

# Module Handbook Information Systems B.Sc.

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KIT DEPARTMENT OF ECONOMICS AND MANAGEMENT / KIT DEPARTMENT OF INFORMATICS



## Table Of Contents

<b>1. General information</b> .....	<b>7</b>
1.1. Structural elements .....	7
1.2. Begin and completion of a module .....	7
1.3. Module versions .....	7
1.4. General and partial examinations .....	7
1.5. Types of exams .....	7
1.6. Repeating exams .....	8
1.7. Examiners .....	8
1.8. Additional accomplishments .....	8
1.9. Further information .....	8
1.10. Contact persons .....	8
<b>2. Study plan</b> .....	<b>9</b>
<b>3. Qualification goals</b> .....	<b>10</b>
<b>4. Field of study structure</b> .....	<b>11</b>
4.1. Bachelor Thesis .....	11
4.2. Orientation Exam .....	11
4.3. Information Systems .....	11
4.4. Informatics .....	12
4.5. Mathematics .....	14
4.6. Economics and Management .....	15
4.7. Law .....	16
4.8. Seminars .....	16
<b>5. Modules</b> .....	<b>17</b>
5.1. Algorithmic Methods for Hard Optimization Problems - M-INFO-101237 .....	17
5.2. Algorithms for Planar Graphs - M-INFO-101220 .....	18
5.3. Algorithms I - M-INFO-100030 .....	19
5.4. Algorithms II - M-INFO-101173 .....	20
5.5. Applications of Operations Research - M-WIWI-101413 .....	21
5.6. Applied Informatics - M-WIWI-101430 .....	23
5.7. Applied Microeconomics - M-WIWI-101499 .....	24
5.8. Basic Notions of Computer Science - M-INFO-101170 .....	25
5.9. Basic Practical Course for the ICPC-Programming Contest - M-INFO-101230 .....	26
5.10. Business Administration - M-WIWI-105267 .....	27
5.11. Business Processes and Information Systems - M-WIWI-101476 .....	28
5.12. Cognitive Systems - M-INFO-100819 .....	29
5.13. Commercial Law - M-INFO-101191 .....	30
5.14. Computer Architecture - M-INFO-100818 .....	31
5.15. Computer Graphics - M-INFO-100856 .....	32
5.16. Computer Organization - M-INFO-103179 .....	33
5.17. Constitutional and Administrative Law - M-INFO-105247 .....	34
5.18. Curves in CAD - M-INFO-101248 .....	35
5.19. Database Systems - M-INFO-104921 .....	36
5.20. Design, Construction and Sustainability Assessment of Buildings - M-WIWI-101467 .....	37
5.21. Digital Circuits Design - M-INFO-102978 .....	38
5.22. eBusiness and Service Management - M-WIWI-101434 .....	39
5.23. Economic Policy I - M-WIWI-101668 .....	40
5.24. Economic Theory - M-WIWI-101501 .....	41
5.25. Economics - M-WIWI-101431 .....	42
5.26. eFinance - M-WIWI-101402 .....	43
5.27. Energy Economics - M-WIWI-101464 .....	44
5.28. Essentials of Finance - M-WIWI-101435 .....	45
5.29. Financial Data Science - M-WIWI-105610 .....	46
5.30. Formal Systems - M-INFO-100799 .....	47
5.31. Foundations of Marketing - M-WIWI-101424 .....	48
5.32. Fundamentals of Digital Service Systems - M-WIWI-102752 .....	50
5.33. Geometric Basics for Geometry Processing - M-INFO-100756 .....	51
5.34. Geometric Optimization - M-INFO-100730 .....	52

5.35. Human Computer Interaction - M-INFO-100729 .....	53
5.36. Human Resources and Organizations - M-WIWI-101513 .....	54
5.37. Industrial Production I - M-WIWI-101437 .....	55
5.38. Information Security - M-WIWI-104069 .....	56
5.39. Information Systems & Digital Business: Interaction - M-WIWI-104911 .....	57
5.40. Information Systems & Digital Business: Platforms - M-WIWI-104912 .....	59
5.41. Information Systems & Digital Business: Servitization - M-WIWI-104913 .....	61
5.42. Information Systems I - M-WIWI-104820 .....	62
5.43. Information Systems II - M-WIWI-104821 .....	63
5.44. Intellectual Property and Data Protection - M-INFO-101253 .....	64
5.45. Introduction in Computer Networks - M-INFO-103455 .....	65
5.46. Introduction to Civil Law - M-INFO-101190 .....	66
5.47. Introduction to Data and Information Management - M-INFO-105589 .....	67
5.48. Introduction to Operations Research - M-WIWI-101418 .....	68
5.49. Introduction to Statistics - M-WIWI-101432 .....	69
5.50. Lab Protocol Engineering - M-INFO-101247 .....	70
5.51. Lab: Working with Database Systems - M-INFO-101865 .....	71
5.52. Lego Mindstorms - Practical Course - M-INFO-102557 .....	72
5.53. Machine Learning and Data Science - M-WIWI-105482 .....	73
5.54. MARS-Based Internship - M-INFO-101245 .....	74
5.55. Mathematics I - M-MATH-104914 .....	75
5.56. Mathematics II - M-MATH-104915 .....	76
5.57. Mechano-Informatics and Robotics - M-INFO-100757 .....	77
5.58. Methodical Foundations of OR - M-WIWI-101936 .....	78
5.59. Microprocessors I - M-INFO-101183 .....	79
5.60. Mobile Computing and Internet of Things - M-INFO-101249 .....	80
5.61. Mobile Robots – Practical Course - M-INFO-101184 .....	81
5.62. Module Bachelor Thesis - M-INFO-104875 .....	82
5.63. Optimization under Uncertainty - M-WIWI-103278 .....	83
5.64. Orientation Exam - M-WIWI-104843 .....	84
5.65. Practical Course Computer Engineering: Hardware Design - M-INFO-101219 .....	85
5.66. Practical Course Web Applications and Service-Oriented Architectures (I) - M-INFO-101633 .....	86
5.67. Programming - M-INFO-101174 .....	87
5.68. Public Finance - M-WIWI-101403 .....	88
5.69. Real Estate Management - M-WIWI-101466 .....	89
5.70. Real-Time Systems - M-INFO-100803 .....	90
5.71. Robotics I - Introduction to Robotics - M-INFO-100893 .....	91
5.72. Security - M-INFO-100834 .....	92
5.73. Semantic Knowledge Management - M-WIWI-101438 .....	93
5.74. Seminar Module Economic Sciences - M-WIWI-101826 .....	94
5.75. Seminar Module Informatics - M-INFO-102058 .....	95
5.76. Seminar Module Law - M-INFO-101218 .....	96
5.77. Software Engineering I - M-INFO-101175 .....	97
5.78. Software Engineering II - M-INFO-100833 .....	98
5.79. Statistics and Econometrics - M-WIWI-101599 .....	99
5.80. Statistics and Econometrics II - M-WIWI-105414 .....	100
5.81. Strategy and Organization - M-WIWI-101425 .....	101
5.82. Supply Chain Management - M-WIWI-101421 .....	102
5.83. Surfaces for Computer Aided Design - M-INFO-101254 .....	103
5.84. Team Project Software Development - M-INFO-104809 .....	104
5.85. Telematics - M-INFO-100801 .....	105
5.86. Theoretical Informatics - M-INFO-101189 .....	106
5.87. Topics in Finance I - M-WIWI-101465 .....	107
5.88. Topics in Finance II - M-WIWI-101423 .....	108
5.89. Web Applications and Service-Oriented Architectures (I) - M-INFO-101636 .....	109
<b>6. Courses.....</b>	<b>110</b>
6.1. Advanced Lab Informatics (Bachelor) - T-WIWI-110541 .....	110
6.2. Advanced Lab Security - T-WIWI-109786 .....	115
6.3. Advanced Lab Security, Usability and Society - T-WIWI-108439 .....	116
6.4. Advanced Topics in Economic Theory - T-WIWI-102609 .....	120

6.5. Algorithmic Methods for Hard Optimization Problems - T-INFO-103334 .....	121
6.6. Algorithms for Planar Graphs - T-INFO-101986 .....	122
6.7. Algorithms I - T-INFO-100001 .....	123
6.8. Algorithms II - T-INFO-102020 .....	124
6.9. Analysis of Multivariate Data - T-WIWI-103063 .....	125
6.10. Applied Informatics – Applications of Artificial Intelligence - T-WIWI-110340 .....	126
6.11. Applied Informatics – Information Security - T-WIWI-110342 .....	128
6.12. Applied Informatics – Modelling - T-WIWI-110338 .....	130
6.13. Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services - T-WIWI-110339 .....	133
6.14. Auction & Mechanism Design - T-WIWI-102876 .....	135
6.15. B2B Sales Management - T-WIWI-111367 .....	137
6.16. Bachelor Thesis - T-INFO-109907 .....	139
6.17. Basic Notions of Computer Science - T-INFO-101964 .....	140
6.18. Basic Notions of Computer Science Pass - T-INFO-101965 .....	141
6.19. Basic Practical Course for the ICPC-Programming Contest - T-INFO-101991 .....	142
6.20. Basic Principles of Economic Policy - T-WIWI-103213 .....	143
6.21. Basics of German Company Tax Law and Tax Planning - T-WIWI-108711 .....	146
6.22. Business Process Modelling - T-WIWI-102697 .....	147
6.23. Business Strategies of Banks - T-WIWI-102626 .....	149
6.24. Civil Law for Beginners - T-INFO-103339 .....	150
6.25. Cognitive Systems - T-INFO-101356 .....	151
6.26. Competition in Networks - T-WIWI-100005 .....	152
6.27. Computer Architecture - T-INFO-101355 .....	153
6.28. Computer Graphics - T-INFO-101393 .....	154
6.29. Computer Graphics Pass - T-INFO-104313 .....	155
6.30. Computer Organization - T-INFO-103531 .....	156
6.31. Consulting in Practice - T-INFO-101975 .....	157
6.32. Consumer Behavior - T-WIWI-106569 .....	158
6.33. Curves in CAD - T-INFO-102067 .....	159
6.34. Data Science I - T-INFO-111622 .....	160
6.35. Database Systems - T-INFO-101497 .....	161
6.36. Decision Theory - T-WIWI-102792 .....	162
6.37. Deployment of Database Systems - T-INFO-101317 .....	163
6.38. Derivatives - T-WIWI-102643 .....	164
6.39. Design, Construction and Sustainability Assessment of Buildings I - T-WIWI-102742 .....	165
6.40. Design, Construction and Sustainability Assessment of Buildings II - T-WIWI-102743 .....	167
6.41. Digital Circuits Design - T-INFO-103469 .....	169
6.42. Digital Services: Foundations - T-WIWI-111307 .....	170
6.43. Economics and Behavior - T-WIWI-102892 .....	172
6.44. Economics I: Microeconomics - T-WIWI-102708 .....	174
6.45. Economics III: Introduction in Econometrics - T-WIWI-102736 .....	176
6.46. eFinance: Information Systems for Securities Trading - T-WIWI-110797 .....	177
6.47. Energy Policy - T-WIWI-102607 .....	178
6.48. Exercises in Civil Law - T-INFO-102013 .....	179
6.49. Facility Location and Strategic Supply Chain Management - T-WIWI-102704 .....	180
6.50. Financial Accounting for Global Firms - T-WIWI-107505 .....	181
6.51. Financial Data Science - T-WIWI-111238 .....	182
6.52. Financial Econometrics - T-WIWI-103064 .....	183
6.53. Financial Econometrics II - T-WIWI-110939 .....	184
6.54. Financial Intermediation - T-WIWI-102623 .....	185
6.55. Financial Management - T-WIWI-102605 .....	186
6.56. Financing and Accounting - T-WIWI-111595 .....	187
6.57. Formal Systems - T-INFO-101336 .....	188
6.58. Foundations of Interactive Systems - T-WIWI-109816 .....	189
6.59. Foundations of Mobile Business - T-WIWI-104679 .....	191
6.60. Fundamentals of Production Management - T-WIWI-102606 .....	193
6.61. Geometric Basics for Geometry Processing - T-INFO-101293 .....	194
6.62. Geometric Optimization - T-INFO-101267 .....	195
6.63. Global Optimization I - T-WIWI-102726 .....	196

6.64. Global Optimization I and II - T-WIWI-103638 .....	198
6.65. Global Optimization II - T-WIWI-102727 .....	201
6.66. Human Resource Management - T-WIWI-102909 .....	203
6.67. Human-Machine-Interaction - T-INFO-101266 .....	204
6.68. Human-Machine-Interaction Pass - T-INFO-106257 .....	205
6.69. Industrial Organization - T-WIWI-102844 .....	206
6.70. Information Systems 1 - T-WIWI-109817 .....	207
6.71. Information Systems 2 - T-WIWI-109818 .....	208
6.72. Intellectual Property and Data Protection - T-INFO-109840 .....	209
6.73. International Finance - T-WIWI-102646 .....	210
6.74. Introduction in Computer Networks - T-INFO-102015 .....	211
6.75. Introduction to Energy Economics - T-WIWI-102746 .....	212
6.76. Introduction to Game Theory - T-WIWI-102850 .....	213
6.77. Introduction to Machine Learning - T-WIWI-111028 .....	215
6.78. Introduction to Neural Networks and Genetic Algorithms - T-WIWI-111029 .....	216
6.79. Introduction to Operations Research I and II - T-WIWI-102758 .....	217
6.80. Introduction to Public Finance - T-WIWI-102877 .....	219
6.81. Introduction to Stochastic Optimization - T-WIWI-106546 .....	220
6.82. Investments - T-WIWI-102604 .....	221
6.83. Lab Protocol Engineering - T-INFO-102066 .....	222
6.84. Lab: Working with Database Systems - T-INFO-103552 .....	223
6.85. Logistics and Supply Chain Management - T-WIWI-102870 .....	224
6.86. Macroeconomic Theory - T-WIWI-109121 .....	225
6.87. Management and Marketing - T-WIWI-111594 .....	226
6.88. Management and Strategy - T-WIWI-102629 .....	227
6.89. Managing Organizations - T-WIWI-102630 .....	229
6.90. Managing the Marketing Mix - T-WIWI-102805 .....	230
6.91. MARS Basis Lab - T-INFO-102053 .....	232
6.92. Mathematics I for Information Systems - Exam - T-MATH-109942 .....	233
6.93. Mathematics I for Information Systems - Exercise - T-MATH-109943 .....	234
6.94. Mathematics II for Information Systems - Exam - T-MATH-109944 .....	235
6.95. Mathematics II for Information Systems - Exercise - T-MATH-109945 .....	236
6.96. Mechanisms and Applications of Workflow Systems - T-INFO-101257 .....	237
6.97. Mechano-Informatics and Robotics - T-INFO-101294 .....	238
6.98. Microprocessors I - T-INFO-101972 .....	239
6.99. Mobile Computing and Internet of Things - T-INFO-102061 .....	240
6.100. Mobile Robots – Practical Course - T-INFO-101992 .....	241
6.101. Modeling and OR-Software: Introduction - T-WIWI-106199 .....	242
6.102. Nonlinear Optimization I - T-WIWI-102724 .....	243
6.103. Nonlinear Optimization I and II - T-WIWI-103637 .....	245
6.104. Nonlinear Optimization II - T-WIWI-102725 .....	247
6.105. Optimization Under Uncertainty - T-WIWI-106545 .....	249
6.106. Personnel Policies and Labor Market Institutions - T-WIWI-102908 .....	250
6.107. Platform Economy - T-WIWI-109936 .....	252
6.108. Practical Course Computer Engineering: Hardware Design - T-INFO-102011 .....	253
6.109. Practical Course Computer Engineering: Hardware Design Pass - T-INFO-105983 .....	254
6.110. Practical Course Web Applications and Service-Oriented Architectures (II) - T-INFO-103119 .....	255
6.111. Practical Course: Lego Mindstorms - T-INFO-107502 .....	256
6.112. Practical Seminar Interaction - T-WIWI-109935 .....	257
6.113. Practical Seminar Platforms - T-WIWI-109937 .....	258
6.114. Practical Seminar Servitization - T-WIWI-109939 .....	259
6.115. Practical Seminar: Digital Services - T-WIWI-110888 .....	260
6.116. Problem Solving, Communication and Leadership - T-WIWI-102871 .....	261
6.117. Process Mining - T-WIWI-109799 .....	263
6.118. Production and Logistics - T-WIWI-111632 .....	265
6.119. Production Economics and Sustainability - T-WIWI-102820 .....	266
6.120. Programming - T-INFO-101531 .....	267
6.121. Programming Pass - T-INFO-101967 .....	268
6.122. Project Management in Practice - T-INFO-101976 .....	269
6.123. Public Law I & II - T-INFO-110300 .....	270

6.124. Public Revenues - T-WIWI-102739 .....	271
6.125. Public Sector Finance - T-WIWI-109590 .....	272
6.126. Real Estate Management I - T-WIWI-102744 .....	273
6.127. Real Estate Management II - T-WIWI-102745 .....	275
6.128. Real-Time Systems - T-INFO-101340 .....	277
6.129. Renewable Energy-Resources, Technologies and Economics - T-WIWI-100806 .....	278
6.130. Robotics I - Introduction to Robotics - T-INFO-108014 .....	280
6.131. Security - T-INFO-101371 .....	281
6.132. Selling IT-Solutions Professionally - T-INFO-101977 .....	282
6.133. Semantic Web Technologies - T-WIWI-110848 .....	283
6.134. Seminar in Business Administration (Bachelor) - T-WIWI-103486 .....	286
6.135. Seminar in Economics (Bachelor) - T-WIWI-103487 .....	296
6.136. Seminar in Informatics (Bachelor) - T-WIWI-103485 .....	299
6.137. Seminar in Operations Research (Bachelor) - T-WIWI-103488 .....	303
6.138. Seminar in Statistics (Bachelor) - T-WIWI-103489 .....	306
6.139. Seminar Informatics A - T-INFO-104336 .....	307
6.140. Seminar: Legal Studies I - T-INFO-101997 .....	315
6.141. Software Engineering I - T-INFO-101968 .....	316
6.142. Software Engineering I Pass - T-INFO-101995 .....	317
6.143. Software Engineering II - T-INFO-101370 .....	318
6.144. Special Topics in Information Systems - T-WIWI-109940 .....	319
6.145. Statistical Modeling of Generalized Regression Models - T-WIWI-103065 .....	320
6.146. Statistics I - T-WIWI-102737 .....	321
6.147. Statistics II - T-WIWI-102738 .....	323
6.148. Strategic Finance and Technoloy Change - T-WIWI-110511 .....	325
6.149. Supplement Applied Informatics - T-WIWI-110711 .....	326
6.150. Surfaces for Computer aided Design - T-INFO-102073 .....	327
6.151. Tactical and Operational Supply Chain Management - T-WIWI-102714 .....	328
6.152. Team Project Software Development - T-INFO-109823 .....	330
6.153. Telematics - T-INFO-101338 .....	331
6.154. Theoretical Foundations of Computer Science - T-INFO-103235 .....	333
6.155. Web Applications and Service-Oriented Architectures (I) - T-INFO-103122 .....	334
6.156. Welfare Economics - T-WIWI-102610 .....	335



## 1 General information

Welcome to the new module handbook of your study program! We are delighted that you have decided to study at the KIT Department of Economics and Management and wish you a good start into the new semester! In the following we would like to give you a short introduction to the most important terms and rules that are important in connection with the choice of modules, courses and examinations.

### 1.1 Structural elements

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).

### 1.2 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.

### 1.3 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](http://www.wiwi.kit.edu/Archiv_MHB.php).

### 1.4 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>.

### 1.5 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.

**Caution: exam type dependent on further pandemic developments**

Due to the current situation, online formats are also available for examinations that are typically offered as **presence examinations**, depending on the circumstances.

All assessments that are announced in the modules as a written exam (written exam/sP according to SPO § 4 Abs. 2, Pkt. 1) can therefore also be offered as an alternative exam assessment/PLaA (according to SPO § 4 Abs. 2, Pkt. 3) depending on further pandemic developments. And vice versa. As alternative examination formats, **a) online examinations with video supervision** (sP) and optionally a face-to-face examination in the same examination period are offered. Or **b) the Online Open Book exam** (PLaA) format.

This option applies to all modules and assessments listed in the module handbook, regardless of whether or not corresponding references are already made to them there. It is also at the discretion of the responsible examiners whether they allow a 'free shot' for their examination when determining the type of examination.

**1.6 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>.

**1.7 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.

**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.

**1.9 Further information**

For current information about studying at the KIT Department of Economics and Management, please visit our website [www.wiwi.kit.edu](http://www.wiwi.kit.edu) as well as [Instagram](#), [LinkedIn](#), and [YouTube](#). Please also see current notices and announcements for students at: <https://www.wiwi.kit.edu/studium.php>.

Information around the legal and official framework of the study program can be found in the respective study and examination regulations of your study program. These are available under the Official Announcements of KIT (<http://www.sle.kit.edu/amtlicheBekanntmachungen.php>).

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>).

**1.10 Contact persons****for Bachelor students**

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**for master students**

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## 2 Study plan

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	Mathematik I* 8 LP	Volkswirtschaftslehre 5 LP	Einführung in das Privatrecht 5 LP		
			Programmieren* 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				
			Angewandte Informatik 8 LP					
4 (SS)	30		Datenbanksysteme 4 LP		Betriebswirtschaftslehre 8 LP	Wirtschaftsprivatrecht 9 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	Seminarmodul 3 LP	
6 (SS)	28,5							
		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.

