642015564.

Mosler, K. und Schmid, F.: Wahrscheinlichkeitsrechnung und schließende Statistik, 4. verb. Aufl., Springer, Berlin 2011, ISBN 978-3642150098.

Stock, J.H. und Watson M.W.: Introduction to Econometrics, 3. Auflage, Prentice Hall 2014, ISBN 978-1292071312

Stocker, T.C. und Steinke I.: Statistik: Grundlagen und Methodik. De Gruyter Oldenbourg, Berlin 2016 ISBN-13: 978-3110353884.

T

7.150 Course: Strategic Finance and Technoloy Change [T-WIWI-110511]

Responsible: Prof. Dr. Martin Ruckes
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101423 - Topics in Finance II](#)
[M-WIWI-101465 - Topics in Finance I](#)

Type	Credits	Recurrence	Version
Written examination	1,5	Each winter term	1

Events					
WS 19/20	2530214	Strategic Finance and Technology Change	1 SWS	Lecture (V)	N.N.
Exams					
WS 19/20	7900219	Strategic Finance and Technoloy Change		Prüfung (PR)	Ruckes

Competence Certificate

The assessment consists of a written exam (60 min.) according to § 4 paragraph 2 Nr. 1 of the examination regulation. The exam is offered each semester. If there are only a small number of participants registered for the exam, we reserve the right to hold an oral examination instead of a written one.

Prerequisites

None

Recommendation

Attending the lecture "Financial Management" is strongly recommended.

T

7.151 Course: Supplement Applied Informatics [T-WIWI-110711]

Responsible: Professorenschaft des Fachbereichs Informatik
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101476 - Business Processes and Information Systems](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each term	1

Competence Certificate

The assessment of this course is a written or (if necessary) oral examination according to §4(2) of the examination regulation. Depending on the particular course associated with this placeholder a bonus on the examination grade is possible.

Prerequisites

None

Annotation

This course can be used in particular for the acceptance of external courses whose content is in the broader area of applied informatics, but is not equivalent to another course of this topic.

T

7.152 Course: Surfaces for Computer aided Design [T-INFO-102073]

Responsible: Prof. Dr. Hartmut Prautzsch
Organisation: KIT Department of Informatics
Part of: [M-INFO-101254 - Surfaces for Computer Aided Design](#)

Type	Credits	Recurrence	Version
Oral examination	5	Each winter term	1

T

7.153 Course: Tactical and Operational Supply Chain Management [T-WIWI-102714]

Responsible: Prof. Dr. Stefan Nickel
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101413 - Applications of Operations Research](#)
[M-WIWI-101421 - Supply Chain Management](#)
[M-WIWI-103278 - Optimization under Uncertainty](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	3

Events					
SS 2020	2550486	Taktisches und operatives SCM	2 SWS	Lecture (V)	Nickel
SS 2020	2550487	Übungen zu Taktisches und operatives SCM	1 SWS	Practice (Ü)	Dunke
Exams					
WS 19/20	00012	Tactical and Operational Supply Chain Management		Prüfung (PR)	Nickel

Competence Certificate

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation.

The exam takes place in every the semester.

Prerequisite for admission to examination is the succesful completion of the online assessments.

Prerequisites

Prerequisite for admission to examination is the succesful completion of the online assessments.

Recommendation

None

Annotation

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

Below you will find excerpts from events related to this course:

V

Taktisches und operatives SCM

2550486, SS 2020, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

Content

The planning of material transport is an essential element of Supply Chain Management. By linking transport connections across different facilities, the material source (production plant) is connected with the material sink (customer). The general supply task can be formulated as follows (cf. Gudehus): For given material flows or shipments, choose the optimal (in terms of minimal costs) distribution and transportation chain from the set of possible logistics chains, which asserts the compliance of delivery times and further constraints. The main goal of the inventory management is the optimal determination of order quantities in terms of minimization of fixed and variable costs subject to resource constraints, supply availability and service level requirements. Similarly, the problem of lot sizing in production considers the determination of the optimal amount of products to be produced in a time slot. The course includes an introduction to basic terms and definitions of Supply Chain Management and a presentation of fundamental quantitative planning models for distribution, vehicle routing, inventory management and lot sizing. Furthermore, case studies from practice will be discussed in detail.