### 3 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 Field of study structure

Mandatory	
Bachelor Thesis	15 CR
Orientation Exam <i>This field will not influence the calculated grade of its parent.</i>	
Information Systems	16 CR
Informatics	54-63 CR
Mathematics	26 CR
Economics and Management	31-40 CR
Law	26 CR
Seminars	3 CR

### 4.1 Bachelor Thesis

**Credits**  
15

Mandatory		
M-INFO-104875	Module Bachelor Thesis	15 CR

### 4.2 Orientation Exam

Mandatory		
M-WIWI-104843	Orientation Exam	0 CR

### 4.3 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

**4.4 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.

<b>Mandatory</b>		
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
<b>Election block: Compulsory Elective Modules in Informatics (between 9 and 18 credits)</b>		
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-105589	Introduction to Data and Information Management	5 CR
M-WIWI-104069	Information Security	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 (II)	4 CR

**4.5 Mathematics****Credits**  
26

Mandatory		
M-WIWI-101432	<a href="#">Introduction to Statistics</a>	10 CR
M-MATH-104914	<a href="#">Mathematics I</a>	8 CR
M-MATH-104915	<a href="#">Mathematics II</a>	8 CR



## 4.6 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-101464	Energy Economics	9 CR
M-WIWI-101435	Essentials of Finance	9 CR
M-WIWI-105610	Financial Data Science	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-105482	Machine Learning and Data Science	9 CR
M-WIWI-101513	Human Resources and Organizations	9 CR
M-WIWI-101466	Real Estate Management	9 CR
M-WIWI-105414	Statistics and Econometrics II	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

**4.7 Law****Credits**  
26

<b>Mandatory</b>		
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
<b>Election block: Compulsory Elective Module in Law (at least 6 credits)</b>		
M-INFO-101253	Intellectual Property and Data Protection	6 CR

**4.8 Seminars****Credits**  
3

<b>Election block: Compulsory Elective Seminar in Informatics (at most 3 credits)</b>		
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

## 5 Modules

M

### 5.1 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	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Irregular	1 term	German	3	1

Mandatory			
T-INFO-103334	<a href="#">Algorithmic Methods for Hard Optimization Problems</a>	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

## 5.2 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	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101986	<a href="#">Algorithms for Planar Graphs</a>	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

## 5.3 Module: Algorithms I [M-INFO-100030]

**Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher

**Organisation:** KIT Department of Informatics

**Part of:** [Informatics \(mandatory\)](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each summer term	1 term	German	1	1

Mandatory			
T-INFO-100001	<a href="#">Algorithms I</a>	6 CR	Dachsbacher

## M

## 5.4 Module: Algorithms II [M-INFO-101173]

**Responsible:** Prof. Dr. Peter Sanders

**Organisation:** KIT Department of Informatics

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-102020	<a href="#">Algorithms II</a>	6 CR	Sanders



## M

## 5.5 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	3	9

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

### 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

- 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

## 5.6 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	Grading scale	Recurrence	Duration	Language	Level	Version
8	Grade to a tenth	Each term	2 terms	German	2	3

Mandatory			
T-WIWI-110339	<a href="#">Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services</a>	4 CR	Sunyaev
T-WIWI-110338	<a href="#">Applied Informatics – Modelling</a>	4 CR	Färber, Oberweis

**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

## 5.7 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	3	3

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

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

**Responsible:** Prof. Dr. Carsten Sinz  
**Organisation:** KIT Department of Informatics  
**Part of:** Informatics (mandatory)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German	1	1

Mandatory			
T-INFO-101965	Basic Notions of Computer Science Pass	0 CR	Sinz
T-INFO-101964	Basic Notions of Computer Science	6 CR	Sinz

**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

**5.9 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	pass/fail	Each summer term	1 term	German	3	1

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



## M

## 5.10 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	Grading scale	Recurrence	Duration	Language	Level	Version
8	Grade to a tenth	Each term	2 terms	German	2	2

Mandatory			
T-WIWI-111632	Production and Logistics	3 CR	Fichtner, Nickel, Schultmann
Election block: Compulsory Elective Courses (1 item)			
T-WIWI-111594	Management and Marketing	5 CR	Klarmann, Lindstädt, Nieken, Terzidis
T-WIWI-111595	Financing and Accounting	5 CR	Luedecke, Ruckes, Strych, Uhrig-Homburg, Wouters

**Competence Certificate**

The assessments of the courses are written examinations.

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.

**Workload**

The total workload for this module is approximately 240 hours (8 credits). The distribution is done according to the credit points of the courses of the module.

The total number of hours per course is calculated from the time required to attend the 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

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

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> German	<b>Level</b> 3	<b>Version</b> 6
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Election block: Compulsory Elective Courses (between 1 and 2 items)			
T-WIWI-102697	<a href="#">Business Process Modelling</a>	4,5 CR	Oberweis
T-WIWI-109799	<a href="#">Process Mining</a>	4,5 CR	Oberweis
Election block: Supplementary Courses (between 0 and 1 items)			
T-WIWI-110711	<a href="#">Supplement Applied Informatics</a>	4,5 CR	Professorenschaft des Instituts AIFB
T-WIWI-104679	<a href="#">Foundations of Mobile Business</a>	4,5 CR	Oberweis
T-WIWI-110541	<a href="#">Advanced Lab Informatics (Bachelor)</a>	4,5 CR	Professorenschaft des Instituts AIFB

**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

## 5.12 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101356	<a href="#">Cognitive Systems</a>	6 CR	Neumann, Waibel

## M

## 5.13 Module: Commercial Law [M-INFO-101191]

**Responsible:** Prof. Dr. Thomas Dreier  
**Organisation:** KIT Department of Informatics  
**Part of:** Law (mandatory)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	3 terms	German	1	3

Mandatory			
T-INFO-102013	<a href="#">Exercises in Civil Law</a>	9 CR	Dreier, Matz

## M

## 5.14 Module: Computer Architecture [M-INFO-100818]

**Responsible:** Prof. Dr. Wolfgang Karl

**Organisation:** KIT Department of Informatics

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101355	<a href="#">Computer Architecture</a>	6 CR	Karl

## M

## 5.15 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101393	<a href="#">Computer Graphics</a>	6 CR	Dachsbacher
T-INFO-104313	<a href="#">Computer Graphics Pass</a>	0 CR	Dachsbacher



## M

## 5.16 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-103531	<a href="#">Computer Organization</a>	6 CR	Karl

## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each term	2 terms	German	2	1

Mandatory			
T-INFO-110300	<a href="#">Public Law I &amp; II</a>	6 CR	Eichenhofer

**Workload**

See German version.

## M

## 5.18 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	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Irregular	1 term	German	3	1

Mandatory			
T-INFO-102067	<a href="#">Curves in CAD</a>	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

## 5.19 Module: Database Systems [M-INFO-104921]

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

<b>Credits</b> 4	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each summer term	<b>Duration</b> 1 term	<b>Language</b> German	<b>Level</b> 2	<b>Version</b> 1
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<b>Mandatory</b>			
T-INFO-101497	<a href="#">Database Systems</a>	4 CR	Böhm

## M

**5.20 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	3

Mandatory			
T-WIWI-102742	<a href="#">Design, Construction and Sustainability Assessment of Buildings I</a>	4,5 CR	Lützkendorf
T-WIWI-102743	<a href="#">Design, Construction and Sustainability Assessment of Buildings II</a>	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

## 5.21 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-103469	<a href="#">Digital Circuits Design</a>	6 CR	Karl

## M

## 5.22 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	3	10

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-111307	Digital Services: Foundations	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](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

## 5.23 Module: Economic Policy I [M-WIWI-101668]

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> German	<b>Level</b> 3	<b>Version</b> 9
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Mandatory			
T-WIWI-103213	<a href="#">Basic Principles of Economic Policy</a>	4,5 CR	Ott
Election block: Compulsory Elective Courses (1 item)			
T-WIWI-109121	<a href="#">Macroeconomic Theory</a>	4,5 CR	Brumm
T-WIWI-102739	<a href="#">Public Revenues</a>	4,5 CR	Wigger
T-WIWI-102908	<a href="#">Personnel Policies and Labor Market Institutions</a>	4,5 CR	Nieken
T-WIWI-100005	<a href="#">Competition in Networks</a>	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

## 5.24 Module: Economic Theory [M-WIWI-101501]

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

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 2 terms	<b>Language</b> German/English	<b>Level</b> 3	<b>Version</b> 3
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Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102609	<a href="#">Advanced Topics in Economic Theory</a>	4,5 CR	Mitusch
T-WIWI-102876	<a href="#">Auction &amp; Mechanism Design</a>	4,5 CR	Szech
T-WIWI-102892	<a href="#">Economics and Behavior</a>	4,5 CR	Szech
T-WIWI-102850	<a href="#">Introduction to Game Theory</a>	4,5 CR	Puppe, Reiß
T-WIWI-102844	<a href="#">Industrial Organization</a>	4,5 CR	Reiß
T-WIWI-109121	<a href="#">Macroeconomic Theory</a>	4,5 CR	Brumm
T-WIWI-102610	<a href="#">Welfare Economics</a>	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

## 5.25 Module: Economics [M-WIWI-101431]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Each term	1 term	German	1	2

Mandatory			
T-WIWI-102708	<a href="#">Economics I: Microeconomics</a>	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

## 5.26 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	3	8

Mandatory			
T-WIWI-110797	<a href="#">eFinance: Information Systems for Securities Trading</a>	4,5 CR	Weinhardt
Election block: Supplementary Courses (at least 4,5 credits)			
T-WIWI-102643	<a href="#">Derivatives</a>	4,5 CR	Uhrig-Homburg
T-WIWI-102646	<a href="#">International Finance</a>	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" 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 the focus of the lecture "eFinance: Information Systems 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

## 5.27 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	3	3

Mandatory			
T-WIWI-102746	<a href="#">Introduction to Energy Economics</a>	5,5 CR	Fichtner
Election block: Supplementary Courses (3,5 credits)			
T-WIWI-102607	<a href="#">Energy Policy</a>	3,5 CR	Wietschel
T-WIWI-100806	<a href="#">Renewable Energy-Resources, Technologies and Economics</a>	3,5 CR	Jochem

**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

## 5.28 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each summer term	1 term	German	3	2

Mandatory			
T-WIWI-102605	<a href="#">Financial Management</a>	4,5 CR	Ruckes
T-WIWI-102604	<a href="#">Investments</a>	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

## 5.29 Module: Financial Data Science [M-WIWI-105610]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Irregular	1 term	English	3	1

Mandatory			
T-WIWI-111238	<a href="#">Financial Data Science</a>	9 CR	Ulrich

### Competence Certificate

The module examination is an alternative exam assessment and consists of two parts in which a maximum of 100 points can be achieved:

In the first part of the examination, a maximum of 30 points can be achieved, which are distributed equally weighted over eight worksheets to be submitted during the semester. The worksheets of the first three weeks are representative for all following worksheets in terms of scope and degree of difficulty. With the beginning of the 4th week of the course, the handing in of the worksheets is considered to be part of the alternative exam assessment.

A maximum of 70 points can be achieved in the second part of the examination. For this part of the examination, the student write a "Final Exam" in the last week of the lecture period, which takes 2 hours.

Detailed information about the course schedule and the module exam will be announced at the first course date.

A retake opportunity for those who do not pass the module exam will take place at the end of the fourth September calendar week of the same year. The registration for the examination must be made at least 1 day before the beginning of the examination. The following applies to deregistration for the examination: Deregistration can be made online in the student portal up to 1 day before the start of the examination.

### Competence Goal

The objective of the module is to provide fundamental financial knowledge for advanced applications in Financial Data Science and Financial Machine Learning. The course teaches concepts and provides weekly Python assignments to scientifically address the following topics: Robo Advisory, Linear Factor Models, Statistical Arbitrage, Monte Carlo Simulation, and Financial Machine Learning. The course is for the students, who are interested in financial markets, as well as for the students, who are interested in Data Science. Scientific financial market knowledge helps in creating financial innovations, such as a Robo Advisor. Practical knowledge in using Python helps in coding machines, which are essential for offering automated financial market solutions.

### Content

The module covers the following topics:

- Robo Advisory: Investor preferences, Expected utility theory, Mean-variance optimal investing
- Linear Factor Models: prediction of returns, decomposition of risks, Capital Asset Pricing Model, Arbitrage Pricing Theory
- Statistical Arbitrage: ARMA-GARCH Modeling of Return Time Series
- Monte Carlo Simulation: Simulation of ARMA-GARCH processes
- Machine Learning: Least Squares Methods, Maximum Likelihood, Prediction of Returns, Prediction of Risks
- New developments in asset management: factor investing, smart beta, I-CAPM, Fama-MacBeth estimation of risk premia, factor anomalies

### Annotation

Please note that the module is only offered every second summer semester (SS2021, SS2023).

### Workload

The total workload for this module is approx. 270 hours (9 credit points). The total number of hours results from the effort for studying online videos, working on quiz questions, studying lpython-Notebooks, participating in interactive "Python Sessions" and reading the recommended literature.

## M

## 5.30 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101336	<a href="#">Formal Systems</a>	6 CR	Beckert

## M

## 5.31 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	3	7

Mandatory			
T-WIWI-102805	<a href="#">Managing the Marketing Mix</a>	4,5 CR	Klarmann
Election block: Supplementary Courses (at least 4,5 credits)			
T-WIWI-111367	<a href="#">B2B Sales Management</a>	4,5 CR	Klarmann
T-WIWI-106569	<a href="#">Consumer Behavior</a>	4,5 CR	Scheibehenne

### 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 aim of this module is to prepare students for a job in marketing or sales. Especially in technically oriented companies, employees who have a certain technical background as industrial engineers or business informatics specialists are often fit for this purpose.

Students

- are familiar with the most important concepts, procedures and theories of the four instruments of the marketing mix (product management, price management, communication management and sales management)
- have the knowledge to make decisions regarding current and future products (product innovations, e.g. by using conjoint analysis)
- know how customers perceive brands and how this perception can be influenced by the company understand how customers react to prices (e.g. using price-sales functions)
- can determine prices on the basis of conceptual and quantitative considerations know the basics of price differentiation
- are familiar with various communication instruments (e.g. TV advertising) and can design them accurately
- make communication decisions systematically (e.g. by means of media planning)
- can segment the market and position the product
- know how to assess the importance and satisfaction of customers.

Additionally when taking the course "B2B Sales Management":

- can shape the relationship with customers and sales partners and know the basics of sales organization as well as essential sales channel decisions
- know about specifics of marketing in B2B
- are able to identify different B2B business types and their peculiarities in marketing and sales
- are able to prioritize customers and calculate B2B customer lifetime value
- are able to determine value-based prices and prepare and conduct B2B sales presentations.

Additionally when taking the course "Consumer Behavior":

- know about the influences of social factors, neuronal processes and cognitive resources on consumer behavior
- know about the influences of evolutionary factors, emotions, individual differences and motivation on consumer behavior.

### 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). In the "B2B Sales Management" course, we impart knowledge about marketing and sales in environments in which companies themselves distribute and market (often technically highly complex) products to other companies ("business-to-business"). In the "Consumer Behavior" course, we provide an understanding of situational, biological, cognitive, and evolutionary factors that influence consumer behavior. This understanding is provided from an interdisciplinary perspective, incorporating relevant theories and empirical research findings from psychology, cognitive science, biology, and economics.

**Annotation**

The courses "Services Marketing and B2B Marketing" and "International Marketing" were offered for the last time in the winter semester 2020/21 and will be replaced by the course "B2B Sales Management" from the winter semester 2021/22 on. The course "Marketing Mix" will continue to be offered as normal in the summer semester 2021 and will also be retained in the long term. For further information please contact the Marketing & Sales Research Group ([marketing.iism.kit.edu](mailto:marketing.iism.kit.edu)).

**Workload**

Total effort for 9 credit points: approx. 270 hours.

The exact distribution is done according to the credit points of the courses of the module.

## M

## 5.32 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	7

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-111307	Digital Services: Foundations	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 pushesthe economic importance of digital services even further thus changing the competition environment. ICT-based interaction and individualization open up completely new dimensions of shared value between clients and providers, dynamic and scalable "service value networks" replace established value chains, digital services are provided globally crossing geographical boundaries. This module establishes a basis for further specialization in service innovation, service economics, service design, service modelling, service analytics as well as the transformation and coordination of service networks.

**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](http://www.ksri.kit.edu/teaching).

**Workload**

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

## M

## 5.33 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	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Irregular	1 term	German	3	1

Mandatory			
T-INFO-101293	<a href="#">Geometric Basics for Geometry Processing</a>	5 CR	Prautzsch

## M

## 5.34 Module: Geometric Optimization [M-INFO-100730]

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

<b>Credits</b> 3	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Irregular	<b>Duration</b> 1 term	<b>Language</b> German	<b>Level</b> 3	<b>Version</b> 1
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<b>Mandatory</b>			
T-INFO-101267	<a href="#">Geometric Optimzation</a>	3 CR	Prautzsch

## M

## 5.35 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101266	<a href="#">Human-Machine-Interaction</a>	6 CR	Beigl
T-INFO-106257	<a href="#">Human-Machine-Interaction Pass</a>	0 CR	Beigl

## M

## 5.36 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	4

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

### Competence Certificate

The assessment is carried out as partial written exams 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

## 5.37 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	3	3

Mandatory			
T-WIWI-102606	<a href="#">Fundamentals of Production Management</a>	5,5 CR	Schultmann
Election block: Supplementary Courses (3,5 credits)			
T-WIWI-102870	<a href="#">Logistics and Supply Chain Management</a>	3,5 CR	Schultmann, Wiens
T-WIWI-102820	<a href="#">Production Economics and Sustainability</a>	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

**5.38 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	3

Mandatory			
T-WIWI-110342	<a href="#">Applied Informatics - Information Security</a>	4,5 CR	Volkamer
Election block: Compulsory Elective Courses (1 item)			
T-WIWI-108439	<a href="#">Advanced Lab Security, Usability and Society</a>	4,5 CR	Volkamer
T-WIWI-109786	<a href="#">Advanced Lab Security</a>	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

## 5.39 Module: Information Systems &amp; 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	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

## 5.40 Module: Information Systems &amp; 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	5

Election block: Compulsory Elective Courses ()			
T-WIWI-111307	<a href="#">Digital Services: Foundations</a>	4,5 CR	Satzger, Weinhardt
T-WIWI-110797	<a href="#">eFinance: Information Systems for Securities Trading</a>	4,5 CR	Weinhardt
T-WIWI-109936	<a href="#">Platform Economy</a>	4,5 CR	Dorner, Weinhardt
T-WIWI-109937	<a href="#">Practical Seminar Platforms</a>	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

## 5.41 Module: Information Systems &amp; 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	3

Election block: Compulsory Elective Courses ()			
T-WIWI-111307	<a href="#">Digital Services: Foundations</a>	4,5 CR	Satzger, Weinhardt
T-WIWI-109816	<a href="#">Foundations of Interactive Systems</a>	4,5 CR	Mädche
T-WIWI-109939	<a href="#">Practical Seminar Servitization</a>	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

## 5.42 Module: Information Systems I [M-WIWI-104820]

**Responsible:** Prof. Dr. Sebastian Abeck  
 Prof. Dr. Alexander Mädche  
 Prof. Dr. Christof Weinhardt

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

**Part of:** [Information Systems](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
4	Grade to a tenth	Each winter term	1 term	German	1	1

Mandatory			
T-WIWI-109817	<a href="#">Information Systems 1</a>	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". 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 one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

**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.
- develops an understanding of the importance of interdisciplinary, systemic thinking and learns to work with students in a team

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 exercises 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

## 5.43 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	Grade to a tenth	Each summer term	1 term	German	1	1

Mandatory			
T-WIWI-109818	<a href="#">Information Systems 2</a>	4 CR	Mädche, 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**

Students

- know important integrated information systems and understand how they are being used in organisations.
- understand central concepts of IT management.
- learn the foundations of market engineering and understand how digital platforms contribute to the solution of allocation problems and how their success can be measured.
- know the foundations of digital value creation (information economy), and basic concepts for 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

## 5.44 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German	3	2

Mandatory			
T-INFO-109840	<a href="#">Intellectual Property and Data Protection</a>	6 CR	Dreier, Eichenhofer

**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

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

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

<b>Credits</b> 4	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each summer term	<b>Duration</b> 1 term	<b>Language</b> German	<b>Level</b> 2	<b>Version</b> 1
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<b>Mandatory</b>			
T-INFO-102015	<a href="#">Introduction in Computer Networks</a>	4 CR	Zitterbart

## M

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

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Each winter term	1 term	German	1	3

Mandatory			
T-INFO-103339	<a href="#">Civil Law for Beginners</a>	5 CR	Matz

## M

## 5.47 Module: Introduction to Data and Information Management [M-INFO-105589]

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (Compulsory Elective Modules in Informatics)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Each term	1 term	German/English	3	2

Election block: Introduction to Data and Information Management (at least 1 item as well as at least 5 credits)			
T-INFO-103552	<a href="#">Lab: Working with Database Systems</a>	4 CR	Böhm
T-INFO-101317	<a href="#">Deployment of Database Systems</a>	5 CR	Böhm
T-INFO-101257	<a href="#">Mechanisms and Applications of Workflow Systems</a>	5 CR	Mülle
T-INFO-101977	<a href="#">Selling IT-Solutions Professionally</a>	1,5 CR	Böhm
T-INFO-101975	<a href="#">Consulting in Practice</a>	1,5 CR	Böhm
T-INFO-101976	<a href="#">Project Management in Practice</a>	1,5 CR	Böhm
T-INFO-111622	<a href="#">Data Science I</a>	5 CR	Böhm, Fouché

### 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

## 5.48 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each summer term	2 terms	German	1	1

Mandatory			
T-WIWI-102758	<a href="#">Introduction to Operations Research I and II</a>	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

## 5.49 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	Grading scale	Recurrence	Duration	Language	Level	Version
10	Grade to a tenth	Each term	2 terms	German	1	2

Mandatory			
T-WIWI-102737	<a href="#">Statistics I</a>	5 CR	Grothe, Schienle
T-WIWI-102738	<a href="#">Statistics II</a>	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), interval 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

## 5.50 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-102066	<a href="#">Lab Protocol Engineering</a>	4 CR	Zitterbart

## M

## 5.51 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-103552	<a href="#">Lab: Working with Database Systems</a>	4 CR	Böhm

## M

## 5.52 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	pass/fail	Each winter term	1 term	German	3	2

Mandatory			
T-INFO-107502	<a href="#">Practical Course: Lego Mindstorms</a>	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

## 5.53 Module: Machine Learning and Data Science [M-WIWI-105482]

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Economics and Management \(Business Administration\)](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German/English	3	1

Mandatory			
T-WIWI-111028	<a href="#">Introduction to Machine Learning</a>	4,5 CR	Geyer-Schulz, Nazemi
T-WIWI-111029	<a href="#">Introduction to Neural Networks and Genetic Algorithms</a>	4,5 CR	Geyer-Schulz

**Competence Certificate**

The module examination is carried out in the form of partial examinations of the selected courses of the module, with which in total the minimum requirement of credit points is fulfilled. The kind of examination is described in detail for each course of this module.

**Competence Goal**

The student

- knows the main families of machine learning methods, their basic principles, assumptions and restrictions.
- can use these methods to solve data analysis problems, to support decision making or for process automation in companies and use the solutions interpreted and evaluated accordingly.
- can compare and evaluate the performance of solutions.

**Prerequisites**

None

**Content**

The module mainly focuses on methods from statistical learning (linear and logistic learning, regression, tree methods, SVMs, and shrinkage estimators) and from the field of neural and genetic procedures were presented. Furthermore, data transformations and -presentations (e.g. dimension reduction, clustering, imputation in case of missing data) and visualization techniques and appropriate inference, diagnosis and validation techniques are presented.

**Workload**

Total effort for 9 credit points: approx. 270 hours. The allocation is based on the credit points of the courses of the module.

## M

## 5.54 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	Grade to a tenth	Each term	1 term	German/English	3	1

Mandatory			
T-INFO-102053	<a href="#">MARS Basis Lab</a>	4 CR	Prautzsch

**Workload**

120 h

## M

## 5.55 Module: Mathematics I [M-MATH-104914]

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

**Organisation:** KIT Department of Mathematics

**Part of:** [Mathematics](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
8	Grade to a tenth	Each winter term	1 term	German	1	2

Mandatory			
T-MATH-109942	<a href="#">Mathematics I for Information Systems - Exam</a>	7 CR	Rieder, Weiß, Wieners
T-MATH-109943	<a href="#">Mathematics I for Information Systems - Exercise</a>	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 90 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

## 5.56 Module: Mathematics II [M-MATH-104915]

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

**Organisation:** KIT Department of Mathematics

**Part of:** [Mathematics](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
8	Grade to a tenth	Each summer term	1 term	German	1	2

Mandatory			
T-MATH-109944	<a href="#">Mathematics II for Information Systems - Exam</a>	7 CR	Rieder, Weiß, Wieners
T-MATH-109945	<a href="#">Mathematics II for Information Systems - Exercise</a>	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

## 5.57 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	Grade to a tenth	Each winter term	1 term	German/English	3	1

Mandatory			
T-INFO-101294	<a href="#">Mechano-Informatics and Robotics</a>	4 CR	Asfour

**Competence Goal**

Students understand the basics of the synergistic integration of methods from mechatronics, computer science and artificial intelligence using the example of humanoid robotics. They are acquainted with the basic concepts and methods of machine learning, the description of robot movements and actions as well as artificial neural networks and their application in robotics.

In particular, they are able to apply basic methods to problems and know relevant tools. Using research-oriented examples from humanoid robotics, students have learned – in an interactive way – to think analytically and to proceed in a structured and goal-oriented way when analyzing, formalizing and solving tasks.

**Content**

The lecture addresses topics at the interface between robotics and artificial intelligence, which are illustrated and explained based on examples from current research in the area of humanoid robotics. The lecture introduces fundamental algorithms in robotics and machine learning as well as methods for describing dynamical systems and representing robot motions and actions. This includes an introduction to artificial neural networks, the description of dynamical systems in state space as well as the learning of movement primitives. The topics and content are illustrated by practical examples from humanoid robotics.

**Recommendation**

Der Besuch des *Basispraktikums Mobile Roboter* wird empfohlen.

## M

## 5.58 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	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****5.59 Module: Microprocessors I [M-INFO-101183]****Responsible:** Prof. Dr. Wolfgang Karl**Organisation:** KIT Department of Informatics**Part of:** [Informatics \(Compulsory Elective Modules in Informatics\)](#)

<b>Credits</b> 3	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each summer term	<b>Duration</b> 1 term	<b>Language</b> German	<b>Level</b> 3	<b>Version</b> 1
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<b>Mandatory</b>			
T-INFO-101972	<a href="#">Microprocessors I</a>	3 CR	Karl

## M

## 5.60 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	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-102061	<a href="#">Mobile Computing and Internet of Things</a>	5 CR	Beigl

**Prerequisites**

None



## M

## 5.61 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	pass/fail	Each summer term	1 term	German/English	3	2

Mandatory			
T-INFO-101992	<a href="#">Mobile Robots – Practical Course</a>	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

## 5.62 Module: Module Bachelor Thesis [M-INFO-104875]

**Organisation:** KIT Department of Informatics

**Part of:** Bachelor Thesis

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
15	Grade to a tenth	Each term	1 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

## 5.63 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	3	4

Election block: Compulsory Elective Courses (between 1 and 2 items)			
T-WIWI-106546	<a href="#">Introduction to Stochastic Optimization</a>	4,5 CR	Rebennack
T-WIWI-106545	<a href="#">Optimization Under Uncertainty</a>	4,5 CR	Rebennack
Election block: Supplementary Courses (at most 1 item)			
T-WIWI-102724	<a href="#">Nonlinear Optimization I</a>	4,5 CR	Stein
T-WIWI-102714	<a href="#">Tactical and Operational Supply Chain Management</a>	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

## 5.64 Module: Orientation Exam [M-WIWI-104843]

**Responsible:** Studiendekan der KIT-Fakultät für Informatik  
Studiendekan des KIT-Studienganges

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

**Part of:** [Orientation Exam](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
0	pass/fail	Each term	2 terms	German	3	1

Mandatory			
T-INFO-101531	<a href="#">Programming</a>	5 CR	Koziolek, Reussner
T-INFO-101967	<a href="#">Programming Pass</a>	0 CR	Koziolek, Reussner
T-MATH-109943	<a href="#">Mathematics I for Information Systems - Exercise</a>	1 CR	Rieder, Weiß, Wieners
T-MATH-109942	<a href="#">Mathematics I for Information Systems - Exam</a>	7 CR	Rieder, Weiß, Wieners
T-WIWI-109817	<a href="#">Information Systems 1</a>	4 CR	Mädche

**Modelled deadline**

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

**Prerequisites**

None

**Annotation**

The deadline for taking the orientation exam shall be extended by two semesters for first-year students of the winter semester of 2018/19 and first-year students of the winter semester of 2019/20, provided that they were enrolled in the same degree program during both semesters.

For first-year students of the winter semester of 2020/2021 or for students who have changed their degree program for the winter semester of 2020/2021, the deadline for taking the orientation exam shall be extended by one semester.

**M****5.65 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-102011	<a href="#">Practical Course Computer Engineering: Hardware Design</a>	4 CR	Karl
T-INFO-105983	<a href="#">Practical Course Computer Engineering: Hardware Design Pass</a>	0 CR	Karl

**Workload**

60 h

**M****5.66 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	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Each winter term	1 term	German	3	2

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

## M

## 5.67 Module: Programming [M-INFO-101174]

**Responsible:** Prof. Dr.-Ing. Anne Koziolk  
Prof. Dr. Ralf Reussner

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (mandatory)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Each winter term	1 term	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

## 5.68 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	3	5

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

## 5.69 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	2

Mandatory			
T-WIWI-102744	<a href="#">Real Estate Management I</a>	4,5 CR	Lützkendorf
T-WIWI-102745	<a href="#">Real Estate Management II</a>	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

## 5.70 Module: Real-Time Systems [M-INFO-100803]

**Responsible:** Prof. Dr.-Ing. Thomas Längle

**Organisation:** KIT Department of Informatics

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101340	<a href="#">Real-Time Systems</a>	6 CR	Längle

## M

## 5.71 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German	3	3

Mandatory			
T-INFO-108014	<a href="#">Robotics I - Introduction to Robotics</a>	6 CR	Asfour

## M

## 5.72 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each summer term	1 term	German	3	1

Mandatory			
T-INFO-101371	<a href="#">Security</a>	6 CR	Hofheinz, Müller-Quade

## M

## 5.73 Module: Semantic Knowledge Management [M-WIWI-101438]

**Responsible:** Michael Färber  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Informatics \(Compulsory Elective Modules in Informatics\)](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	3	10

Mandatory			
T-WIWI-110848	<a href="#">Semantic Web Technologies</a>	4,5 CR	Käfer
Election block: Supplementary Courses (at least 1 item)			
T-WIWI-110340	<a href="#">Applied Informatics – Applications of Artificial Intelligence</a>	4,5 CR	Färber
T-WIWI-102697	<a href="#">Business Process Modelling</a>	4,5 CR	Oberweis
T-WIWI-110541	<a href="#">Advanced Lab Informatics (Bachelor)</a>	4,5 CR	Professorenschaft des Instituts AIFB

**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

## 5.74 Module: Seminar Module Economic Sciences [M-WIWI-101826]

**Responsible:** Studiendekan des KIT-Studienganges  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [Seminars](#)

Credits	Grading scale	Language	Level	Version
3	Grade to a tenth	German	3	1

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

## 5.75 Module: Seminar Module Informatics [M-INFO-102058]

**Responsible:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Informatics  
 KIT Department of Economics and Management  
**Part of:** [Seminars](#)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
3	Grade to a tenth	Each term	1 term	German/English	3	1

Election block: Seminar Informatics (1 item)			
T-INFO-104336	<a href="#">Seminar Informatics A</a>	3 CR	Abeck
T-WIWI-103485	<a href="#">Seminar in Informatics (Bachelor)</a>	3 CR	Professorenschaft des Instituts AIFB

## M

## 5.76 Module: Seminar Module Law [M-INFO-101218]

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
3	Grade to a tenth	Each term	1 term	German	3	1

Mandatory			
T-INFO-101997	<a href="#">Seminar: Legal Studies I</a>	3 CR	Dreier



## M

## 5.77 Module: Software Engineering I [M-INFO-101175]

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

**Organisation:** KIT Department of Informatics

**Part of:** Informatics (mandatory)

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each summer term	1 term	German	2	1

Mandatory			
T-INFO-101968	<a href="#">Software Engineering I</a>	6 CR	Koziolk, Reussner, Tichy
T-INFO-101995	<a href="#">Software Engineering I Pass</a>	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

## 5.78 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	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, domain-driven design

## M

## 5.79 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German	3	5

Mandatory			
T-WIWI-102736	<a href="#">Economics III: Introduction in Econometrics</a>	5 CR	Schienle
Election block: Supplementary Courses (between 1 and 2 items)			
T-WIWI-103063	<a href="#">Analysis of Multivariate Data</a>	4,5 CR	Grothe
T-WIWI-103064	<a href="#">Financial Econometrics</a>	4,5 CR	Schienle
T-WIWI-110939	<a href="#">Financial Econometrics II</a>	4,5 CR	Schienle
T-WIWI-103065	<a href="#">Statistical Modeling of Generalized Regression Models</a>	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

## 5.80 Module: Statistics and Econometrics II [M-WIWI-105414]

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** Economics and Management (Business Administration)

<b>Credits</b> 9	<b>Grading scale</b> Grade to a tenth	<b>Recurrence</b> Each term	<b>Duration</b> 1 term	<b>Language</b> German	<b>Level</b> 4	<b>Version</b> 2
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Election block: Compulsory Elective Courses ()			
T-WIWI-103063	<a href="#">Analysis of Multivariate Data</a>	4,5 CR	Grothe
T-WIWI-103064	<a href="#">Financial Econometrics</a>	4,5 CR	Schienle
T-WIWI-110939	<a href="#">Financial Econometrics II</a>	4,5 CR	Schienle
T-WIWI-103065	<a href="#">Statistical Modeling of Generalized Regression Models</a>	4,5 CR	Heller

**Competence Certificate**

The assessment is carried out as partial exams of the examination regulation) of the single courses of this module, whose sum of credits must meet the minimum requirement of credits of this module.

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

**Competence Goal**

The student

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

**Prerequisites**

The following module must be passed: Statistics and Econometrics [M-WIWI-101599]

**Content**

The courses provide foundations of advanced Econometric and statistical techniques for regression, time series and multivariate analysis.

**Workload**

The total workload for this module is approximately 270 hours.

## M

## 5.81 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	2 terms	German	3	4

Election block: Strategy and Organization (at least 9 credits)			
T-WIWI-102630	<a href="#">Managing Organizations</a>	3,5 CR	Lindstädt
T-WIWI-102871	<a href="#">Problem Solving, Communication and Leadership</a>	2 CR	Lindstädt
T-WIWI-102629	<a href="#">Management and Strategy</a>	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

## 5.82 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	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

## 5.83 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	Grading scale	Recurrence	Duration	Language	Level	Version
5	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-102073	<a href="#">Surfaces for Computer aided Design</a>	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

## 5.84 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	Grading scale	Recurrence	Duration	Language	Level	Version
8	Grade to a tenth	Each term	1 term	German	3	1

Mandatory			
T-INFO-109823	<a href="#">Team Project Software Development</a>	8 CR	Abeck, Reussner



## M

## 5.85 Module: Telematics [M-INFO-100801]

**Responsible:** Prof. Dr. Martina Zitterbart

**Organisation:** KIT Department of Informatics

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

Credits	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-101338	<a href="#">Telematics</a>	6 CR	Zitterbart

## M

## 5.86 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	Grading scale	Recurrence	Duration	Language	Level	Version
6	Grade to a tenth	Each winter term	1 term	German/English	2	1

Mandatory			
T-INFO-103235	<a href="#">Theoretical Foundations of Computer Science</a>	6 CR	Ueckerdt, 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

## 5.87 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	3	8

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

## 5.88 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	Grading scale	Recurrence	Duration	Language	Level	Version
9	Grade to a tenth	Each term	1 term	German/English	3	9

Election block: Compulsory Elective Courses (9 credits)			
T-WIWI-102643	<a href="#">Derivatives</a>	4,5 CR	Uhrig-Homburg
T-WIWI-110797	<a href="#">eFinance: Information Systems for Securities Trading</a>	4,5 CR	Weinhardt
T-WIWI-102623	<a href="#">Financial Intermediation</a>	4,5 CR	Ruckes
T-WIWI-107505	<a href="#">Financial Accounting for Global Firms</a>	4,5 CR	Luedecke
T-WIWI-102626	<a href="#">Business Strategies of Banks</a>	3 CR	Müller
T-WIWI-108711	<a href="#">Basics of German Company Tax Law and Tax Planning</a>	4,5 CR	Gutekunst, Wigger
T-WIWI-102646	<a href="#">International Finance</a>	3 CR	Uhrig-Homburg
T-WIWI-110511	<a href="#">Strategic Finance and Technology Change</a>	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 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 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****5.89 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	Grading scale	Recurrence	Duration	Language	Level	Version
4	Grade to a tenth	Each winter term	1 term	German	3	1

Mandatory			
T-INFO-103122	<a href="#">Web Applications and Service-Oriented Architectures (I)</a>	4 CR	Abeck







## 6 Courses





## T

## 6.1 Course: Advanced Lab Informatics (Bachelor) [T-WIWI-110541]

**Responsible:** Professorenschaft des Instituts AIFB  
**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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each term	1

Events					
ST 2021	2512204	Lab Realisation of innovative services (Bachelor)	3 SWS	Practical course / 	Oberweis, Schiefer, Schüler, Toussaint
ST 2021	2512400	Advanced Lab Development of Sociotechnical Information Systems (Bachelor)	3 SWS	Practical course / 	Sunyaev, Pandl
ST 2021	2512402	Advanced Lab Blockchain Hackathon (Bachelor)		Practical course / 	Sunyaev, Beyene, Kannengießer
ST 2021	2612554	Practical lab Security, Usability and Society (Bachelor)	3 SWS	Practical course / 	Strufe, Mayer, Arias Cabarcos, Berens, Mossano, Beckmann
WT 21/22	2500024	Praktikum Security, Usability and Society (Master)	3 SWS	Practical course	Volkamer, Mayer, Ghiglieri, Aldag, Beckmann, Mossano
WT 21/22	2512204	Lab Realisation of innovative services (Bachelor)	3 SWS	Practical course	Oberweis, Toussaint, Schüler, Schiefer
WT 21/22	2512400	Practical Course Sociotechnical Information Systems Development (Bachelor)	3 SWS	Practical course / 	Sunyaev, Pandl, Goram
WT 21/22	2512402	Advanced Lab Blockchain Hackathon (Bachelor)		Practical course / 	Sunyaev, Kannengießer, Beyene
WT 21/22	2512554	Praktikum Security, Usability and Society (Bachelor)	3 SWS	Practical course	Volkamer, Mayer, Ghiglieri, Aldag, Beckmann, Mossano
Exams					
ST 2021	7900016	Advanced Lab Development of Sociotechnical Information Systems (Bachelor)			Sunyaev
ST 2021	7900029	Practical lab Security, Usability and Society (Bachelor)			Volkamer
ST 2021	7900085	Advanced Lab Realization of innovative services (Bachelor)			Oberweis
ST 2021	7900096	Advanced Lab Blockchain Hackathon (Bachelor)			Sunyaev
WT 21/22	7900047	Advanced Lab Realization of Innovative Services (Bachelor)			Oberweis
WT 21/22	7900080	Advanced Lab Development of Sociotechnical Information Systems (Bachelor)			Sunyaev
WT 21/22	7900086	Advanced Lab Blockchain Hackathon (Bachelor)			Sunyaev
WT 21/22	7900102	Advanced Lab Information Service Engineering			Sack
WT 21/22	7900116	Advanced Lab Security, Usability and Society (Bachelor)			Volkamer

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**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:*

	<p><b>Lab Realisation of innovative services (Bachelor)</b> 2512204, SS 2021, 3 SWS, Language: German, <a href="#">Open in study portal</a></p>	<p><b>Practical course (P) Blended (On-Site/Online)</b></p>
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**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.

**Organizational issues**


Die genauen Termine und Informationen zur Anmeldung werden auf der Veranstaltungsseite bekannt gegeben.

	<p><b>Advanced Lab Development of Sociotechnical Information Systems (Bachelor)</b> 2512400, SS 2021, 3 SWS, Language: German/English, <a href="#">Open in study portal</a></p>	<p><b>Practical course (P) Online</b></p>
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**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.

	<p><b>Practical lab Security, Usability and Society (Bachelor)</b> 2612554, SS 2021, 3 SWS, Language: German/English, <a href="#">Open in study portal</a></p>	<p><b>Practical course (P) Online</b></p>
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**Content**

The internship "Security, Usability and Society" will cover topics both of usable security and privacy programming, and how to conduct user studies. This internship will be only in English. The kick-off, the presentations, and every written material to be graded must be in English. Communications with supervisors can be in German.

WiWi portal: <https://portal.wiwi.kit.edu/ys/4628>

**Important dates:**

Kick-off: 06.04.2021, 10:00-11:00 CET in Microsoft Teams - [Link](#)

Report + code submission : 07.09.2021, 23:59 CET

Presentation deadline : 20.09.2021, 23:59 CET

Presentation day: 24.09.2021, 09:00 CET

Topics:

**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.

- Notes 2.0

**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.

- Password Manager Enrolment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Visualization app to explore Facebook behavioral data collection

**Designing 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.

- Neurotechnologies, Neuroprivacy, and User Acceptance
- Expert feedback for an anti-phishing webpage template (English only)
- "Your website has been hacked" - How to inform business owners about security issues on their webpages in more sensitive ways

Please, note that registration is not required to participate in the kick-off meeting.

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](https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

**Praktikum Security, Usability and Society (Master)**

2500024, WS 21/22, 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. To reserve a place, please, register on the WiWi portal and send an email with your chosen topic, plus a back-up one, to [melanie.volkamer@kit.edu](mailto:melanie.volkamer@kit.edu). Topics are assigned first-come-first-served until all of them are filled. Topics in italics have been already assigned.

**Important dates:**

Kick-off: 04.10.2021, 10:00-11:00 CET in Microsoft Teams - [Link](#)

Report + code submission : 06.02.2022, 23:59 CET

Presentation deadline : 06.02.2022, 23:59 CET

Presentation day: 08.02.2022

Topics:

**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.

- Notes 2.0

**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*.

- Password Manager Enrolment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Cookie Consent Manager for Websites

**Designing 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.

- How to display URLs to support people's ability to detect phishing (English)
- *Studying the Effect of Static vs. Dynamic Phishing Detection*
- *How effective are QR-scanners in helping users detecting phishing emails?*

Please, note that registration is not required to participate in the kick-off meeting.

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](https://secuso.aifb.kit.edu/Studium_und_Lehre.php).

**Lab Realisation of innovative services (Bachelor)**

2512204, WS 21/22, 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.

**Organizational issues**

Die genauen Termine und Informationen zur Anmeldung werden auf der Veranstaltungsseite bekannt gegeben.

**Practical Course Sociotechnical Information Systems Development (Bachelor)**

2512400, WS 21/22, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)  
Online

**Content**

The aim of this course is to provide a practical introduction into developing socio-technical information systems, such as web platforms, mobile apps, or desktop applications. Course participants will create (individually or in groups) software solutions for specific problems from various practical domains. The course tasks comprise requirements assessment, system design, and software implementation. Furthermore, course participants will gain insights into software quality assurance methods and software documentation.

**Learning objectives:**

- Independent and self-organized realization of a software development project
- Evaluation and selection of suitable development tools and methods
- Application of modern software development methods
- Planning and execution of different development tasks: requirements assessment, system design, implementation, and quality assurance
- Project documentation
- Presentation of project results in an comprehensible and structured form

**Praktikum Security, Usability and Society (Bachelor)**

2512554, WS 21/22, 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. To reserve a place, please, register on the WiWi portal and send an email with your chosen topic, plus a back-up one, to [melanie.volkamer@kit.edu](mailto:melanie.volkamer@kit.edu). Topics are assigned first-come-first-served until all of them are filled. Topics in italics have been already assigned.

**Important dates:**

Kick-off: 04.10.2021, 10:00-11:00 CET in Microsoft Teams - [Link](#)

Report + code submission : 06.02.2022, 23:59 CET

Presentation deadline : 06.02.2022, 23:59 CET

Presentation day: 08.02.2022

Topics:

**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.

- *Notes 2.0*

**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.

- *Password Manager Enrolment Add-On*
- *Portfolio Graphical Recognition-Based Passwords with Gamepads*
- *Cookie Consent Manager for Websites*

**Designing 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.

- *How to display URLs to support people's ability to detect phishing (English)*
- *Studying the Effect of Static vs. Dynamic Phishing Detection*
- *How effective are QR-scanners in helping users detecting phishing emails?*

Please, note that registration is not required to participate in the kick-off meeting.

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](https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

T

**6.2 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	2

Events					
WT 21/22	2512557	<a href="#">Practical Course Security (Master)</a>	4 SWS	Practical course	Baumgart, Volkamer, Mayer, Leinweber, Schiffel
Exams					
WT 21/22	7900046	<a href="#">Advanced Lab Security (Master)</a>			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

**Practical Course Security (Master)**

2512557, WS 21/22, 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 ILIAS.

## T

## 6.3 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2612554	<a href="#">Practical lab Security, Usability and Society (Bachelor)</a>	3 SWS	Practical course / 	Strufe, Mayer, Arias Cabarcos, Berens, Mossano, Beckmann
WT 21/22	2500024	<a href="#">Praktikum Security, Usability and Society (Master)</a>	3 SWS	Practical course	Volkamer, Mayer, Ghiglieri, Aldag, Beckmann, Mossano
WT 21/22	2512554	<a href="#">Praktikum Security, Usability and Society (Bachelor)</a>	3 SWS	Practical course	Volkamer, Mayer, Ghiglieri, Aldag, Beckmann, Mossano
Exams					
ST 2021	7900029	<a href="#">Practical lab Security, Usability and Society (Bachelor)</a>			Volkamer
WT 21/22	7900116	<a href="#">Advanced Lab Security, Usability and Society (Bachelor)</a>			Volkamer
WT 21/22	7900307	<a href="#">Advanced Lab Security, Usability and Society (Master)</a>			Volkamer

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

### 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 (Bachelor)

2612554, SS 2021, 3 SWS, Language: German/English, [Open in study portal](#)

Practical course (P)  
Online

**Content**

The internship "Security, Usability and Society" will cover topics both of usable security and privacy programming, and how to conduct user studies. This internship will be only in English. The kick-off, the presentations, and every written material to be graded must be in English. Communications with supervisors can be in German.

WiWi portal: <https://portal.wiwi.kit.edu/ys/4628>

**Important dates:**

Kick-off: 06.04.2021, 10:00-11:00 CET in Microsoft Teams - [Link](#)

Report + code submission : 07.09.2021, 23:59 CET

Presentation deadline : 20.09.2021, 23:59 CET

Presentation day: 24.09.2021, 09:00 CET

Topics:

**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.

- Notes 2.0

**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.

- Password Manager Enrolment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Visualization app to explore Facebook behavioral data collection

**Designing 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.

- Neurotechnologies, Neuroprivacy, and User Acceptance
- Expert feedback for an anti-phishing webpage template (English only)
- "Your website has been hacked" - How to inform business owners about security issues on their webpages in more sensitive ways

Please, note that registration is not required to participate in the kick-off meeting.

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](https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

**Praktikum Security, Usability and Society (Master)**

2500024, WS 21/22, 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. To reserve a place, please, register on the WiWi portal and send an email with your chosen topic, plus a back-up one, to [melanie.volkamer@kit.edu](mailto:melanie.volkamer@kit.edu). Topics are assigned first-come-first-served until all of them are filled. Topics in italics have been already assigned.