Literature**Weiterführende Literatur**

- Domschke: Logistik: Transporte, 5. Auflage, Oldenbourg, 2005
- Domschke: Logistik: Rundreisen und Touren, 4. Auflage, Oldenbourg, 1997
- Ghiani, Laporte, Musmanno: Introduction to Logistics Systems Planning and Control, Wiley, 2004
- Gudehus: Logistik, 3. Auflage, Springer, 2005
- Simchi-Levi, Kaminsky, Simchi-Levi: Designing and Managing the Supply Chain, 3rd edition, McGraw-Hill, 2008
- Silver, Pyke, Peterson: Inventory management and production planning and scheduling, 3rd edition, Wiley, 1998

T

7.154 Course: Team Project Software Development [T-INFO-109823]

Responsible: Prof. Dr. Sebastian Abeck
Prof. Dr. Ralf Reussner

Organisation: KIT Department of Informatics

Part of: [M-INFO-104809 - Team Project Software Development](#)

Type	Credits	Recurrence	Version
Examination of another type	8	Each term	1

Events					
SS 2020	2400003	Team Project Software Development	SWS	Practical course (P)	Abeck, Reussner, Schneider, Burger

T

7.155 Course: Technical Conditions Met [T-WIWI-106623]**Organisation:** KIT Department of Economics and Management**Part of:** [M-WIWI-101599 - Statistics and Econometrics](#)

Type	Credits	Recurrence	Version
Completed coursework	0	Each term	1

Competence Certificate

This module element is intended to record the Bachelor-examination "Introduction to Game Theory". In the master module M-WIWI-101453 "Applied Strategic Decisions", this means that the obligatory course "Advanced Game Theory" is not required.

Prerequisites

None

**7.156 Course: Telematics [T-INFO-101338]**

Responsible: Prof. Dr. Martina Zitterbart
Organisation: KIT Department of Informatics
Part of: [M-INFO-100801 - Telematics](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24128	Telematics	3 SWS	Lecture (V)	Bauer, Friebe, Heseding, Hock, Zitterbart
Exams					
WS 19/20	7500166	Telematics		Prüfung (PR)	Zitterbart

Below you will find excerpts from events related to this course:

**Telematics**

24128, WS 19/20, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)**Content**

The lecture covers (i.a.) protocols, architectures, as well as methods and algorithms, for routing and establishing reliable end-to-end connections in the Internet. In addition to various methods for media access control in local area networks, the lecture also covers other communication systems, e.g. circuit-switched systems such as ISDN. Participants should also have understood the possibilities for managing and administering networks.

Familiarity with the contents of the lecture *Einführung in Rechnernetze* or comparable lectures is assumed.

Learning Objectives

After attending this lecture, the students will

- have a profound understanding of protocols, architectures, as well as procedures and algorithms used for routing and for establishing reliable end-to-end connections in the Internet
- have a profound understanding of different media access control procedures in local networks and other communication systems like circuit-switched ISDN
- have a profound understanding of the problems that arise in large scale dynamic communication systems and are familiar with mechanism to deal with these problems
- be familiar with current developments such as SDN and data center networking
- be familiar with different aspects and possibilities for network management and administration

Students have a profound understanding of the basic protocol mechanisms that are necessary to establish reliable end-to-end communication. Students have detailed knowledge about the congestion and flow control mechanisms used in TCP and can discuss fairness issue in the context of multiple parallel transport streams. Students can analytically determine the performance of transport protocols and know techniques for dealing with specific constraints in the context of TCP, e.g., high data rates and low latencies. Students are familiar with current topics such as the problem of middle boxes on the Internet, the usage of TCP in data centers or multipath TCP. Students are also familiar with practical aspects of modern transport protocols and know practical ways to overcome heterogeneity in the development of distributed applications.