**Important dates:**

Kick-off: 04.10.2021, 10:00-11:00 CET in Microsoft Teams - [Link](#)

Report + code submission : 06.02.2022, 23:59 CET

Presentation deadline : 06.02.2022, 23:59 CET

Presentation day: 08.02.2022

Topics:

**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.

- Notes 2.0

**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*.

- Password Manager Enrolment Add-On
- Portfolio Graphical Recognition-Based Passwords with Gamepads
- Cookie Consent Manager for Websites

**Designing 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.

- How to display URLs to support people's ability to detect phishing (English)
- *Studying the Effect of Static vs. Dynamic Phishing Detection*
- *How effective are QR-scanners in helping users detecting phishing emails?*

Please, note that registration is not required to participate in the kick-off meeting.

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](https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

**Praktikum Security, Usability and Society (Bachelor)**

2512554, WS 21/22, 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. To reserve a place, please, register on the WiWi portal and send an email with your chosen topic, plus a back-up one, to [melanie.volkamer@kit.edu](mailto:melanie.volkamer@kit.edu). Topics are assigned first-come-first-served until all of them are filled. Topics in italics have been already assigned.

**Important dates:**

Kick-off: 04.10.2021, 10:00-11:00 CET in Microsoft Teams - [Link](#)

Report + code submission : 06.02.2022, 23:59 CET

Presentation deadline : 06.02.2022, 23:59 CET

Presentation day: 08.02.2022

Topics:

**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.

- *Notes 2.0*

**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.

- *Password Manager Enrolment Add-On*
- *Portfolio Graphical Recognition-Based Passwords with Gamepads*
- *Cookie Consent Manager for Websites*

**Designing 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.

- *How to display URLs to support people's ability to detect phishing (English)*
- *Studying the Effect of Static vs. Dynamic Phishing Detection*
- *How effective are QR-scanners in helping users detecting phishing emails?*

Please, note that registration is not required to participate in the kick-off meeting.



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](https://secuso.aifb.kit.edu/Studium_und_Lehre.php) .

## T

## 6.4 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	1

Events					
ST 2021	2520527	<a href="#">Advanced Topics in Economic Theory</a>	2 SWS	Lecture / 	Mitusch, Brumm
ST 2021	2520528	<a href="#">Übung zu Advanced Topics in Economic Theory</a>	1 SWS	Practice / 	Pegorari
Exams					
ST 2021	00227	<a href="#">Advanced Topics in Economic Theory</a>			Mitusch, Brumm
ST 2021	7900329	<a href="#">Advanced Topics in Economic Theory</a>			Mitusch, Brumm

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

### 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 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
Online

### 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

**6.5 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	Grading scale	Recurrence	Version
Oral examination	5	Grade to a third	Irregular	1

T

## 6.6 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**  
Oral examination

**Credits**  
5

**Grading scale**  
Grade to a third

**Recurrence**  
Each summer term

**Version**  
1

Events					
ST 2021	24614	<a href="#">Algorithmen für planare Graphen (mit Übungen)</a>	3 SWS	Lecture / Practice (/  )	Ueckerdt, Gottesbüren
Exams					
ST 2021	7500018	<a href="#">Algorithms for Planar Graphs</a>			Ueckerdt
ST 2021	7500207	<a href="#">Algorithms for Planar Graphs</a>			Ueckerdt


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled




T

## 6.7 Course: Algorithms I [T-INFO-100001]

**Responsible:** Prof. Dr.-Ing. Carsten Dachsbacher**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-100030 - Algorithms I](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each summer term	1

Events					
ST 2021	24500	<a href="#">Algorithms I</a>	4 SWS	Lecture / Practice (/  )	Dachsbacher, Kleine Büning
Exams					
ST 2021	7500194	<a href="#">Algorithms I</a>			Dachsbacher
WT 21/22	7500281	<a href="#">Algorithms I</a>			Dachsbacher

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.8 Course: Algorithms II [T-INFO-102020]

**Responsible:** Prof. Dr. Peter Sanders  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101173 - Algorithms II](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each winter term	1

Events					
WT 21/22	24079	<a href="#">Algorithms II</a>	4 SWS	Lecture	Sanders, Seemaier, Lehmann
Exams					
ST 2021	7500464	<a href="#">Algorithms II</a>			Sanders

## T

## 6.9 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](#)  
[M-WIWI-105414 - Statistics and Econometrics II](#)

**Type**  
Written examination

**Credits**  
4,5

**Grading scale**  
Grade to a third

**Recurrence**  
Irregular

**Version**  
1

Events					
WT 21/22	2550550		2 SWS	Lecture	Grothe
WT 21/22	2550551		2 SWS	Practice	Grothe, Kächele

**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 21/22, 2 SWS, [Open in study portal](#)

Lecture (V)

**Literature**

Skript zur Vorlesung

T

## 6.10 Course: Applied Informatics – Applications of Artificial Intelligence [T-WIWI-110340]

**Responsible:** Michael Färber  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101438 - Semantic Knowledge Management](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2511314	<a href="#">Applied Informatics - Applications of Artificial Intelligence</a>	2 SWS	Lecture	Färber, Käfer
WT 21/22	2511315	<a href="#">Exercises to Applied Informatics - Applications of Artificial Intelligence</a>	1 SWS	Practice	Färber, Käfer, Nguyen
Exams					
ST 2021	7900009	<a href="#">Applied Informatics - Applications of AI (Registration until 12 July 2021)</a>			Färber
WT 21/22	7900091	<a href="#">Applied Informatics - Applications of Artificial Intelligence</a>			Färber

### 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

## Applied Informatics - Applications of Artificial Intelligence

2511314, WS 21/22, 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 21/22, 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

## 6.11 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	3

Events					
ST 2021	2511550	<a href="#">Applied Informatics - Information Security</a>	2 SWS	Lecture / 📱	Ghiglieri, Mayer
ST 2021	2511551	<a href="#">Exercise Applied Informatics - Information Security</a>	1 SWS	Practice / 📱	Berens
Exams					
ST 2021	7900064	<a href="#">Applied Informatics - Information Security (Registration until 12 July 2021)</a>			Volkamer
WT 21/22	7900074	<a href="#">Applied Informatics - Information Security</a>			Volkamer

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

### 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, for which admission must be obtained through successful participation in the exercise during the semester.

The exam takes place every semester and can be repeated at every regular examination date.

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

## V

### Applied Informatics - Information Security

2511550, SS 2021, 2 SWS, [Open in study portal](#)

Lecture (V)  
Online

### 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](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 2021, 1 SWS, [Open in study portal](#)**Practice (Ü)  
Online****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](https://secuso.aifb.kit.edu/Studium_und_Lehre.php)).

T

**6.12 Course: Applied Informatics – Modelling [T-WIWI-110338]**

**Responsible:** Michael Färber  
Prof. Dr. Andreas Oberweis

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

**Part of:** [M-WIWI-101430 - Applied Informatics](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4	Grade to a third	Each winter term	1

Events					
WT 21/22	2511030	<a href="#">Applied Informatics - Modelling</a>	2 SWS	Lecture	Oberweis, Schiefer
WT 21/22	2511031	<a href="#">Exercises to Applied Informatics - Modelling</a>	1 SWS	Practice	Oberweis, Schiefer
Exams					
ST 2021	7900018	<a href="#">Applied Informatics - Modelling (Registration until 12 July 2021)</a>			Oberweis, Färber
WT 21/22	7900003	<a href="#">Applied Informatics - Modelling</a>			Oberweis, Färber

**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 21/22, 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: 120-135 hours
- Presence time: 45 hours
- Self study: 75-90 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 21/22, 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

**6.13 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	Grading scale	Recurrence	Version
Written examination	4	Grade to a third	Each summer term	1

Events					
ST 2021	2511032	<a href="#">Applied Informatics - Principles of Internet Computing: Foundations for Emerging Technologies and Future Services</a>	2 SWS	Lecture / 	Sunyaev
ST 2021	2511033	<a href="#">Übungen zu Angewandte Informatik - Internet Computing</a>	1 SWS	Practice / 	Sunyaev, Teigeler, Beyene
Exams					
ST 2021	7900025	<a href="#">Applied Informatics - Internet Computing (Registration until 12 July 2021)</a>			Sunyaev
WT 21/22	7900004	<a href="#">Applied Informatics – Principles of Internet Computing: Foundations for Emerging Technologies and Future Services</a>			Sunyaev

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**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**

2511032, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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

## T

## 6.14 Course: Auction &amp; 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2560550	<a href="#">Auction and Mechanism Design</a>	2 SWS	Lecture / 	Szech
ST 2021	2560551	<a href="#">Übung zu Auction and Mechanism Design</a>	1 SWS	Practice / 	Szech, Huber
Exams					
ST 2021	7900161	<a href="#">Exam Auction &amp; Mechanism Design</a>			Szech
ST 2021	7900207	<a href="#">Exam Auction &amp; Mechanism Design (2)</a>			Szech

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

### Competence Certificate

The assessment consists of a written exam (60 minutes) (following S4(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

## Auction and Mechanism Design

2560550, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
Online

**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.

It depends on the future pandemic development if the assessment will be in the form of an open-book-exam (Prüfungsleistung *anderer Art*, SPO § 4 Abs. 2, Pkt. 3) or in the form of a written exam (60 minutes) (SPO §4 (2), 1).

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

## 6.15 Course: B2B Sales Management [T-WIWI-111367]

**Responsible:** Prof. Dr. Martin Klarmann  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101424 - Foundations of Marketing](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2572187	<a href="#">B2B Sales Management</a>	2 SWS	Lecture / 	Klarmann
WT 21/22	2572188	<a href="#">Übung zu B2B Vertriebsmanagement (Bachelor)</a>	1 SWS	Practice / 	Cordts, Pade

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**Competence Certificate**

The assessment of success takes place through the preparation and presentation of a sales presentation based on a use case (max 30 points) and a written exam with additional aids in the sense of an open book exam (max. 60 points). In total, a maximum of 90 points can be achieved in the course.

In the winter term 2021/22, the written exam will either take place in the lecture hall or online, depending on further pandemic developments. Further details will be announced during the lecture.

**Prerequisites**

None.

**Annotation**

For further information please contact Marketing and Sales Research Group ([marketing.iism.kit.edu](mailto:marketing.iism.kit.edu)).

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

V

**B2B Sales Management**

2572187, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Blended (On-Site/Online)

**Content****Content**

The event is designed to teach you taking on marketing responsibility in a very special business environment. This involves companies that sell and market their (often technically highly complex) products themselves to other companies, which is referred to as "business-to-business" (B2B) marketing and sales. Since traditional communication instruments (e.g. advertising) often hardly work in this environment and many projects lead to a long-term cooperation between supplier and customer, (personal) sales play a special role in marketing. Therefore, this event introduces marketing in B2B markets on the one hand and deals with questions of sales and distribution on the other hand.

Topics with regard to B2B sales management are:

- Basic aspects of B2B sales and B2B purchasing
- Understanding of marketing challenges in specific B2B business types (commodities, systems, solutions)
- Value pricing and value-based selling
- Organizational buying behavior
- Basics of B2B customer relationship management (e.g. key account management, reference customer management)
- Sales process (lead generation, sales presentations, customer-oriented selling, closing)
- Sales automation

**Learning objectives**

Students

- Are familiar with marketing and sales peculiarities and challenges in B2B environments
- Are able to identify different B2B business types and their marketing characteristics
- Are familiar with central theories of organizational buying behavior
- Are familiar with central objectives of Customer Relationship Management in B2B environments and are able to implement them with appropriate tools
- Are able to prioritize customers and calculate B2B Customer Lifetime Value
- Know how B2B sales presentations work and have also gained practical experience in this area
- Are able to determine value-based prices

**Workload**

The total workload for this course is approximately 135.0 hours.

Attendance time: 35.0 hours

Self-study: 100.0 hours

**Organization**

A detailed schedule will be announced.

**Literature**

Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T

**6.16 Course: Bachelor Thesis [T-INFO-109907]****Organisation:** KIT Department of Informatics**Part of:** [M-INFO-104875 - Module Bachelor Thesis](#)

Type	Credits	Grading scale	Recurrence	Version
Final Thesis	15	Grade to a third	Each term	1

**Final Thesis**

This course represents a final thesis. The following periods have been supplied:

<b>Submission deadline</b>	4 months
<b>Maximum extension period</b>	1 months
<b>Correction period</b>	6 weeks

T

## 6.17 Course: Basic Notions of Computer Science [T-INFO-101964]

**Responsible:** Prof. Dr. Carsten Sinz  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101170 - Basic Notions of Computer Science](#)

**Type**  
Written examination

**Credits**  
6

**Grading scale**  
Grade to a third

**Recurrence**  
Each winter term

**Version**  
1

Events					
WT 21/22	24001	<a href="#">Grundbegriffe der Informatik</a>	3 SWS	Lecture	Sinz, Kleine Büning
Exams					
ST 2021	75400100	<a href="#">Basic Notions of Computer Science</a>			Worsch

T

## 6.18 Course: Basic Notions of Computer Science Pass [T-INFO-101965]

**Responsible:** Prof. Dr. Carsten Sinz  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101170 - Basic Notions of Computer Science](#)

Type	Credits	Grading scale	Recurrence	Version
Completed coursework	0	pass/fail	Each winter term	1

Events					
WT 21/22	24002	<a href="#">Übungen zu Grundbegriffe der Informatik</a>	1 SWS	Practice	Sinz, Kleine Büning

T


## 6.19 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	Grading scale	Recurrence	Version
Completed coursework	4	pass/fail	Each summer term	2

Events					
ST 2021	24872	<a href="#">Basispraktikum zum ICPC Programmierwettbewerb</a>	2 SWS	Practical course / 	Jungeblut, Zeitz, Ueckerdt
Exams					
ST 2021	7500020	<a href="#">Basic Practical Course for the ICPC-Programming Contest</a>			Wagner, Ueckerdt

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

## T

## 6.20 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**  
Written examination

**Credits**  
4,5

**Grading scale**  
Grade to a third

**Recurrence**  
see Annotations

**Version**  
1

Events					
ST 2021	2560280	<a href="#">Basic Principles of Economic Policy</a>	2 SWS	Lecture / ✕	Ott
ST 2021	2560281	<a href="#">Exercises of Basic Principles of Economic Policy</a>	1 SWS	Practice / ✕	Ott, Scheu
Exams					
ST 2021	7900106	<a href="#">Basic Principles of Economic Policy</a>			Ott
WT 21/22	7900079	<a href="#">Basic Principles of Economic Policy</a>			Ott

Legend: Online, Blended (On-Site/Online), On-Site, ✕ Cancelled

#### Competence Certificate

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

#### Prerequisites

None

#### Recommendation

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

**Annotation**

Please note that the lecture will not be held in summer semester 2021. The exam is offered.

**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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Cancelled



**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.

**Organizational issues**

Zugehörige Veranstaltung: Übungen zur Einführung in die Wirtschaftspolitik [2560281]

Die Vorlesung wird im SoSe 2021 nicht gelesen. Die Prüfung findet statt. Vorbereitungsunterlagen finden Sie im Ilias.

**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 2021, 1 SWS, Language: German, [Open in study portal](#)

**Practice (Ü)  
Cancelled**

**Organizational issues**

Zugehörige Veranstaltung: [2560280] Einführung in die Wirtschaftspolitik

Die Vorlesung und Übung wird im SoSe 2021 nicht gelesen. Die Prüfung findet statt. Vorbereitungsunterlagen finden Sie im Ilias - insbesondere die Video Übungsaufzeichnungen vom SoSe 2020 sind zur Verfügung gestellt.

**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

## 6.21 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	2

Events					
WT 21/22	2560134	<a href="#">Basics of German Company Tax Law and Tax Planning</a>	3 SWS	Lecture /	Wigger, Gutekunst
Exams					
ST 2021	790unbe	<a href="#">Basics of German Company Tax Law and Tax Planning</a>			Wigger
WT 21/22	790unbe	<a href="#">Basics of German Company Tax Law and Tax Planning</a>			Wigger

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1.5 h written exam (following Art. 4, para. 2, clause 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 21/22, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Content****Workload:**


The total workload for this course is approximately 135.0 hours. For further information see German version.

## T

## 6.22 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	2

Events					
WT 21/22	2511210	<a href="#">Business Process Modelling</a>	2 SWS	Lecture	Oberweis
WT 21/22	2511211	<a href="#">Exercise Business Process Modelling</a>	1 SWS	Practice / 	Oberweis, Schüler
Exams					
ST 2021	7900047	<a href="#">Business Process Modelling (Registration until 12 July 2021)</a>			Oberweis
WT 21/22	7900015	<a href="#">Business Process Modelling</a>			Oberweis

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**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:

## V

**Business Process Modelling**

2511210, WS 21/22, 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

## 6.23 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	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	1

Events					
ST 2021	2530299	<a href="#">Business Strategies of Banks</a>	2 SWS	Lecture / <b>X</b>	Müller
WT 21/22	2530299	<a href="#">Business Strategies of Banks</a>	2 SWS	Lecture	Müller
Exams					
ST 2021	7900079	<a href="#">Business Strategies of Banks</a>			Müller
WT 21/22	7900064	<a href="#">Business Strategies of Banks</a>			Müller, Ruckes

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Cancelled

**Literature****Weiterführende Literatur:**

- Ein Skript wird im Verlauf der Veranstaltung kapitelweise ausgeteilt.
- Hartmann-Wendels, Thomas; Pfingsten, Andreas; Weber, Martin; 2014, Bankbetriebslehre, 6. Auflage, Springer

## V

**Business Strategies of Banks**

2530299, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

**Organizational issues**

Die Veranstaltung findet nur statt, wenn sie in Präsenz stattfinden kann.

Termine und Räume laut Ankündigung am Institut.

**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

## 6.24 Course: Civil Law for Beginners [T-INFO-103339]

**Responsible:** Dr. Yvonne Matz  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101190 - Introduction to Civil Law](#)


**Type**  
Written examination





**Credits**  
5

**Grading scale**  
Grade to a third

**Recurrence**  
Each winter term

**Version**  
3

Events					
WT 21/22	24012	<a href="#">Civil Law for Beginners</a>	4 SWS	Lecture / 	Matz
Exams					
ST 2021	7500041	<a href="#">Civil Law for Beginners</a>			Dreier, Matz

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.25 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**  
Written examination





**Credits**  
6

**Grading scale**  
Grade to a third

**Recurrence**  
Each summer term

**Version**  
1

Events					
ST 2021	24572	<a href="#">Kognitive Systeme</a>	4 SWS	Lecture / Practice (/  )	Waibel, Stüker, Neumann
Exams					
ST 2021	7500157	<a href="#">Cognitive Systems</a>			Waibel, Neumann
WT 21/22	7500158	<a href="#">Cognitive Systems Waibel/Neumann</a>			Waibel, Neumann

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

## T

## 6.26 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	3

Events					
WT 21/22	2561204	<a href="#">Competition in Networks</a>	2 SWS	Lecture	Mitusch
WT 21/22	2561205	<a href="#">Übung zu Wettbewerb in Netzen</a>	1 SWS	Practice	Wisotzky, Mitusch, Corbo
Exams					
ST 2021	7900274	<a href="#">Competition in Networks</a>			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 21/22, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

**Content**

Network or infrastructure industries like telecommunication, transport, and utilities form the backbone of modern economies. The lecture provides an overview of the economic characteristics of network industries. The planning of networks is complicated by the multitude of aspects involved (like spatial differentiation and the like). The interactions of different companies - competition or cooperation or both - are characterized by complex interdependencies within the networks: network effects, economies of scale, effects of vertical integration, switching costs, standardization, compatibility etc. appear increasingly in these sectors and even tend to appear in combination. Additionally, government interventions can often be observed, partly driven by the aims of competition policy and partly driven by the aims industrial policy. All these issues are brought up, analyzed formally (in part) and illustrated by several examples in the lecture

**Literature**

Literatur und Skripte werden in der Veranstaltung angegeben.




T

## 6.27 Course: Computer Architecture [T-INFO-101355]

**Responsible:** Prof. Dr. Wolfgang Karl  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-100818 - Computer Architecture](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each summer term	1

Events					
ST 2021	2424570	<a href="#">Computer structures</a>	3 SWS	Lecture / 	Karl
Exams					
ST 2021	7500190	<a href="#">Computer Architecture</a>			Karl

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.28 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**  
Written examination

**Credits**  
6

**Grading scale**  
Grade to a third

**Recurrence**  
Each winter term

**Version**  
1

Events					
WT 21/22	24081	<a href="#">Computergrafik</a>	4 SWS	Lecture / 	Dachsbacher
Exams					
ST 2021	7500257	<a href="#">Computer Graphics</a>			Dachsbacher
WT 21/22	7500430	<a href="#">Computer Graphics</a>			Dachsbacher

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.29 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**  
Completed coursework

**Credits**  
0

**Grading scale**  
pass/fail

**Recurrence**  
Each winter term

**Version**  
1

## Events

WT 21/22	24083	<a href="#">Übungen zu Computergrafik</a>		Lecture / Practice (	Jung, Dolp
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T

**6.30 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	Grading scale	Version
Written examination	6	Grade to a third	1

Events					
WT 21/22	24502	<a href="#">Computer Organization</a>	3 SWS	Lecture	Henkel, Bauer, Lehmann, Karl
WT 21/22	24505	<a href="#">Übungen zu Rechnerorganisation</a>	2 SWS	Practice	Henkel, Lehmann
Exams					
ST 2021	7500240	<a href="#">Computer Organization</a>			Henkel

**6.31 Course: Consulting in Practice [T-INFO-101975]**

**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-105589 - Introduction to Data and Information Management](#)

Type	Credits	Grading scale	Recurrence	Version
Completed coursework	1,5	pass/fail	Irregular	1

Events					
WT 21/22	24664	<a href="#">Praxis der Unternehmensberatung</a>	2 SWS	Lecture	Böhm, Lang

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

**Praxis der Unternehmensberatung**

24664, WS 21/22, 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".

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**6.32 Course: Consumer Behavior [T-WIWI-106569]**

**Responsible:** Prof. Dr. Benjamin Scheibehenne  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101424 - Foundations of Marketing](#)  
[M-WIWI-104911 - Information Systems & Digital Business: Interaction](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Once	2

**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/>).

T

## 6.33 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	Credits	Grading scale	Recurrence	Version
Oral examination	5	Grade to a third	Irregular	1

Exams			
ST 2021	7500246	<a href="#">Curves in CAD</a>	Prautzsch

T


## 6.34 Course: Data Science I [T-INFO-111622]



**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
Dr.-Ing. Edouard Fouché

**Organisation:** KIT Department of Informatics

**Part of:** [M-INFO-105589 - Introduction to Data and Information Management](#)

Type	Credits	Grading scale	Recurrence	Version
Oral examination	5	Grade to a third	Each winter term	2

Events					
WT 21/22	24114	<a href="#">Data Science 1</a>	3 SWS	Lecture / 	Fouché

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

## 6.35 Course: Database Systems [T-INFO-101497]

**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-104921 - Database Systems](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4	Grade to a third	Each summer term	1

Events					
ST 2021	24516	<a href="#">Datenbanksysteme</a>	2 SWS	Lecture / 	Böhm, Mülle
ST 2021	24522	<a href="#">Übungen zu Datenbanksysteme</a>	1 SWS	Practice / 	Böhm, Mülle
Exams					
ST 2021	7500166	<a href="#">Database Systems</a>			Böhm

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**6.36 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2520365	<a href="#">Decision Theory</a>	2 SWS	Lecture /	Ehrhart
ST 2021	2520366	<a href="#">Übungen zu Entscheidungstheorie</a>	1 SWS	Practice /	Ehrhart
Exams					
ST 2021	7900254	<a href="#">Decision Theory</a>			Ehrhart
WT 21/22	7900217	<a href="#">Decision Theory</a>			Ehrhart

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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.

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

**Decision Theory**

2520365, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Literature**

- Ehrhart, K.-M. und S.K. Berninghaus (2012): Skript zur Vorlesung Entscheidungstheorie, KIT.
- Hirshleifer und Riley (1997): The Analytics of Uncertainty and Information. London: Cambridge University Press, 4. Aufl.
- Berninghaus, S.K., K.-M. Ehrhart und W. Güth (2006): Strategische Spiele. Berlin u.a.: Springer, 2., überarbeitete und erweiterte Aufl. (oder erste Auflage, 2002)

T

**6.37 Course: Deployment of Database Systems [T-INFO-101317]****Responsible:** Prof. Dr.-Ing. Klemens Böhm**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105589 - Introduction to Data and Information Management](#)

Type	Credits	Grading scale	Recurrence	Version
Oral examination	5	Grade to a third	Each winter term	1

Exams			
ST 2021	7500090	<a href="#">Deployment of Database Systems</a>	Böhm

T

## 6.38 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2530550	<a href="#">Derivatives</a>	2 SWS	Lecture / 📱	Uhrig-Homburg
ST 2021	2530551	<a href="#">Übung zu Derivate</a>	1 SWS	Practice / 📱	Uhrig-Homburg, Eska
Exams					
ST 2021	7900111	<a href="#">Derivatives</a>			Uhrig-Homburg
WT 21/22	7900051	<a href="#">Derivatives</a>			Uhrig-Homburg

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

**Competence Certificate**

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

**Prerequisites**

None

**Recommendation**

None

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

V

**Derivatives**

2530550, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Organizational issues**

*Veranstaltungskonzept umfasst vollständige Aufzeichnungen von Vorlesung und Übung. Ergänzend bieten wir zweiwöchig freiwillige Live-Fragerunden zum fachlichen und organisatorischen Austausch an.*

**Literature**

- Hull (2012): Options, Futures, & Other Derivatives, Prentice Hall, 8th Edition

**Weiterführende Literatur:**

Cox/Rubinstein (1985): Option Markets, Prentice Hall

T

## 6.39 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2586404	<a href="#">Design and Construction of Buildings</a>	2 SWS	Lecture	Lützkendorf
WT 21/22	2586405	<a href="#">Übung zu Bauökologie I</a>	1 SWS	Practice	Rochlitzer
Exams					
WT 21/22	7900247	<a href="#">Design, Construction and Sustainability Assessment of Buildings I</a>			Lützkendorf
WT 21/22	7900248	<a href="#">Design, Construction and Sustainability Assessment of Buildings I</a>			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 21/22, 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

**6.40 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2585403	<a href="#">Übung zu Bauökologie II</a>	1 SWS	Practice /	Rochlitzer
ST 2021	2585404	<a href="#">Sustainability Assessment of Buildings</a>	2 SWS	Lecture /	Lützkendorf
Exams					
ST 2021	7900345	<a href="#">Design, Construction and Sustainability Assessment of Buildings II</a>			Lützkendorf
ST 2021	7900350	<a href="#">Design, Construction and Sustainability Assessment of Buildings II</a>			Lützkendorf

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

Depending on further pandemic developments, the exam will be offered either as a 60-minute upload exam (Open Book Exam @ Home), or as a 60-minute exam (written exam according to SPO § 4 Abs. 2, Pkt. 1).

**Prerequisites**

None

**Recommendation**

A combination with the module *Real Estate Management* and with engineering science modules from the areas building physics and structural design is recommended.

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

**Sustainability Assessment of Buildings**2585404, SS 2021, 2 SWS, Language: German, [Open in study portal](#)**Lecture (V)  
Online****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 design is 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 taken 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




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## 6.41 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	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each summer term	1

Events					
ST 2021	24007	<a href="#">Digital Circuits Design</a>	3 SWS	Lecture / 	Tahoori
Exams					
ST 2021	7500254	<a href="#">Digital Circuits Design</a>			Henkel, Karl, Tahoori

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**6.42 Course: Digital Services: Foundations [T-WIWI-111307]**

**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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2595466	<a href="#">Digital Services: Foundations</a>	2 SWS	Lecture /	Satzger, Weinhardt, Kühl
ST 2021	2595467	<a href="#">Exercise Digital Services: Foundations</a>	1 SWS	Practice /	Kühl, Schöffner, Badewitz
Exams					
ST 2021	7900307	<a href="#">Digital Services</a>			Satzger

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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-109938 "Digital Services".

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

**Digital Services: Foundations**

2595466, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
Online

**Content**

The world has been moving towards "service-led" economies: In many developed countries, services already account for more than 70% of the gross domestic product. In order to design, engineer, and manage services, traditional "goods-oriented" business models are often inappropriate. At the same time, the rapid development of information and communication technology (ICT) pushes "servitization" and the economic importance of digital services and, therefore, drives competition: Increased interaction and individualization options open up new dimensions of "value co-creation" between providers and customers; dynamic and scalable service value networks replace static value chains; services can instantly be delivered anywhere across the globe.

Building on a systematic categorization of different types of services and on the general notion of "value co-creation", we cover concepts and foundations for engineering and managing ICT-based digital services, allowing for further specialization in other KSRI/IISM courses at the Master level. Topics in this course include an introduction to services, cloud and cloud labor services, web services, service innovation, service analytics, digital economics, as well as the transformation and coordination of service value networks. Additionally, case studies, hands-on exercises, and guest lectures will illustrate the relevance of digital services in today's world. This course is held in English to acquaint students with international environments.

**Literature**

- Beverungen, D., Müller, O., Matzner, M., Mendling, J., & Vom Brocke, J. (2019). Conceptualizing smart service systems. *Electronic Markets*, 29(1), 7-18.
- Böhmman, T., Leimeister, J. M., & Möslin, K. (2014). Service systems engineering. *Business & Information Systems Engineering*, 6(2), 73-79.
- Cardoso, J., Fromm, H., Nickel, S., Satzger, G., Studer, R., & Weinhardt, C. (Eds.). (2015). *Fundamentals of service systems* (Vol. 12). Heidelberg: Springer.
- Davenport, T., & Harris, J. (2017). *Competing on analytics: Updated, with a new introduction: The new science of winning*. Harvard Business Press.
- Fromm, H., Habryn, F., & Satzger, G. (2012). Service analytics: Leveraging data across enterprise boundaries for competitive advantage. In *Globalization of professional services* (pp. 139-149). Springer, Berlin, Heidelberg.
- Ostrom, A. L., Parasuraman, A., Bowen, D. E., Patrício, L., & Voss, C. A. (2015). Service research priorities in a rapidly changing context. *Journal of Service Research*, 18(2), 127-159.
- Schüritz, R., & Satzger, G. (2016). Patterns of data-infused business model innovation. In *2016 IEEE 18th Conference on Business Informatics (CBI)* (Vol. 1, pp. 133-142). IEEE.
- Spohrer, J., Maglio, P. P., Bailey, J., & Gruhl, D. (2007). Steps toward a science of service systems. *Computer*, 40(1), 71-77.

**6.43 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2560137	<a href="#">Economics and Behavior</a>	2 SWS	Lecture /	Szech, Rau, Zhao
WT 21/22	2560138	<a href="#">Übung zu Economics and Behavior</a>	1 SWS	Practice /	Szech, Zhao

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

**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:

**Economics and Behavior**

2560137, WS 21/22, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
Online

**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.

**6.44 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	Grading scale	Recurrence	Version
Written examination	5	Grade to a third	Each winter term	1

Events					
WT 21/22	2610012	<a href="#">Economics I: Microeconomics</a>	3 SWS	Lecture	Puppe

**Competence Certificate**

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. 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:*

**Economics I: Microeconomics**

2610012, WS 21/22, 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

## 6.45 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	Grading scale	Recurrence	Version
Written examination	5	Grade to a third	Each summer term	2

Events					
ST 2021	2520016	<a href="#">Economics III: Introduction to Econometrics</a>	2 SWS	Lecture /	Schienle, Rüter
ST 2021	2520017	<a href="#">Übungen zu VWL III</a>	2 SWS	Practice /	Schienle, Rüter, Görgen
Exams					
ST 2021	7900278	<a href="#">Economics III: Introduction in Econometrics</a>			Schienle
ST 2021	7900281	<a href="#">Economics III: Introduction in Econometrics</a>			Schienle

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

### Competence Certificate

Depending on further pandemic developments, the examination will be offered either as a 90-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

### Prerequisites

None

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

## V

### Economics III: Introduction to Econometrics

2520016, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

### 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

**6.46 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2540454	<a href="#">eFinance: Information Systems for Securities Trading</a>	2 SWS	Lecture	Weinhardt, Notheisen
WT 21/22	2540455	<a href="#">Übungen zu eFinance: Wirtschaftsinformatik für den Wertpapierhandel</a>	1 SWS	Practice	Jaquart

**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.

**Annotation**

The course "eFinance: Information Systems for Securities Trading" covers different actors and their function in the securities industry in-depth, highlighting key trends in modern financial markets, such as Distributed Ledger Technology, Sustainable Finance, and Artificial Intelligence. Security prices evolve through a large number of bilateral trades, performed by market participants that have specific, well-regulated and institutionalized roles. Market microstructure is the subfield of financial economics that studies the price formation process. This process is significantly impacted by regulation and driven by technological innovation. Using the lens of theoretical economic models, this course reviews insights concerning the strategic trading behaviour of individual market participants, and models are brought market data. Analytical tools and empirical methods of market microstructure help to understand many puzzling phenomena in securities markets.

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

## V

**eFinance: Information Systems for Securities Trading**

2540454, WS 21/22, 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

## 6.47 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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each summer term	3

Events					
ST 2021	2581959	<a href="#">Energy Policy</a>	2 SWS	Lecture /	Wietschel
Exams					
ST 2021	7981959	<a href="#">Energy Policy</a>			Fichtner

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The assessment consists of a written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**

None.

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

V

**Energy Policy**

2581959, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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.

T

## 6.48 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**  
Examination of another type





**Credits**  
9

**Grading scale**  
Grade to a third

**Recurrence**  
Each term

**Version**  
2

Events					
ST 2021	24504	<a href="#">Advanced Civil Law</a>	2 SWS	Lecture / 	Matz
ST 2021	24506	<a href="#">Exercises in Civil Law</a>	2 SWS	Lecture / 	Dreier
ST 2021	24926	<a href="#">Case Studies in Civil Law</a>	2 SWS	Practice / 	Käde, Hägle
WT 21/22	24011	<a href="#">Commercial and Corporate Law</a>	2 SWS	Lecture / 	Wiele
WT 21/22	24017	<a href="#">Exercises in Civil Law</a>	2 SWS	Lecture / 	Dreier
Exams					
ST 2021	7500099	<a href="#">Wirtschaftsprivatrecht</a>			Dreier, Matz
WT 21/22	7500108	<a href="#">Commercial Law</a>			Dreier, Matz

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.49 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	4

Events					
WT 21/22	2550486	<a href="#">Facility Location and Strategic Supply Chain Management</a>	2 SWS	Lecture	Nickel
WT 21/22	2550487	<a href="#">Übungen zu Standortplanung und strategisches SCM</a>	1 SWS	Practice /	Pomes
Exams					
ST 2021	7900343	<a href="#">Facility Location and Strategic Supply Chain Management</a>			Nickel

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

### 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.

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.

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

V

## Facility Location and Strategic Supply Chain Management

2550486, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

### Literature

#### Weiterführende Literatur:

- Daskin: Network and Discrete Location: Models, Algorithms, and Applications, Wiley, 1995
- Domschke, Drexl: Logistik: Standorte, 4. Auflage, Oldenbourg, 1996
- Francis, McGinnis, White: Facility Layout and Location: An Analytical Approach, 2nd Edition, Prentice Hall, 1992
- Love, Morris, Wesolowsky: Facilities Location: Models and Methods, North Holland, 1988
- Thonemann: Operations Management - Konzepte, Methoden und Anwendungen, Pearson Studium, 2005

T

**6.50 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2530242	<a href="#">Financial Accounting for Global Firms</a>	2 SWS	Lecture	Luedecke
WT 21/22	2530243	<a href="#">Übung zu Financial Accounting for Global Firms</a>	1 SWS	Practice	Luedecke
Exams					
ST 2021	7900195	<a href="#">Financial Accounting for Global Firms</a>			Luedecke
WT 21/22	7900142	<a href="#">Financial Accounting for Global Firms</a>			Luedecke, Ruckes

**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 21/22, 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.

Coenenberg, A.G., Haller, A. und W. Schultze (2016): Jahresabschluss und Jahresabschlussanalyse, 24. Auflage. Schäffer-Poeschel Verlag Stuttgart.

T

**6.51 Course: Financial Data Science [T-WIWI-111238]**

**Responsible:** Prof. Dr. Maxim Ulrich  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-105610 - Financial Data Science](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	9	Grade to a third	see Annotations	1

Exams			
ST 2021	7900301	<a href="#">Financial Data Science</a>	Ulrich
ST 2021	7900369	<a href="#">Financial Data Science</a>	Ulrich

**Competence Certificate**

The module examination is an alternative exam assessment and consists of two parts in which a maximum of 100 points can be achieved:

In the first part of the examination, a maximum of 30 points can be achieved, which are distributed equally weighted over eight worksheets to be submitted during the semester. The worksheets of the first three weeks are representative for all following worksheets in terms of scope and degree of difficulty. With the beginning of the 4th week of the course, the handing in of the worksheets is considered to be part of the alternative exam assessment.

A maximum of 70 points can be achieved in the second part of the examination. For this part of the examination, the student write a "Final Exam" in the last week of the lecture period, which takes 2 hours.

Detailed information about the course schedule and the module exam will be announced at the first course date.

A retake opportunity for those who do not pass the module exam will take place at the end of the fourth September calendar week of the same year. The registration for the examination must be made at least 1 day before the beginning of the examination. The following applies to deregistration for the examination: Deregistration can be made online in the student portal up to 1 day before the start of the examination.

**Prerequisites**

None.

**Annotation**

Please note that the course is only offered every second summer semester (SS2021, SS2023).

T

**6.52 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](#)  
[M-WIWI-105414 - Statistics and Econometrics II](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Irregular	2

**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....

T

**6.53 Course: Financial Econometrics II [T-WIWI-110939]**

**Responsible:** Prof. Dr. Melanie Schienle  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101599 - Statistics and Econometrics](#)  
[M-WIWI-105414 - Statistics and Econometrics II](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	see Annotations	2

**Competence Certificate**

Alternative exam assessment (Takehome Exam). Details will be announced at the beginning of the course.

**Prerequisites**

None

**Recommendation**

Knowledge of the contents covered by the course "Financial Econometrics"

**Annotation**

Course language is English

The course takes place each second winter term starting in WS2020/21



T

**6.54 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2530232	<a href="#">Financial Intermediation</a>	2 SWS	Lecture	Ruckes
WT 21/22	2530233	<a href="#">Übung zu Finanzintermediation</a>	1 SWS	Practice	Ruckes, Benz
Exams					
ST 2021	7900078	<a href="#">Financial Intermediation</a>			Ruckes
WT 21/22	7900063	<a href="#">Financial Intermediation</a>			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 21/22, 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

## 6.55 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2530216	<a href="#">Financial Management</a>	2 SWS	Lecture / 	Ruckes
ST 2021	2530217	<a href="#">Übung zu Financial Management</a>	1 SWS	Practice / 	Ruckes, Wiegratz
Exams					
ST 2021	7900074	<a href="#">Financial Management</a>			Ruckes
WT 21/22	7900060	<a href="#">Financial Management</a>			Ruckes

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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

**6.56 Course: Financing and Accounting [T-WIWI-111595]**

**Responsible:** Dr. Torsten Luedecke  
 Prof. Dr. Martin Ruckes  
 Dr. Jan-Oliver Strych  
 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	Grading scale	Recurrence	Version
Written examination	5	Grade to a third	Each summer term	1

**Competence Certificate**

Written Exam. The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

T

## 6.57 Course: Formal Systems [T-INFO-101336]

**Responsible:** Prof. Dr. Bernhard Beckert  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-100799 - Formal Systems](#)

**Type**  
Written examination

**Credits**  
6

**Grading scale**  
Grade to a third

**Recurrence**  
Each winter term

**Version**  
1


Events					
WT 21/22	24086	<a href="#">Formale Systeme</a>	4 SWS	Lecture / Practice (	Beckert, Ulbrich, Weigl
Exams					
ST 2021	7500009	<a href="#">Formal Systems</a>			Beckert
WT 21/22	7500036	<a href="#">Formal Systems</a>			Beckert





T

## 6.58 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2540560	<a href="#">Foundations of Interactive Systems</a>	3 SWS	Lecture / 	Mädche
Exams					
ST 2021	7900247	<a href="#">Foundations of Interactive Systems</a>			Mädche
WT 21/22	7900326	<a href="#">Foundations of Interactive Systems</a>			Mädche

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

### 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 2021, 3 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
Online

**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.

**6.59 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	4

Events					
ST 2021	2511226	<a href="#">Grundlagen für mobile Business</a>	2 SWS	Lecture /	Schiefer, Frister
ST 2021	2511227	<a href="#">Übungen zu Grundlagen für mobile Business</a>	1 SWS	Practice /	Schiefer, Frister
Exams					
ST 2021	7900001	<a href="#">Foundations of mobile Business (Registration until 12 July 2021)</a>			Oberweis
WT 21/22	7900118	<a href="#">Foundations of mobile Business</a>			Oberweis

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

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.

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

**Grundlagen für mobile Business**

2511226, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Content**

The lecture covers the basics of mobile business with a focus on (information) technical basics. These are interlinked with the economic background in Germany.

Contents are:

1. organizational matters
2. introduction & definitions
3. mobile devices
4. mobile radio technologies
5. mobile communications market
6. mobile applications
7. digital radio technologies
8. location & context

Note: The teaching units listed above each have a different scope.

**Learning objectives:**

If you are confronted with a question in your job which affects "Mobile Business", you should be able to provide answers quickly and competently:

Market structures  
 technique  
 Possibilities for applications  
 lawsuits  
 issues

**Workload:**

The total workload for this course unit is approx. 135 hours (4.5 credit points).

**Organizational issues**

Vorlesung und Übung werden integriert angeboten.

Die Vorlesung wird in MS-Teams im verlinkten Team durchgeführt. Für eine Teilnahme bitte dort anmelden.

**Literature**

- Jochen Schiller: Mobilkommunikation (2. Aufl. 2003)  
[http://www.mi.fu-berlin.de/inf/groups/ag-tech/teaching/resources/Mobile\\_Communications/course\\_Material/index.html](http://www.mi.fu-berlin.de/inf/groups/ag-tech/teaching/resources/Mobile_Communications/course_Material/index.html)
- Martin Sauter: Grundkurs Mobile Kommunikationssysteme (6. Aufl. 2015)  
<http://link.springer.com/book/10.1007%2F978-3-658-08342-7>
- Küpper, A.: Location-based Services. Fundamentals and Operation. Wiley & Sons, 2005.
- Roth, J.: Mobile Computing. Grundlagen, Technik, Konzepte. Dpunkt.verlag, 2. Auflage, 2005.
- Mansfeld, W.: Satellitenortung und Navigation: Grundlagen, Wirkungsweise und Anwendung globaler Satellitennavigationssysteme
- Dodel, H., Häupler, D.: Satellitennavigation

**Einige relevante Informationen im Web**

- Bundesnetzagentur <http://www.bundesnetzagentur.de>  
u.a. Jahresbericht und Marktbeobachtung
- VATM-Marktstudien  
<http://www.vatm.de/vatm-marktstudien.html>
- Verbände, bspw. BITKOM ([bitkom.org](http://bitkom.org)), eco e.V. ([eco.de](http://eco.de))
- Presse, bspw. Teltarif, Heise, Golem, ...
- Statistiken (Statista Lizenz des KIT)



**6.60 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	Grading scale	Recurrence	Version
Written examination	5,5	Grade to a third	Each summer term	1

Events					
ST 2021	2581950	<a href="#">Fundamentals of Production Management</a>	2 SWS	Lecture /	Schultmann
ST 2021	2581951	<a href="#">Übungen Grundlagen der Produktionswirtschaft</a>	2 SWS	Practice /	Stallkamp, Steins
Exams					
ST 2021	7981950	<a href="#">Fundamentals of Production Management</a>			Schultmann

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The assessment consists of a written exam (90 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**

None

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

**Fundamentals of Production Management**

2581950, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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.

**Organizational issues**

Blockveranstaltung, siehe Institutsaushang

**Literature**

Wird in der Veranstaltung bekannt gegeben.

T

**6.61 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	Credits	Grading scale	Recurrence	Version
Oral examination	5	Grade to a third	Irregular	1

Exams			
ST 2021	7500245	<a href="#">Geometric Basics for Geometry Processing</a>	Prautzsch

T

**6.62 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	Grading scale	Recurrence	Version
Oral examination	3	Grade to a third	Irregular	1


Exams			
ST 2021	7500230	<a href="#">Geometric Optimization</a>	Prautzsch





T

## 6.63 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2550134	<a href="#">Globale Optimierung I</a>	2 SWS	Lecture / 	Stein
Exams					
ST 2021	7900270_SS2021_HK	<a href="#">Global Optimization I</a>			Stein

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**Competence Certificate**

Success is in the form of a written examination (60 min.) (according to § 4(2), 1 SPO). The successful completion of the exercises is required for admission to the written exam.

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.

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

V

**Globale Optimierung I**

2550134, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Content**

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Algorithms (Kelley's cutting plane method, Frank-Wolfe method, primal-dual interior point methods)

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 *nonconvex* optimization problems forms the contents of the lecture "Global Optimization II". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

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

**Literature**

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

**Weiterführende Literatur:**

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

**6.64 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	Grading scale	Recurrence	Version
Written examination	9	Grade to a third	Each summer term	1

Events					
ST 2021	2550134	<a href="#">Globale Optimierung I</a>	2 SWS	Lecture /	Stein
ST 2021	2550135	<a href="#">Übung zu Globale Optimierung I und II</a>	2 SWS	Practice /	Stein, Schwarze, Beck
ST 2021	2550136	<a href="#">Globale Optimierung II</a>	2 SWS	Lecture /	Stein
Exams					
ST 2021	7900272_SS2021_HK	<a href="#">Global Optimization I and II</a>			Stein

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The assessment of the lecture is a written examination (120 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

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.