Students know the functions of (Internet) routing and routers and can explain and apply common routing algorithms. Students are familiar with routing architectures and different alternatives for buffer placement as well as their advantages and disadvantages. Students understand the classification into interior and exterior gateway protocols and have in-depth knowledge of the functionality and features of common protocols such as RIP, OSPF, and BGP. Students are also familiar with current topics such as label switching, IPv6 and SDN.

Students know the function of media access control and are able to classify and analytically evaluate different media access control mechanisms. Students have an in-depth knowledge of Ethernet and various Ethernet variants and characteristics, which especially includes current developments such as real-time Ethernet and data center Ethernet. Students can explain and apply the Spanning Tree Protocol.

Students know the architecture of ISDN and can reproduce the peculiarities of setting up the ISDN subscriber line. Students are familiar with the technical features of DSL.

Literature

S. Keshav. An Engineering Approach to Computer Networking. Addison-Wesley, 1997
J.F. Kurose, K.W. Ross. Computer Networking: A Top-Down Approach Featuring the Internet. 4th Edition, Addison-Wesley, 2007
W. Stallings. Data and Computer Communications. 8th Edition, Prentice Hall, 2006
Weiterführende Literatur •D. Bertsekas, R. Gallager. Data Networks. 2nd Edition, Prentice-Hall, 1991
•F. Halsall. Data Communications, Computer Networks and Open Systems. 4th Edition, Addison-Wesley Publishing Company, 1996
•W. Haaß. Handbuch der Kommunikationsnetze. Springer, 1997
•A.S. Tanenbaum. Computer-Networks. 4th Edition, Prentice-Hall, 2004
•Internet-Standards
•Artikel in Fachzeitschriften

T

7.157 Course: Theoretical Foundations of Computer Science [T-INFO-103235]

Responsible: Prof. Dr. Jörn Müller-Quade
 Prof. Dr. Peter Sanders
 Prof. Dr. Dorothea Wagner

Organisation: KIT Department of Informatics

Part of: [M-INFO-101189 - Theoretical Informatics](#)

Type	Credits	Recurrence	Version
Written examination	6	Each winter term	1

Events					
WS 19/20	24005	Theoretical Foundations of Computer Science	3/1 SWS	Lecture (V)	Wagner, Brückner, Sauer
Exams					
WS 19/20	7500251	Theoretical Foundations of Computer Science		Prüfung (PR)	Wagner, Ueckerdt

T

7.158 Course: Web Applications and Service-Oriented Architectures (I) [T-INFO-103122]

Responsible: Prof. Dr. Sebastian Abeck

Organisation: KIT Department of Informatics

Part of: [M-INFO-101636 - Web Applications and Service-Oriented Architectures \(I\)](#)

Type	Credits	Recurrence	Version
Oral examination	4	Each winter term	1

Events					
WS 19/20	24153	Web Applications and Service-oriented Architectures (I)	2 SWS	Lecture (V)	Abeck, Hippchen, Schneider
Exams					
WS 19/20	7500026	Web Applications and Service-oriented Architectures (I)		Prüfung (PR)	Abeck

T

7.159 Course: Welfare Economics [T-WIWI-102610]

Responsible: Prof. Dr. Clemens Puppe
Organisation: KIT Department of Economics and Management
Part of: [M-WIWI-101501 - Economic Theory](#)

Type	Credits	Recurrence	Version
Written examination	4,5	Each summer term	2

Competence Certificate

The assessment consists of a written exam at the end of the semester (according to Section 4 (2), 1 or 2 of the examination regulation).

Prerequisites

The course *Economics I: Microeconomics* [2610012] has to be completed beforehand.

Recommendation

None