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

**Globale Optimierung I**

2550134, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
Online**

**Content**

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of convex functions under convex constraints. It is structured as follows:

- Introduction, examples, and terminology
- Existence results for optimal points
- Optimality in convex optimization
- Duality, bounds, and constraint qualifications
- Algorithms (Kelley's cutting plane method, Frank-Wolfe method, primal-dual interior point methods)

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 *nonconvex* optimization problems forms the contents of the lecture "Global Optimization II". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

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

**Literature**

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

**Weiterführende Literatur:**

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

**Globale Optimierung II**

2550136, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Content**

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz 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 *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

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

**Literature**

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

**Weiterführende Literatur:**

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



**6.65 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2550136	<a href="#">Globale Optimierung II</a>	2 SWS	Lecture /	Stein
Exams					
ST 2021	7900271_SS2021_HK	<a href="#">Global Optimization II</a>			Stein

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The assessment of the lecture is a written examination (60 minutes) according to §4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

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.

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

**Globale Optimierung II**

2550136, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Content**

In many optimization problems from economics, engineering and natural sciences, solution algorithms are only able to efficiently identify *local* optimizers, while it is much harder to find *globally* optimal points. This corresponds to the fact that by local search it is easy to find the summit of the closest mountain, but that the search for the summit of Mount Everest is rather elaborate.

The lecture treats methods for global optimization of nonconvex functions under nonconvex constraints. It is structured as follows:

- Introduction and examples
- Convex relaxation
- Interval arithmetic
- Convex relaxation via alphaBB method
- Branch-and-bound methods
- Lipschitz 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 *convex* optimization problems forms the contents of the lecture "Global Optimization I". The lectures "Global Optimization I" and "Global Optimization II" are held consecutively *in the same semester*.

**Learning objectives:**

The student

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

**Literature**

O. Stein, Grundzüge der Globalen Optimierung, SpringerSpektrum, 2018.

**Weiterführende Literatur:**

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

**6.66 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2573005	<a href="#">Human Resource Management</a>	2 SWS	Lecture	Nieken
WT 21/22	2573006	<a href="#">Übung zu Human Resource Management</a>	1 SWS	Practice	Nieken, Mitarbeiter
Exams					
ST 2021	7900134	<a href="#">Human Resource Management</a>			Nieken

**Competence Certificate**

The assessment of this course is a written examination of 1 hour. 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 21/22, 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: 32 hours

Preparation of lecture: 52 hours

Exam preparation: 51 hours

**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

## 6.67 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	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each summer term	2

Events					
ST 2021	24659	<a href="#">Human-Computer-Interaction</a>	2 SWS	Lecture / 	Beigl
Exams					
ST 2021	7500048	<a href="#">Human-Machine-Interaction</a>			Beigl
WT 21/22	7500076	<a href="#">Human-Machine-Interaction</a>			Beigl



Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.68 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	Grading scale	Recurrence	Version
Completed coursework	0	pass/fail	Each summer term	1

Events					
ST 2021	2400095	<a href="#">Human-Computer-Interaction</a>	1 SWS	Practice / 	Beigl
ST 2021	24659	<a href="#">Human-Computer-Interaction</a>	2 SWS	Lecture / 	Beigl
Exams					
ST 2021	7500121	<a href="#">Human-Machine-Interaction</a>			Beigl

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

**6.69 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**  
Written examination

**Credits**  
4,5

**Grading scale**  
Grade to a third

**Recurrence**  
Irregular

**Version**  
1

Exams			
ST 2021	7990001	<a href="#">Industrial Organization</a>	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.

## T

## 6.70 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	Grading scale	Recurrence	Version
Written examination	4	Grade to a third	Each winter term	2

Events					
WT 21/22	2540425	<a href="#">Wirtschaftsinformatik I</a>	2 SWS	Lecture	Mädche, Weinhardt, Abeck
Exams					
ST 2021	7900279	<a href="#">Information Systems 1</a>			Mädche
WT 21/22	7900103	<a href="#">Information Systems 1</a>			Mädche

**Competence Certificate**

The assessment is monitored in the form of a written test (60 minutes) at the end of the lecture period. 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**

None

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

## V

**Wirtschaftsinformatik I**

2540425, WS 21/22, 2 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


**6.71 Course: Information Systems 2 [T-WIWI-109818]**

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

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

**Part of:** [M-WIWI-104821 - Information Systems II](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4	Grade to a third	Each summer term	1

Events					
ST 2021	2540450	<a href="#">Wirtschaftsinformatik 2</a>	2 SWS	Lecture / 	Weinhardt, Mädche, Gnewuch
Exams					
ST 2021	7900325	<a href="#">Information Systems 2</a>			Weinhardt
WT 21/22	7900220	<a href="#">Information Systems 2</a>			Weinhardt

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**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

## 6.72 Course: Intellectual Property and Data Protection [T-INFO-109840]

**Responsible:** Prof. Dr. Thomas Dreier  
Dr. Johannes Eichenhofer

**Organisation:** KIT Department of Informatics

**Part of:** [M-INFO-101253 - Intellectual Property and Data Protection](#)



**Type**  
Written examination





**Credits**  
6

**Grading scale**  
Grade to a third

**Recurrence**  
Each winter term

**Version**  
1

Events					
WT 21/22	24018	<a href="#">Datenschutzrecht</a>	2 SWS	Lecture / 	Vettermann
WT 21/22	24070	<a href="#">Industrial Property and Copyright Law</a>	2 SWS	Lecture / 	Dreier
Exams					
ST 2021	7500299	<a href="#">Intellectual Property and Data Protection</a>			Dreier, Matz

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.73 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	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	see Annotations	1

Events					
ST 2021	2530570	<a href="#">International Finance</a>	2 SWS	Lecture / 📱	Walter, Uhrig-Homburg
Exams					
ST 2021	7900097	<a href="#">International Finance</a>			Uhrig-Homburg
WT 21/22	7900052	<a href="#">International Finance</a>			Uhrig-Homburg

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

**Competence Certificate**

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

**Prerequisites**

None

**Recommendation**

None

**Annotation**

The course is offered as a 14-day or block course.

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

V

**International Finance**

2530570, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Organizational issues**

nach dem 21.04. nach Absprache

**Literature****Weiterführende Literatur:**



- Eiteman, D. et al., Multinational Business Finance, 13. Auflage, 2012.
- Solnik, B. und D. McLeavey, Global Investments, 6. Auflage, 2008.





T

## 6.74 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	Grading scale	Recurrence	Version
Written examination	4	Grade to a third	Each summer term	1

Events					
ST 2021	24519	<a href="#">Einführung in Rechnernetze</a>	2 SWS	Lecture / 	Kopmann, Neumeister, Schneider, Friebe, Jung, Zitterbart
ST 2021	24521	<a href="#">Übung zu Einführung in Rechnernetze</a>	1 SWS	Practice / 	Kopmann, Neumeister, Schneider, Friebe, Jung, Zitterbart
Exams					
ST 2021	7500116	<a href="#">Introduction to Computer Networking</a>			Zitterbart
WT 21/22	7500201	<a href="#">Introduction to Computer Networking</a>			Zitterbart

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**6.75 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	Grading scale	Recurrence	Version
Written examination	5,5	Grade to a third	Each summer term	4

Events					
ST 2021	2581010	<a href="#">Introduction to Energy Economics</a>	2 SWS	Lecture /	Fichtner
ST 2021	2581011	<a href="#">Übungen zu Einführung in die Energiewirtschaft</a>	2 SWS	Practice /	Lehmann, Sandmeier, Ardone, Fichtner
Exams					
ST 2021	7981010	<a href="#">Introduction to Energy Economics</a>			Fichtner

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The assessment consists of a written exam (90 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**

None.

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

**Introduction to Energy Economics**

2581010, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
Online**

**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

T

## 6.76 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2520525	<a href="#">Introduction to Game Theory</a>	2 SWS	Lecture / 📱	Reiß
ST 2021	2520526	<a href="#">Übungen zu Einführung in die Spieltheorie</a>	1 SWS	Practice / 📱	Peters, Reiß
Exams					
ST 2021	7990002	<a href="#">Introduction to Game Theory</a>			Reiß

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

**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**

The course Economics I: Microeconomics [2610012] must have been successfully completed.

**Recommendation**

Basic knowledge of mathematics and statistics is assumed.

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

V

**Introduction to Game Theory**

2520525, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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

**6.77 Course: Introduction to Machine Learning [T-WIWI-111028]**

**Responsible:** Prof. Dr. Andreas Geyer-Schulz  
Dr. Abdolreza Nazemi

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

**Part of:** [M-WIWI-105482 - Machine Learning and Data Science](#)

Type	Credits	Grading scale	Recurrence	Expansion	Version
Written examination	4,5	Grade to a third	Each winter term	1 terms	1

Events					
WT 21/22	2540539	<a href="#">Introduction to Machine Learning</a>	2 SWS	Lecture	Nazemi
WT 21/22	2540540	<a href="#">Übung zu Introduction to Machine Learning</a>	1 SWS	Practice	Nazemi
Exams					
ST 2021	7900319	<a href="#">Introduction to Machine Learning (Nachklausur WS 2020/2021)</a>			Geyer-Schulz

**Competence Certificate**

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five-point-steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.

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 one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.

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

## V

**Introduction to Machine Learning**

2540539, WS 21/22, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

**Content**

- Introduction
- Data Cleaning
- Data Visualization
- Linear Regression
- Logistic Regression
- Tree-based Algorithms
- Support Vector Machine
- Shrinkage Models
- Dimensionality Reduction
- Clustering

**Literature**

- Alpaydin, E. (2014). *Introduction to Machine Learning*. Third Edition, MIT Press.
- Hall, J. (2020). *Machine Learning in Business: An Introduction to the World of Data Science*. Independently published.
- James, G., Witten, D., Hastie, T., and R. Tibshirani (2013). *An Introduction to Statistical Learning: with Applications in R*. Springer.
- Tan, P. N., Steinbach, M., Karpatne, A., & Kumar, V. (2018). *Introduction to data mining*. Pearson

T



## 6.78 Course: Introduction to Neural Networks and Genetic Algorithms [T-WIWI-111029]





**Responsible:** Prof. Dr. Andreas Geyer-Schulz

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

**Part of:** [M-WIWI-105482 - Machine Learning and Data Science](#)

Type	Credits	Grading scale	Recurrence	Expansion	Version
Written examination	4,5	Grade to a third	Each summer term	1 terms	1

Events					
ST 2021	2540541	<a href="#">Introduction to Neural Networks and Genetic Algorithms</a>	2 SWS	Lecture / 	Geyer-Schulz
ST 2021	2540542	<a href="#">Übung Introduction to Neural Networks and Genetic Algorithms</a>	1 SWS	Practice / 	Geyer-Schulz
Exams					
ST 2021	7900303	<a href="#">Introduction to Neural Networks and Genetic Algorithms</a>			Geyer-Schulz

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

### Competence Certificate

Written examination (60 minutes) according to §4(2), 1 SPO. The exam is considered passed if at least 50 out of a maximum of 100 possible points are achieved. The grades are graded in five-point-steps (best grade 1.0 from 95 points). Details of the grade formation and scale will be announced in the course.

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 one grade level (0.3 or 0.4). The exact criteria for awarding a bonus will be announced at the beginning of the course.



T

**6.79 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	Grading scale	Recurrence	Version
Written examination	9	Grade to a third	see Annotations	1

Events					
ST 2021	2550040	<a href="#">Introduction to Operations Research I</a>	2 SWS	Lecture / 📺	Nickel
WT 21/22	2530043	<a href="#">Introduction to Operations Research II</a>	2 SWS	Lecture	Nickel
WT 21/22	2530044			Tutorial ( / 🗣️)	Dunke
Exams					
ST 2021	7900237	<a href="#">Introduction to Operations Research I and II</a>			Rebennack

Legend: 📺 Online, 🗣️ Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

**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 I**

2550040, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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

**V****Introduction to Operations Research II**2530043, WS 21/22, 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

**6.80 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2560131	<a href="#">Introduction to Public Finance</a>	3 SWS	Lecture /	Wigger
Exams					
ST 2021	790fiwi	<a href="#">Introduction to Public Finance</a>			Wigger
WT 21/22	790fiwi	<a href="#">Introduction to Public Finance</a>			Wigger

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

**Prerequisites**

None

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

**Introduction to Public Finance**

2560131, WS 21/22, 3 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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

## 6.81 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2550470	<a href="#">Einführung in die Stochastische Optimierung</a>	2 SWS	Lecture / 	Rebennack
ST 2021	2550471	<a href="#">Übung zur Einführung in die Stochastische Optimierung</a>	1 SWS	Practice / 	Rebennack, Sinske
ST 2021	2550474	<a href="#">Rechnerübung zur Einführung in die Stochastische Optimierung</a>	2 SWS	Practice / 	Rebennack, Sinske
Exams					
ST 2021	7900311	<a href="#">Introduction to Stochastic Optimization</a>			Rebennack

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**Competence Certificate**

Alternative exam assessment (open book exam). The exam takes place in every semester.

**Prerequisites**

None.

## T 6.82 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2530575	<a href="#">Investments</a>	2 SWS	Lecture / 📺	Uhrig-Homburg
ST 2021	2530576	<a href="#">Übung zu Investments</a>	1 SWS	Practice / 📺	Uhrig-Homburg, Eberbach
Exams					
ST 2021	7900109	<a href="#">Investments</a>			Uhrig-Homburg
WT 21/22	7900054	<a href="#">Investments</a>			Uhrig-Homburg

Legend: 📺 Online, 📺📺 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

### Competence Certificate

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

### Prerequisites

None

### Recommendation

Knowledge of Business Administration: Finance and Accounting [2610026] is recommended.

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

<div style="background-color: #76a033; color: white; padding: 5px; display: inline-block;">V</div> <b>Investments</b> 2530575, SS 2021, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Lecture (V)</b> <b>Online</b>
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### Organizational issues

*Veranstaltungskonzept umfasst vollständige Aufzeichnungen von Vorlesung und Übung. Ergänzend bieten wir zweiwöchig freiwillige Live-Fragerunden zum fachlichen und organisatorischen Austausch an.*

### Literature

#### Weiterführende Literatur:

Bodie/Kane/Marcus (2010): Essentials of Investments, 8. Aufl., McGraw-Hill Irwin, Boston

T

## 6.83 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	Grading scale	Recurrence	Version
Examination of another type	4	Grade to a third	Each winter term	2

Events					
WT 21/22	2400107	<a href="#">Basispraktikum Protocol Engineering</a>	4 SWS	Practical course	König, Zitterbart
Exams					
WT 21/22	7500023	<a href="#">Lab Protocol Engineering</a>			Zitterbart

T




## 6.84 Course: Lab: Working with Database Systems [T-INFO-103552]

**Responsible:** Prof. Dr.-Ing. Klemens Böhm**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-101865 - Lab: Working with Database Systems](#)[M-INFO-105589 - Introduction to Data and Information Management](#)

Type	Credits	Grading scale	Recurrence	Version
Completed coursework	4	pass/fail	Each winter term	2

## Events

WT 21/22	24317	<a href="#">Arbeiten mit Datenbanksystemen</a>	2 SWS	Practical course / 	Böhm, Renftle
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Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.85 Course: Logistics and Supply Chain Management [T-WIWI-102870]

**Responsible:** Prof. Dr. Frank Schultmann  
PD Dr. Marcus Wiens

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

**Part of:** [M-WIWI-101437 - Industrial Production I](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each summer term	1

Events					
ST 2021	2581996	<a href="#">Logistics and Supply Chain Management</a>	2 SWS	Lecture / 📱	Wiens, Schultmann
ST 2021	2581997	<a href="#">Übung zu Logistics and Supply Chain Management</a>	1 SWS	Practice / 📱	Diehlmann, Lüttenberg
Exams					
ST 2021	7981996	<a href="#">Logistics and Supply Chain Management</a>			Schultmann

Legend: 📱 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✕ Cancelled

### Competence Certificate

The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

### Prerequisites

None

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

V

### Logistics and Supply Chain Management

2581996, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
Online

### 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

## 6.86 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	2

Events					
WT 21/22	2560404	<a href="#">Macroeconomic Theory</a>	2 SWS	Lecture	Brumm
WT 21/22	2560405	<a href="#">Übung zu Macroeconomic Theory</a>	1 SWS	Practice	Pegorari
Exams					
ST 2021	7900313	<a href="#">Macroeconomic Theory</a>			Brumm
WT 21/22	7900264	<a href="#">Macroeconomic Theory</a>			Brumm

**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 21/22, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)

**Literature**

Literatur und Skripte werden in der Veranstaltung angegeben.

T


**6.87 Course: Management and Marketing [T-WIWI-111594]**

**Responsible:** Prof. Dr. Martin Klarmann  
 Prof. Dr. Hagen Lindstädt  
 Prof. Dr. Petra Nieken  
 Prof. Dr. Orestis Terzidis

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

**Part of:** [M-WIWI-105267 - Business Administration](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	5	Grade to a third	Each winter term	1

Events					
WT 21/22	2600023	<a href="#">Management</a>	2 SWS	Lecture / 	Nieken, Terzidis
WT 21/22	2610026	<a href="#">Marketing</a>	2 SWS	Lecture	Klarmann

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**Competence Certificate**

Written exam on the two courses "Management" and "Marketing". The examination is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

**Prerequisites**

None

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

V

**Marketing**

2610026, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)

**Literature**


Ausführliche Literaturhinweise werden in den Materialien zur Vorlesung gegeben.

T

## 6.88 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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each summer term	1

Events					
ST 2021	2577900	<a href="#">Management and Strategy</a>	2 SWS	Lecture / 	Lindstädt
Exams					
ST 2021	7900067	<a href="#">Management and Strategy</a>			Lindstädt
WT 21/22	7900199	<a href="#">Management and Strategy</a>			Lindstädt

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**Competence Certificate**

The assessment consists of a written exam (60 min) taking place at the beginn of the recess period (according to §4 (2), 1 of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date.

**Prerequisites**

None

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

V

**Management and Strategy**

2577900, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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:**

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as an open-book examination (examination performance of a different kind according to SPO § 4 para. 2, item 3), or as a 60-minute written examination (written examination according to SPO § 4 para. 2, item 1).

It is expected that the exam will take place at the beginning of the semester's lecture-free period.

The examination is offered every semester and can be repeated at any regular examination date.

**Literature**

- Pidun, U.: *Corporate Strategy: Theory and Practice*. Springer-Gabler, Wiesbaden 2019.
- Lindstädt, H.; Hauser, R.: *Strategische Wirkungsbereiche des Unternehmens*. Gabler, Wiesbaden 2004.
- Grant, R.M.: *Strategisches Management*. Pearson Studium, 5., aktualisierte Aufl., München 2006.

Die relevanten Auszüge und zusätzliche Quellen werden in der Veranstaltung bekannt gegeben.

T

**6.89 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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	3

Exams			
ST 2021	7900066	<a href="#">Managing Organizations</a>	Lindstädt
WT 21/22	7900049	<a href="#">Managing Organizations</a>	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

**6.90 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2571152	<a href="#">Managing the Marketing Mix</a>	2 SWS	Lecture /	Klarmann
ST 2021	2571153	<a href="#">Übung zu Marketing Mix (Bachelor)</a>	1 SWS	Practice /	Pade
Exams					
ST 2021	7900023	<a href="#">Managing the Marketing Mix</a>			Klarmann

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

The assessment of success takes place through the preparation and presentation of a case study (max. 30 points) as well as a written exam with additional aids in the sense of an open book exam (max. 60 points). In total, a maximum of 90 points can be achieved in the course.

In the winter term 2021/22, the written exam will either take place in the lecture hall or online, depending on further pandemic developments. Further details will be announced during the lecture.

**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](mailto:marketing.iism.kit.edu)).

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

**Managing the Marketing Mix**

2571152, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**Content**

The content of this course concentrates on the elements of the marketing mix. Therefore the main chapters are brand management, pricing, promotion and sales management.

For further information please contact Marketing & Sales Research Group ([marketing.iism.kit.edu](mailto: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, bidding procedures) and price differentiation
- are able to name and explain the relevant communication theories
- can identify crisis situations and formulate appropriate response strategies
- 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
- know the basics of sales organization
- are able to evaluate basic sales channel decisions

**Workload:**

The total workload for this course is approximately 135.0 hours.

**Literature**



Homburg, Christian (2016), Marketingmanagement, 6. Aufl., Wiesbaden.

T

## 6.91 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	Grading scale	Version
Examination of another type	4	Grade to a third	1

Events					
ST 2021	2400036	<a href="#">MARS-Basispraktikum</a>	4 SWS	Practical course / 	Xu, Prautzsch
WT 21/22	2400025	<a href="#">Praktikum</a>	2 SWS	Practical course / 	Xu, Prautzsch
Exams					
ST 2021	7500170	<a href="#">MARS basis lab</a>			Prautzsch

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled



T

**6.92 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	Grading scale	Version
Written examination	7	Grade to a third	1

Exams			
ST 2021	7700072	<a href="#">Mathematics I for Information Systems - Exam</a>	Weiß

**Annotation**

This exam is part of the orientation exam.

T

**6.93 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	Grading scale	Version
Completed coursework	1	pass/fail	2

**Annotation**

This exam is part of the orientation exam.

T


## 6.94 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	Grading scale	Version
Written examination	7	Grade to a third	1

Events					
ST 2021	0187700	<a href="#">Mathematik II für Wirtschaftsinformatik</a>	4 SWS	Lecture / 	Weiß
Exams					
ST 2021	7700021	<a href="#">Mathematics II for Information Systems - Exam</a>			Weiß

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.95 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	Grading scale	Version
Completed coursework	1	pass/fail	2

Exams			
ST 2021	7700093	<a href="#">Mathematics II for Information Systems - Exercise</a>	Weiß

T

## 6.96 Course: Mechanisms and Applications of Workflow Systems [T-INFO-101257]

**Responsible:** Jutta Mülle**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105589 - Introduction to Data and Information Management](#)**Type**  
Written examination**Credits**  
5**Grading scale**  
Grade to a third**Recurrence**  
Each winter term**Version**  
1

Events					
WT 21/22	24111	<a href="#">Konzepte und Anwendungen von Workflowsystemen</a>	3 SWS	Lecture / 	Mülle, Böhm
Exams					
ST 2021	7500094	<a href="#">Mechanisms and Applications of Workflow Systems</a>			Mülle

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**6.97 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	Grading scale	Recurrence	Version
Written examination	4	Grade to a third	Each winter term	1

Events					
WT 21/22	2400077	<a href="#">Mechano-Informatics and Robotics</a>	2 SWS	Lecture /	Asfour
Exams					
ST 2021	7500217	<a href="#">Nachprüfung: Mechano-Informatics and Robotics</a>			Asfour
WT 21/22	7500176	<a href="#">Mechano-Informatics and Robotics</a>			Asfour

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

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

**Mechano-Informatics and Robotics**

2400077, WS 21/22, 2 SWS, Language: German/English, [Open in study portal](#)

**Lecture (V)**  
**Blended (On-Site/Online)**

**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.

**Organizational issues**

Zugehörige Veranstaltungen: Empfehlung - Basispraktikum Mobile Roboter

Die Erfolgskontrolle erfolgt in Form einer schriftlichen Prüfung in englischer Sprache im Umfang von i.d.R. 60 Minuten nach § 4 Abs. 2 Nr. 1 SPO.

**Arbeitsaufwand:**

2h Präsenz

+ 2\*2h = 4h Vor/Nachbereitung

+ 30h Prüfungsvorbereitung

120h

T

## 6.98 Course: Microprocessors I [T-INFO-101972]

**Responsible:** Prof. Dr. Wolfgang Karl  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-101183 - Microprocessors I](#)


**Type**  
Oral examination

**Credits**  
3

**Grading scale**  
Grade to a third

**Recurrence**  
Each summer term

**Version**  
1

Events					
ST 2021	2424688	<a href="#">Microprocessors I</a>	2 SWS	Lecture / 	Karl
Exams					
ST 2021	7500147	<a href="#">Microprocessors I</a>			Karl

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

**6.99 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**  
Oral examination**Credits**  
5**Grading scale**  
Grade to a third**Recurrence**  
Each winter term**Version**  
1

Events					
WT 21/22	2400051	<a href="#">Mobile Computing and Internet of Things</a>	2+1 SWS	Lecture / Practice (	Beigl
Exams					
ST 2021	7500107_0621	<a href="#">Mobile Computing and Internet of Things</a>			Beigl
ST 2021	7500107_0819	<a href="#">Mobile Computing and Internet of Things</a>			Beigl
ST 2021	7500107_0930	<a href="#">Mobile Computing and Internet of Things</a>			Beigl
WT 21/22	7500145	<a href="#">Mobile Computing and Internet of Things</a>			Beigl



T

**6.100 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	Grading scale	Recurrence	Version
Completed coursework	4	pass/fail	Each summer term	2

Events					
ST 2021	24624	<a href="#">Mobile Robots - Practical Course</a>	4 SWS	Practical course /	Asfour
Exams					
ST 2021	7500264	<a href="#">Mobile Robots – Practical Course</a>			Asfour

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

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

V

**Mobile Robots - Practical Course**

24624, SS 2021, 4 SWS, Language: German, [Open in study portal](#)

**Practical course (P)  
Online**

**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.

**Organizational issues**

Die Erfolgskontrolle erfolgt nach § 4 Abs. 2 Nr. 3 SPO als Erfolgskontrolle anderer Art und besteht aus mehreren Teilaufgaben. Die Bewertung erfolgt mit den Noten "bestanden" / "nicht bestanden".

Voraussetzungen: Kenntnisse in der Programmiersprache C und in der Technischen Informatik werden vorausgesetzt.

Arbeitsaufwand: 120 h


**Modul für Bachelor Maschinenbau, Mechatronik und Informationstechnik, Elektrotechnik und Informationstechnik**





T

## 6.101 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	2

Events				
ST 2021	2550490	<a href="#">Modellieren und OR-Software: Einführung</a>	3 SWS	Practical course /  Nickel, Pomes, Bakker, Zander
Exams				
ST 2021	7900153	<a href="#">Modeling and OR-Software: Introduction</a>		Nickel

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

### 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 2021, 3 SWS, Language: German, [Open in study portal](#)

Practical course (P)  
Online

### 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.

**6.102 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	4

Events					
WT 21/22	2550111	<a href="#">Nonlinear Optimization I</a>	2 SWS	Lecture	Stein
WT 21/22	2550112	<a href="#">Exercises Nonlinear Optimization I + II</a>		Practice	Stein, Beck, Schwarze, Neumann
Exams					
ST 2021	7900252_SS2021_NK	<a href="#">Nonlinear Optimization I</a>			Stein

**Competence Certificate**

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam. 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 21/22, 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

**6.103 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	Grading scale	Recurrence	Version
Written examination	9	Grade to a third	Each winter term	6

Events					
WT 21/22	2550111	<a href="#">Nonlinear Optimization I</a>	2 SWS	Lecture	Stein
WT 21/22	2550112	<a href="#">Exercises Nonlinear Optimization I + II</a>		Practice	Stein, Beck, Schwarze, Neumann
WT 21/22	2550113	<a href="#">Nonlinear Optimization II</a>	2 SWS	Lecture	Stein
Exams					
ST 2021	7900266_SS2021_NK	<a href="#">Nonlinear Optimization I and II</a>			Stein

**Competence Certificate**

The assessment consists of a written exam (120 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

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 21/22, 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

**Nonlinear Optimization II**

2550113, WS 21/22, 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

**6.104 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	3

Events					
WT 21/22	2550112	<a href="#">Exercises Nonlinear Optimization I + II</a>		Practice	Stein, Beck, Schwarze, Neumann
WT 21/22	2550113	<a href="#">Nonlinear Optimization II</a>	2 SWS	Lecture	Stein
Exams					
ST 2021	7900258_SS2021_NK	<a href="#">Nonlinear Optimization II</a>			Stein

**Competence Certificate**

The assessment consists of a written exam (60 minutes) according to Section 4(2), 1 of the examination regulation. The successful completion of the exercises is required for admission to the written exam.

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 21/22, 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

**6.105 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**  
Written examination

**Credits**  
4,5

**Grading scale**  
Grade to a third

**Recurrence**  
Each winter term

**Version**  
3

Exams			
ST 2021	7900309	<a href="#">Optimization under Uncertainty</a>	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

## 6.106 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2573001	<a href="#">Personnel Policies and Labor Market Institutions</a>	2 SWS	Lecture / 📺	Nieken
ST 2021	2573002	<a href="#">Übungen zu Personalpolitik und Arbeitsmarktinstitutionen</a>	1 SWS	Practice / 📺	Nieken, Mitarbeiter
Exams					
ST 2021	7900133	<a href="#">Personnel Policies and Labor Market Institutions</a>			Nieken

Legend: 📺 Online, 🔄 Blended (On-Site/Online), 📍 On-Site, ✖ Cancelled

**Competence Certificate**

The assessment of this course is a written examination of 1 hour. 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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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 32 hours

Preparation of lecture 52 hours

Exam preparation 51 hours

**Literature**

Arbeitsmarktökonomik, W. Franz, Springer, 2013

**Organizational issues**

Die Vorlesungsinhalte sind als Aufzeichnungen verfügbar. An ausgewählten Vorlesungsterminen gibt es Live-Sessions. Diese werden zum Vorlesungsstart bekannt gegeben.

There are recordings of the lecture contents. There will be live sessions on selected lecture dates. These will be announced at the start of the lecture time.

**6.107 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	3

Events					
WT 21/22	2540468	<a href="#">Platform Economy</a>	2 SWS	Lecture	Weinhardt
WT 21/22	2540469	<a href="#">Übung zu Platform Economy</a>		Practice	Richter

**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:

**Platform Economy**

2540468, WS 21/22, 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](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

**6.108 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	Grading scale	Recurrence	Version
Examination of another type	4	Grade to a third	Each winter term	1

Events					
WT 21/22	2424309	<a href="#">Basispraktikum TI: Hardwarenaher Systementwurf (findet nicht statt aktuell)</a>	4 SWS	Practical course	Karl

T

**6.109 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	Grading scale	Recurrence	Version
Completed coursework	0	pass/fail	Each winter term	1

T


## 6.110 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	Grading scale	Recurrence	Version
Examination of another type	5	Grade to a third	Each winter term	2

Events					
WT 21/22	24312	<a href="#">Basispraktikum Web-Anwendungen und Serviceorientierte Architekturen (I)</a>	2 SWS	Practical course / 	Abeck, Schneider, Sanger

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**6.111 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	Grading scale	Recurrence	Version
Completed coursework	4	pass/fail	Each winter term	1

Events					
WT 21/22	24306	<a href="#">Lego Mindstorms - Laboratory</a>	3 SWS	Practical course /	Asfour
Exams					
WT 21/22	7500179	<a href="#">Lego Mindstorms - Practical Course</a>			Asfour

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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 21/22, 3 SWS, Language: German, [Open in study portal](#)

**Practical course (P)**  
**Blended (On-Site/Online)**

**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.

**Organizational issues**

Das Praktikum findet wöchentlich statt.

Nachweis: Die Erfolgskontrolle wird in der Modulbeschreibung erläutert.

Ansprechpartner: Pascal Weiner

E-Mail: [pascal.weiner@kit.edu](mailto:pascal.weiner@kit.edu)

**Empfehlung:**

Grundlegende Kenntnisse in Java sind hilfreich, aber nicht zwingend erforderlich. / Basic knowledge in JAVA is helpful but not required.

**Arbeitsaufwand:** 120 h

**Beschreibung:**

Die Aufgabenstellungen des Praktikums reichen von Aufbau und Programmierung der Lego EV3-Bausteine mit der Programmiersprache JAVA bis hin zur Lösung spezieller Aufgaben, die im Rahmen eines abschließenden Wettrennens zu lösen sind (Linien folgen, Hindernissen ausweichen, Bahnplanung).

**Literature**

Wird in der Veranstaltung bekannt gegeben.



T

**6.112 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each term	2

Events					
WT 21/22	2540555	<a href="#">Practical Seminar: Digital Services (Ba)</a>	3 SWS	Lecture	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

**6.113 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	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

**6.114 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	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

**6.115 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each summer term	1

Events					
WT 21/22	2540555	<a href="#">Practical Seminar: Digital Services (Ba)</a>	3 SWS	Lecture	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](http://www.ksri.kit.edu).

**6.116 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	Grading scale	Recurrence	Version
Written examination	2	Grade to a third	Each summer term	1

Events					
ST 2021	2577910	<a href="#">Problem solving, communication and leadership</a>	1 SWS	Lecture /	Lindstädt
Exams					
ST 2021	7900068	<a href="#">Problem Solving, Communication and Leadership</a>			Lindstädt
WT 21/22	7900070	<a href="#">Problem Solving, Communication and Leadership</a>			Lindstädt

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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, SS 2021, 1 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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:**

Depending on further pandemic developments, the examination will be offered in the summer semester 2021 either as an open-book examination (examination performance of a different kind according to SPO § 4 para. 2, item 3), or as a 60-minute written examination (written examination according to SPO § 4 para. 2, item 1).

It is expected that the exam will take place at the beginning of the semester's lecture-free period.

The examination is offered every semester and can be repeated at any regular examination date.

**Organizational issues**

Blockveranstaltung, Termine werden bekannt gegeben

**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

**6.117 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	2

Events					
ST 2021	2511204	<a href="#">Process Mining</a>	2 SWS	Lecture / 	Oberweis
ST 2021	2511205	<a href="#">Exercise Process Mining</a>	1 SWS	Practice / 	Oberweis, Schreiber
Exams					
ST 2021	7900048	<a href="#">Process Mining (Registration until 12 July 2021)</a>			Oberweis
WT 21/22	7900033	<a href="#">Process Mining</a>			Oberweis

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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

**6.118 Course: Production and Logistics [T-WIWI-111632]**

**Responsible:** Prof. Dr. Wolf Fichtner  
 Prof. Dr. Stefan Nickel  
 Prof. Dr. Frank Schultmann

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

**Part of:** [M-WIWI-105267 - Business Administration](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3	Grade to a third	Each winter term	1

**Competence Certificate**

Written examination on the course "Production and Logistics". The exam is offered at the beginning of each lecture-free period. Repeat examinations are possible at any regular examination date.

**Prerequisites**

None

T


**6.119 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	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2581960	<a href="#">Production Economics and Sustainability</a>	2 SWS	Lecture / 	Volk
Exams					
ST 2021	7981960	<a href="#">Production Economics and Sustainability</a>			Schultmann

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**Competence Certificate**

The assessment consists of an oral (30 minutes) or written exam (60 minutes) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

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

V

**Production Economics and Sustainability**

2581960, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
On-Site

**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

**6.120 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	Grading scale	Recurrence	Version
Examination of another type	5	Grade to a third	Each winter term	1

Events					
WT 21/22	24004	<a href="#">Programming</a>	4 SWS	Lecture / Practice (	Heinrich
Exams					
ST 2021	7500195	<a href="#">Programming</a>			Reussner

T

## 6.121 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**  
Completed coursework

**Credits**  
0

**Grading scale**  
pass/fail

**Recurrence**  
Each term

**Version**  
1

Events					
WT 21/22	24004	<a href="#">Programming</a>	4 SWS	Lecture / Practice (	Heinrich
Exams					
ST 2021	7500022	<a href="#">Programming Pass</a>			Reussner

**6.122 Course: Project Management in Practice [T-INFO-101976]**

**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-105589 - Introduction to Data and Information Management](#)

**Type**  
Completed coursework

**Credits**  
1,5

**Grading scale**  
pass/fail

**Recurrence**  
Irregular

**Version**  
1

Events					
ST 2021	2400019	<a href="#">Project Management in Practice</a>	2 SWS	Lecture /	Böhm, Schnober
Exams					
ST 2021	7500288	<a href="#">Project Management in Practice</a>			Böhm

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

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

**Project Management in Practice**

2400019, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
Online**

**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)

**Organizational issues**

Die Plätze sind begrenzt und die Anmeldung findet durch das Sekretariat Prof. Böhm statt.

Termine

FR, 16. 4. von 13:00 bis 18:00 Uhr

SA, 17.4. von 9:00 bis 15:30 Uhr

FR, 23.4. von 13:00 bis 18:00 Uhr



SA, 24.4. von 9:00 bis 15:30 Uhr





T

## 6.123 Course: Public Law I &amp; II [T-INFO-110300]

**Responsible:** Dr. Johannes Eichenhofer**Organisation:** KIT Department of Informatics**Part of:** [M-INFO-105247 - Constitutional and Administrative Law](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each summer term	1

Events					
ST 2021	24520	<a href="#">Öffentliches Recht II - Öffentliches Wirtschaftsrecht</a>	2 SWS	Lecture / 	Eichenhofer
WT 21/22	24016	<a href="#">Öffentliches Recht I - Grundlagen</a>	2 SWS	Lecture / 	Bauer
Exams					
ST 2021	7500298	<a href="#">Public Law I &amp; II</a>			Eichenhofer

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.124 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2560120	<a href="#">Public Revenues</a>	2 SWS	Lecture /	Wigger
ST 2021	2560121	<a href="#">Übung zu Öffentliche Einnahmen</a>	1 SWS	Practice /	Wigger
Exams					
ST 2021	790oeff	<a href="#">Public Revenues</a>			Wigger
WT 21/22	790oeff	<a href="#">Public Revenues</a>			Wigger

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

**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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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

**6.125 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	2

Events					
WT 21/22	2560136		3 SWS	Lecture	Wigger, Groh
Exams					
ST 2021	790oefi	<a href="#">Public Sector Finance</a>			Wigger
WT 21/22	790oefi	<a href="#">Public Sector Finance</a>			Wigger

**Competence Certificate**

Depending on the further pandemic development the assessment will consist either of an open book exam (following Art. 4, para. 2, clause 3 of the examination regulation), or of an 1h written exam (following Art. 4, para. 2, clause 1 of the examination regulation).

**Prerequisites**

None

**Annotation**

Previous title until winter semester 2018/19 "Municipal Finance".

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



2560136, WS 21/22, 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.



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## 6.126 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**  
Written examination

**Credits**  
4,5

**Grading scale**  
Grade to a third

**Recurrence**  
Each winter term

**Version**  
1

Events					
WT 21/22	2586400	<a href="#">Real Estate Management I</a>	2 SWS	Lecture	Lützkendorf, Worschech
WT 21/22	2586401	<a href="#">Übungen zu Real Estate Management I</a>	2 SWS	Practice	Worschech
Exams					
WT 21/22	7900249	<a href="#">Real Estate Management I</a>			Lützkendorf
WT 21/22	7900316	<a href="#">Real Estate Management I</a>			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 taken 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 21/22, 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 reassesses 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 reassesses 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

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## 6.127 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2585400	<a href="#">Real Estate Management II</a>	2 SWS	Lecture / 📱	Lützkendorf, Worschech
ST 2021	2585401	<a href="#">Übung zu Real Estate Management II</a>	2 SWS	Practice / 📱	Worschech
Exams					
ST 2021	7900333	<a href="#">Real Estate Management II</a>			Lützkendorf
ST 2021	7900353	<a href="#">Real Estate Management II</a>			Lützkendorf

Legend: 📱 Online, 🔄 Blended (On-Site/Online), ● On-Site, ✕ Cancelled

**Competence Certificate**

Depending on further pandemic developments, the exam will be offered either as a 60-minute upload exam (Open Book Exam @ Home), or as a 60-minute exam (written exam according to SPO § 4 Abs. 2, Pkt. 1).

**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 2021, 2 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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





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## 6.128 Course: Real-Time Systems [T-INFO-101340]

**Responsible:** Prof. Dr.-Ing. Thomas Längle  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-100803 - Real-Time Systems](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each summer term	1

Events					
ST 2021	24576	<a href="#">Real-Time Systems</a>	4 SWS	Lecture / Practice (/ 	Längle, Ledermann, Huck
Exams					
ST 2021	750002	<a href="#">Real-Time Systems</a>			Längle

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**6.129 Course: Renewable Energy-Resources, Technologies and Economics [T-WIWI-100806]**

**Responsible:** PD Dr. Patrick Jochem  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101464 - Energy Economics](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	3,5	Grade to a third	Each winter term	4

Events					
WT 21/22	2581012	<a href="#">Renewable Energy – Resources, Technologies and Economics</a>	2 SWS	Lecture	Jochem
Exams					
ST 2021	7981012	<a href="#">Renewable Energy-Resources, Technologies and Economics</a>			Fichtner

**Competence Certificate**

The assessment consists of a written exam (60 minutes, in English, answers are possible in German or English) (following §4(2) of the examination regulation). The exam takes place in every semester. Re-examinations are offered at every ordinary examination date. Depending on the respective pandemic situation, the exam may be offered as an open book exam (alternative exam assessment, following §4(2), 3 of the examination regulation).

**Prerequisites**

None.

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

**Renewable Energy – Resources, Technologies and Economics**

2581012, WS 21/22, 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.

**Organizational issues**

Blockveranstaltung, freitags 14:00-17:00 Uhr, 29.10., 12.11., 26.11., 10.12., 14.01., 28.01., 11.02.


**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.

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## 6.130 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**  
Written examination**Credits**  
6**Grading scale**  
Grade to a third**Recurrence**  
Each winter term**Version**  
1

Events					
WT 21/22	2424152	<a href="#">Robotics I - Introduction to Robotics</a>	3/1 SWS	Lecture / 	Asfour
Exams					
ST 2021	7500218	<a href="#">Robotik I - Einführung in die Robotik</a>			Asfour
WT 21/22	7500106	<a href="#">Robotics I - Introduction to Robotics</a>			Asfour

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled



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## 6.131 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	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each summer term	1

Events					
ST 2021	24941	<a href="#">Security</a>	3 SWS	Lecture / 	Müller-Quade, Strufe
Exams					
ST 2021	7500150	<a href="#">Security</a>			Müller-Quade
ST 2021	7524941	<a href="#">Security</a>			Müller-Quade, Strufe
WT 21/22	7500180	<a href="#">Security</a>			Müller-Quade, Strufe

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

**6.132 Course: Selling IT-Solutions Professionally [T-INFO-101977]**

**Responsible:** Prof. Dr.-Ing. Klemens Böhm  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-105589 - Introduction to Data and Information Management](#)

Type	Credits	Grading scale	Recurrence	Version
Completed coursework	1,5	pass/fail	Irregular	1

**6.133 Course: Semantic Web Technologies [T-WIWI-110848]**

**Responsible:** Tobias Christof Käfer  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101438 - Semantic Knowledge Management](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	1

Events					
ST 2021	2511310	<a href="#">Semantic Web Technologies</a>	2 SWS	Lecture /	Färber, Käfer, Heling
ST 2021	2511311	<a href="#">Exercises to Semantic Web Technologies</a>	1 SWS	Practice /	Färber, Käfer, Heling
Exams					
ST 2021	7900028	<a href="#">Semantic Web Technologies (Registration until 12 July 2021)</a>			Färber
WT 21/22	7900022	<a href="#">Semantic Web Technologies</a>			Sure-Vetter

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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 2021, 2 SWS, Language: English, [Open in study portal](#)

Lecture (V)  
Online

**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 2021, 1 SWS, Language: English, [Open in study portal](#)

**Practice (Ü)  
Online**

**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.

## T

## 6.134 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	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2021	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar / ☞	Mädche
ST 2021	2530293	Seminar in Finance (Bachelor, Prof. Ruckes)	2 SWS	Seminar / 📱	Ruckes, Luedecke, Hoang, Benz, Wiegatz, Strych, Silbereis
ST 2021	2530374	Machine Learning for Business Applications	2 SWS	Seminar / 📱	Ulrich
ST 2021	2530610	Seminar Financial Economics		Seminar / 📱	Thimme
ST 2021	2540472	Digital Citizen Science	2 SWS	Seminar / 📱	Weinhardt, Volkamer, Mayer, Knierim, Greif-Winzrieth, Mädche, Nieken, Scheibehenne, Szech, Woll
ST 2021	2540473	Business Data Analytics	2 SWS	Seminar / 📱	Dann, Stoeckel, Grote, Badewitz
ST 2021	2540477	Digital Experience & Participation	2 SWS	Seminar / 📱	Peukert, Greif-Winzrieth
ST 2021	2540478	Smart Grid Economics & Energy Markets	2 SWS	Seminar / 📱	Staudt, Huber, Richter, vom Scheidt, Golla, Henni, Schmidt, Meinke, Qu
ST 2021	2540524	Bachelor Seminar in Data Science and Machine Learning	2 SWS	Seminar / 📱	Geyer-Schulz, Schweigert, Schweizer
ST 2021	2540553	Interactive Analytics Seminar	2 SWS	Seminar / 📱	Mädche, Beigl, Toreini, Pescara
ST 2021	2540557	Information Systems and Service Design Seminar	3 SWS	Seminar / 📱	Mädche
ST 2021	2540588	Economic Psychology in Action	2 SWS	Seminar / 📱	Liu
ST 2021	2545010	Entrepreneurship Basics (Track 1)	2 SWS	Seminar / 📱	Eckerle, Terzidis, Hirte
ST 2021	2545011	Entrepreneurship Basics (Track 2)	2 SWS	Seminar / 📱	Böhrer, Terzidis
ST 2021	2571180	Seminar in Marketing und Vertrieb (Master)	2 SWS	Seminar / 📱	Klarmann, Mitarbeiter
ST 2021	2573010	Seminar Human Resources and Organizations (Bachelor)	2 SWS	Seminar / 📱	Nieken, Mitarbeiter
ST 2021	2573011	Seminar Human Resource Management (Bachelor)	2 SWS	Seminar / 📱	Nieken, Mitarbeiter
ST 2021	2579909	Seminar Management Accounting	2 SWS	Seminar / 📱	Wouters, Hammann, Disch
ST 2021	2579919	Seminar in Management Accounting - Special Topics	2 SWS	Seminar / 📱	Ebinger
ST 2021	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar / 📱	Plötz
ST 2021	2581977	Seminar Produktionswirtschaft und Logistik II	2 SWS	Seminar / 📱	Volk, Schultmann
ST 2021	2581980	Seminar Energiewirtschaft II	2 SWS	Seminar / 📱	Fichtner
ST 2021	2581990		2 SWS	Seminar / 📱	Schultmann

WT 21/22	2500019	Digital Citizen Science	2 SWS	Seminar	Mädche, Nieken
WT 21/22	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar / 🌀	Mädche
WT 21/22	2530374	Machine Learning for Business Applications	2 SWS	Seminar / 📱	Ulrich
WT 21/22	2530580	Seminar in Finance: Green is the new Black	2 SWS	Seminar	Uhrig-Homburg
WT 21/22	2530610	Seminar in Financial Economics: Fintech on the Rise (Bachelor)	2 SWS	Seminar	Thimme
WT 21/22	2540473	Data Science in Service Management	2 SWS	Seminar	Stoeckel, Badewitz
WT 21/22	2540475	Electronic Markets & User behavior	2 SWS	Seminar	Knierim, Jaquart
WT 21/22	2540477	Digital Experience and Participation	2 SWS	Seminar	Peukert, Puzmaz, Fegert, Greif-Winzrieth, Hoffmann
WT 21/22	2540478	Smart Grids and Energy Markets	2 SWS	Seminar	Dinther, Staudt, Richter, vom Scheidt, Golla, Schmidt, Henni
WT 21/22	2540524	Bachelor Seminar aus Data Science and Machine Learning	2 SWS	Seminar	Geyer-Schulz, Nazemi, Schweizer
WT 21/22	2540557	Information Systems and Design (ISSD) Seminar	2 SWS	Seminar	Mädche
WT 21/22	2545010	Entrepreneurship Basics (Track 1)	2 SWS	Seminar	Eckerle, Hirte
WT 21/22	2545011	Entrepreneurship Basics (Track 2)	2 SWS	Seminar	Böhrer, Terzidis
WT 21/22	2571180	Seminar in Marketing und Vertrieb (Bachelor)	2 SWS	Seminar / 🎯	Klarmann, Mitarbeiter
WT 21/22	2573010	Seminar: Human Resources and Organizations (Bachelor)	2 SWS	Seminar	Nieken, Mitarbeiter
WT 21/22	2573011	Seminar: Human Resource Management (Bachelor)	2 SWS	Seminar	Nieken, Mitarbeiter
WT 21/22	2579919	Seminar Management Accounting - Special Topics	2 SWS	Seminar	Wouters, Ebinger
WT 21/22	2581030	Seminar Energiewirtschaft IV	2 SWS	Seminar	Dehler-Holland, Yilmaz, Fichtner, Britto
WT 21/22	2581976	Seminar in Production and Operations Management I	2 SWS	Seminar	Glöser-Chahoud, Schultmann
WT 21/22	2581977	Seminar in Production and Operations Management II	2 SWS	Seminar	Volk, Schultmann
WT 21/22	2581978	Seminar in Production and Operations Management III	2 SWS	Seminar	Schultmann, Diehlmann, Klein
WT 21/22	2581980		2 SWS	Seminar / 📱	Fichtner, Fraunholz, Kraft, Zimmermann
WT 21/22	2581981		2 SWS	Seminar	Ardone, Finck, Fichtner, Slednev
<b>Exams</b>					
ST 2021	00004	Seminar Financial Economics			Thimme
ST 2021	7900003	Seminar in Finance (Bachelor, Prof. Ruckes)			Ruckes
ST 2021	7900013	Bachelor Seminar in Data Science and Machine Learning			Geyer-Schulz
ST 2021	7900036	Collaborative Development of Conversational Agents			Mädche
ST 2021	7900056	Entrepreneurship Basics (Track 1)			Terzidis
ST 2021	7900057	Entrepreneurship Basics (Track 2)			Terzidis
ST 2021	7900081	Seminar in Business Administration (Bachelor)			Satzger
ST 2021	7900082	Seminar in Business Administration (Bachelor)			Lützkendorf
ST 2021	7900089	Seminar in Business Administration (Bachelor)			Lützkendorf
ST 2021	7900093	Seminar in Business Administration A			Weinhardt
ST 2021	7900100	Seminar Human Resource Management (Bachelor)			Nieken

ST 2021	7900104	Seminar in Business Administration (Bachelor)	Lützkendorf
ST 2021	7900180	Seminar in Business Administration	Weinhardt
ST 2021	7900190	Current Topics in Digital Transformation Seminar	Mädche
ST 2021	7900214	Seminar Business Data Analytics (Master)	Weinhardt
ST 2021	7900239	Economic Psychology in Action	Scheibehenne
ST 2021	7900256	Seminar Electronic Markets & User Behavior	Weinhardt
ST 2021	7900261	Information Systems and Design (ISSD) Seminar	Mädche
ST 2021	7900265	Interactive Analytics Seminar	Mädche
ST 2021	7900285	Seminar Digital Citizen Science	Weinhardt
ST 2021	7900288	Seminar Business Data Analytics	Weinhardt
ST 2021	7900372	Seminar Digital Citizen Science	Weinhardt
ST 2021	79-2579909-B	Seminar Management Accounting (Bachelor)	Wouters
ST 2021	79-2579919-B	Seminar Management Accounting - Special Topics (Bachelor)	Wouters
ST 2021	79-2579929-B	Seminar Management Accounting - Entrepreneurship Topics (Bachelor)	Wouters
ST 2021	792581030	Seminar in Business Administration (Bachelor)	Plötz
ST 2021	7981976	Seminar in Production and Operations Management I	Schultmann
ST 2021	7981977	Seminar in Production and Operations Management II	Schultmann
ST 2021	7981978	Seminar in Production and Operations Management III	Schultmann
ST 2021	7981979	Seminar Energy Economics I	Fichtner
ST 2021	7981980	Seminar Energy Economics II	Fichtner
ST 2021	7981981	Seminar Energy Economics III	Fichtner
WT 21/22	7900017	Seminar Smart Grid and Energy Markets	Weinhardt
WT 21/22	7900069	Current Topics in Digital Transformation Seminar	Mädche
WT 21/22	7900085	Entrepreneurship Basics (Track 1)	Terzidis
WT 21/22	7900087	Entrepreneurship Basics (Track 2)	Terzidis
WT 21/22	7900175	Seminar in Finance (Bachelor): Green is the new Black	Uhrig-Homburg
WT 21/22	7900203	Seminar in Finance	Uhrig-Homburg
WT 21/22	7900233	Information Systems and Design (ISSD) Seminar	Mädche
WT 21/22	7900315	Seminar Financial Economics "FinTech on the Rise" (Bachelor)	Thimme

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

### 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:*



**Machine Learning for Business Applications**2530374, SS 2021, 2 SWS, Language: English, [Open in study portal](#)**Seminar (S)**  
**Online****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.

**Organizational issues**

Blockseminar tba

**Information Systems and Service Design Seminar**2540557, SS 2021, 3 SWS, Language: English, [Open in study portal](#)**Seminar (S)**  
**Online****Content**

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group ISSD (Prof. Mädche). The research group "Information Systems & Service Design" (ISSD) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

**Learning Objectives**

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

**Prerequisites**

No specific prerequisites are required for the seminar.

**Literature**

Further literature will be made available in the seminar.

**Organizational issues**

Termine werden bekannt gegeben

**Economic Psychology in Action**2540588, SS 2021, 2 SWS, Language: English, [Open in study portal](#)**Seminar (S)**  
**Online**

**Content****Description**

This blocked event contains 3 stages.

In Stage 1, students meet online for one day and experience recent economic psychology research as participants. The research topics will mainly consist of novel economic games with certain level of strategic depth (i.e., we will not play simple games like rock paper scissors, nor we will play games that many people are familiar with like the prisoner's dilemma).

In Stage 2, students will receive the data from the games they played in Stage 1 along with a few journal articles assigned by the instructor on related topics. Based on reading, they choose one of the datasets from Stage 1 to write up a short report.

In Stage 3, students will try to design and conduct a study on a related topic themselves based on what they have learned in the previous stages. They will collect their own data and write a research report. The nature of this project is to be determined together by the students and instructor. It would either be ideas generated by the students themselves, or something assigned by the instructor.

English will be the language used in all discussions, course materials, and assessments.

**Competence Certificate**


The assessment is based on the short report in Stage 2 and the research report in Stage 3.

**Workload**

Students are expected to spend a total of 90 hours (30 hours per ECTS), including meeting and assignments, on this seminar.

**Organizational issues**

Blockveranstaltung, Termine werden bekanntgegeben

	<b>Seminar Human Resources and Organizations (Bachelor)</b> 2573010, SS 2021, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>Online</b>
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**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.

**Organizational issues**

Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

	<b>Seminar Human Resource Management (Bachelor)</b> 2573011, SS 2021, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>Online</b>
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**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.

**Organizational issues**

Geb. 05.20, Raum 2A-12.1, Termine werden bekannt gegeben

**Seminar Management Accounting**

2579909, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**Online**

**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.

**Note:**

- Maximum of 16 students.

**Organizational issues**

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

**Literature**

Will be announced in the course.

**Seminar in Management Accounting - Special Topics**

2579919, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**Online**

**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).

**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.

**Note:**

- Maximum of 16 students.

**Organizational issues**

Geb.05.20, 2A-12.1; Termine werden bekannt gegeben

**Literature**

Will be announced in the course.

**Digital Citizen Science**

2500019, WS 21/22, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)

**Content**

Digital Citizen Science is an innovative approach to conduct field research - interactively and in the real world. Especially in times of social distancing measures essential questions about how private lives are changing are investigated. Who is experiencing more stress during HomeOffice hours? Who is flourishing while learning at home because flow is experienced more often? Which formats of digital cooperation are fostering social contacts and bonding? These and other questions that target the main topic: Well-being @Home are focused in these seminar projects.

The seminar theses are supervised by academics from multiple institutes that are working together on the topic of Digital Citizen Science arbeiten. Involved are the research groups of Prof. Mädche, Prof. Nieken, Prof. Scheibehenne, Prof. Szech, Prof. Volkamer, Prof. Weinhardt and Prof. Woll.

**Machine Learning for Business Applications**

2530374, WS 21/22, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)  
Online

**Content**

Machine learning (ML) is changing virtually every aspect of our lives. Today ML algorithms accomplish tasks that until recently only expert humans could perform. As it relates to finance, this is the most exciting time to adopt a disruptive technology that will transform how everyone invests for generations.

In this seminar we will apply modern machine learning techniques hands on to various business applications.

**Organizational issues**

Blockseminar tba

**Data Science in Service Management**

2540473, WS 21/22, 2 SWS, Language: German/English, [Open in study portal](#)

Seminar (S)

**Content**

wird auf deutsch und englisch gehalten

**Organizational issues**

Blockveranstaltung, siehe WWW

**Bachelor Seminar aus Data Science and Machine Learning**2540524, WS 21/22, 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 21/22, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

**Content****Course Content:**

This seminar shows what is important for entrepreneurs and guides you through a structured process from the first business idea to a pitch of your final business model. In teams you create, develop, validate and present your business model. It partially simulates a start-up process up to the investor pitch.

After completing this course, the course participants will be able to

- Characterize the specifications of Technology Push and Market Pull
- Describe why personal and team core values are important for team formation and how they can affect start-up projects.
- Reflect on and name top 3 personal and team core values.
- Reflect on and name top 3 personal and team core competences
- Develop a sound value proposition for a target customer
- Recognize Business Opportunities
- Create Business Ideas
- Pitch their Business Ideas to potential investors

**Credentials:**

Registration is via the Wiwi portal.

**Exam:**

Presentation + active participation + paper.

**Target group:**

Bachelor students

**Entrepreneurship Basics (Track 2)**2545011, WS 21/22, 2 SWS, Language: English, [Open in study portal](#)

Seminar (S)

**Content****Course Content:**

This seminar shows what is important for entrepreneurs and guides you through a structured process from the first business idea to a pitch of your final business model. In teams you create, develop, validate and present your business model. It partially simulates a start-up process up to the investor pitch.

Starting with a rough business idea, you learn to understand and validate the customer problems. Together with your teammates and the feedback from the other teams and the lecturer, you will create a sharp business model by using tools like the Value Proposition Canvas, the Business Model Canvas and customer interviews. With some further information about rapid prototyping and structuring a pitch and a one-pager for business angels, you will learn, how to present the developed business. This seminar is teamwork. You grow as a team, learn to communicate and to work efficient in a team so all your results (the pitch and the written outline) are presented by the team.

**Credentials:**

Registration is via the Wiwi portal.

**Exam:**

Presentation + active participation + paper.

**Target group:**

Bachelor students

**Seminar: Human Resources and Organizations (Bachelor)**

Seminar (S)

2573010, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)**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.

**Organizational issues**

Blockveranstaltung siehe Homepage

**Seminar: Human Resource Management (Bachelor)**

Seminar (S)

2573011, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)**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.

**Organizational issues**

Blockveranstaltung siehe Homepage

**Seminar Management Accounting - Special Topics**

Seminar (S)

2579919, WS 21/22, 2 SWS, Language: English, [Open in study portal](#)

**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).

**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.

**6.135 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	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2021	2560233	Seminar zur Luftverkehrspolitik		Seminar /	Mitusch, Wisotzky
ST 2021	2560241	Digital IT Solutions and Services transforming the Field of Public Transportation	2 SWS	Prüfung ( /	Janoshalmi
ST 2021	2560553	Overcoming the Corona Crisis, Seminar Morals and Social Behavior (Bachelor)	2 SWS	Seminar /	Szech, Zhao
ST 2021	2560554	Markets for Attention and the Digital Economy Seminar on Topics in Political Economy (Master)	2 SWS	Seminar /	Szech, Huber
ST 2021	2560556	Social Preferences in Behavioral Economics / „Seminar on Topics in Political Economy“		Seminar /	Szech, Rau
WT 21/22	2521310	Topics in Econometrics	2 SWS	Seminar	Schienze, Rüter, Görden
WT 21/22	2560140	Disruption and the Digital Economy - Topics in Political Economy (Bachelor)	2 SWS	Seminar	Szech, Huber, Rosar
WT 21/22	2560141	Overcoming the Corona Crisis - Morals & Social Behavior (Bachelor)	2 SWS	Seminar	Szech, Zhao, Rau, Rosar
WT 21/22	2560142	Disruption and the Digital Economy - Topics in Political Economy (Master)	2 SWS	Seminar	Szech, Huber, Rosar
WT 21/22	2560145	Moral Wiggle Room and Information Avoidance - Topics on Polit Econ (Bachelor)	2 SWS	Seminar	Szech, Rau, Huber
WT 21/22	2561208	Selected aspects of European transport planning and -modelling	1 SWS	Seminar	Szimba
Exams					
ST 2021	7900040	Seminar in Macroeconomics I			Brumm
ST 2021	7900051	Seminar in Economic Policy			Ott
ST 2021	7900060	Markets for Attention and the Digital Economy (Bachelor)			Szech
ST 2021	7900130	Overcoming the Corona Crisis (Bachelor)			Szech
ST 2021	7900220	Seminar in Macroeconomics II			Brumm
ST 2021	7900248	Social Preferences in Behavioral Economics			Szech
ST 2021	7900269	Game Theory in Experimental Economics			Puppe
ST 2021	7900364	Seminar zur Luftverkehrspolitik			Mitusch
ST 2021	7900365	Seminar Strategic Decisions (Bachelor)			Ehrhart
ST 2021	79sefi1	Seminar Death, Mistake & Fraud in Science (Bachelor)			Wigger
WT 21/22	7900139	Seminar in Economics (Bachelor/Master)			Mitusch
WT 21/22	7900281	Seminar in Economics B (Master), Seminar in Economics A (Bachelor)			Mitusch

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled



**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:

	<b>Overcoming the Corona Crisis, Seminar Morals and Social Behavior (Bachelor)</b> 2560553, SS 2021, 2 SWS, Language: English, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>Online</b>
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**Content**

Participation will be limited to 12 students.

**Organizational issues**

Blockveranstaltung

	<b>Markets for Attention and the Digital Economy Seminar on Topics in Political Economy (Master)</b> 2560554, SS 2021, 2 SWS, Language: English, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>Online</b>
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**Content**

For Master 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>

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.

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 different lengths (20%). Students can improve their grades by actively participating in the discussions of the presentations.

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.

**Organizational issues**

Blockveranstaltung

	<b>Topics in Econometrics</b> 2521310, WS 21/22, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Seminar (S)</b>
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**Organizational issues**

Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

**Disruption and the Digital Economy - Topics in Political Economy (Bachelor)**

Seminar (S)

2560140, WS 21/22, 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>

Seminar Papers of 8–10 pages are to be handed in.

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.

**Overcoming the Corona Crisis - Morals & Social Behavior (Bachelor)**

Seminar (S)

2560141, WS 21/22, 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.

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.

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.

**Organizational issues**

Application is possible via <https://portal.wiwi.kit.edu/Seminare>

**Disruption and the Digital Economy - Topics in Political Economy (Master)**

Seminar (S)

2560142, WS 21/22, 2 SWS, Language: English, [Open in study portal](#)**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.

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.

**Moral Wiggle Room and Information Avoidance - Topics on Polit Econ (Bachelor)**

Seminar (S)

2560145, WS 21/22, 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>

Seminar Papers of 8–10 pages are to be handed in.

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.

**6.136 Course: Seminar in Informatics (Bachelor) [T-WIWI-103485]**

**Responsible:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-INFO-102058 - Seminar Module Informatics](#)

Type	Credits	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2021	2513308	<a href="#">Seminar Knowledge Discovery and Data Mining (Bachelor)</a>	3 SWS	Seminar /	Färber, Nguyen, Noullet, Saier, Bartscherer
ST 2021	2513310	<a href="#">Seminar Data Science &amp; Real-time Big Data Analytics (Bachelor)</a>	2 SWS	Seminar /	Färber, Riemer, Heyden, Käfer
ST 2021	2513402	<a href="#">Seminar Emerging Trends in Internet Technologies (Bachelor)</a>	2 SWS	Seminar /	Sunyaev, Thiebes, Lins
ST 2021	2513404	<a href="#">Seminar Emerging Trends in Digital Health (Bachelor)</a>	2 SWS	Seminar /	Lins, Sunyaev, Thiebes
ST 2021	2513500	<a href="#">Cognitive Automobiles and Robots</a>	2 SWS	Seminar /	Zöllner
ST 2021	2540553	<a href="#">Interactive Analytics Seminar</a>	2 SWS	Seminar /	Mädche, Beigl, Toreini, Pescara
WT 21/22	2513200	<a href="#">Seminar Programming 3 (Bachelor)</a>	2 SWS	Seminar	Oberweis, Fritsch, Frister, Forell
WT 21/22	2513214	<a href="#">Seminar Information security and Data protection (Bachelor)</a>	2 SWS	Seminar	Oberweis, Volkamer, Raabe, Alpers, Düzgün, Dietmann, Hennig, Schiefer, Wagner
WT 21/22	2513216	<a href="#">Seminar Mobility, AI and Digital sovereignty (Bachelor)</a>	2 SWS	Seminar	Oberweis, Alpers, Becker
WT 21/22	2513312	<a href="#">Seminar Linked Data and the Semantic Web (Bachelor)</a>	3 SWS	Seminar	Färber, Käfer
WT 21/22	2513314	<a href="#">Seminar Real-World Challenges in Data Science and Analytics (Bachelor)</a>	3 SWS		Nickel, Weinhardt, Färber, Brandt, Kulbach
WT 21/22	2513315	<a href="#">Seminar Real-World Challenges in Data Science and Analytics (Master)</a>	3 SWS		Nickel, Weinhardt, Färber, Brandt, Kulbach
Exams					
ST 2021	7900069	<a href="#">Seminar in Informatics (Bachelor) - Design and Development of Innovative Explainable AI</a>			Satzger
ST 2021	7900090	<a href="#">Seminar Data Science &amp; Real-time Big Data Analytics (Bachelor)</a>			Sure-Vetter
ST 2021	7900094	<a href="#">Seminar Knowledge Discovery and Data Mining (Bachelor)</a>			Sure-Vetter
ST 2021	7900136	<a href="#">Seminar Emerging Trends in Digital Health (Bachelor)</a>			Sunyaev
ST 2021	7900187	<a href="#">Seminar Emerging Trends in Internet Technologies (Bachelor)</a>			Sunyaev
ST 2021	7900265	<a href="#">Interactive Analytics Seminar</a>			Mädche
WT 21/22	7900038	<a href="#">Seminar Linked Data and the Semantic Web (Bachelor)</a>			Färber
WT 21/22	7900042	<a href="#">Seminar Programming 3 (Bachelor)</a>			Oberweis
WT 21/22	7900117	<a href="#">Seminar Mobility, AI and Digital Sovereignty (Bachelor)</a>			Oberweis
WT 21/22	7900129	<a href="#">Security and Privacy Awareness</a>			Volkamer
WT 21/22	7900284	<a href="#">Seminar Privacy and IT Security (Bachelor)</a>			Oberweis

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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:

	<b>Seminar Knowledge Discovery and Data Mining (Bachelor)</b> 2513308, SS 2021, 3 SWS, Language: English, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>Online</b>
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**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.

**Organizational issues**


Die Anmeldung erfolgt über das WiWi Portal <https://portal.wiwi.kit.edu/>.

Für weitere Fragen bezüglich des Seminar und der behandelten Themen wenden Sie sich bitte an die entsprechenden Verantwortlichen.

**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.

	<b>Seminar Data Science &amp; Real-time Big Data Analytics (Bachelor)</b> 2513310, SS 2021, 2 SWS, Language: English, <a href="#">Open in study portal</a>	<b>Seminar (S)</b> <b>Online</b>
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**Content**

In this 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 seminar is given under the following Link:

<http://seminar-cep.fzi.de>

Questions are answered via the e-mail address [sem-ep@fzi.de](mailto:sem-ep@fzi.de).

**Organizational issues**

Further information as well as the registration form can be found under the following link:

<http://seminar-cep.fzi.de>

Questions are answered via the e-mail address [sem-ep@fzi.de](mailto:sem-ep@fzi.de).

**Cognitive Automobiles and Robots**

2513500, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**Online**

**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.

**Organizational issues**

Anmeldung und weitere Informationen sind im Wiwi-Portal zu finden.

Registration and further information can be found in the WiWi-portal.

**Seminar Programming 3 (Bachelor)**

2513200, WS 21/22, 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.

**Seminar Linked Data and the Semantic Web (Bachelor)**

2513312, WS 21/22, 3 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**

**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.

**Seminar Real-World Challenges in Data Science and Analytics (Bachelor)**

2513314, WS 21/22, 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 Real-World Challenges in Data Science and Analytics (Master)**

2513315, WS 21/22, 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.

## T




## 6.137 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	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2021	2550132	Seminar zur Mathematischen Optimierung (MA)	2 SWS	Seminar / 	Stein, Beck, Neumann, Schwarze
ST 2021	2550472	Seminar on Power Systems Optimization (Bachelor)	2 SWS	Seminar / 	Rebennack, Warwicker, Sinske
ST 2021	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar / 	Nickel, Mitarbeiter
WT 21/22	2550131	Seminar on Methodical Foundations of Operations Research (B)	2 SWS	Seminar	Stein, Beck, Neumann, Schwarze
WT 21/22	2550491	Seminar: Modern OR and Innovative Logistics	2 SWS	Seminar	Nickel, Mitarbeiter
Exams					
ST 2021	7900017_SS2021	Seminar in Operations Research (Bachelor)			Stein
ST 2021	7900018_SS2021	Seminar in Operations Research A (Master)			Stein
ST 2021	7900232	Seminar Recent Topics in Optimization (Bachelor)			Rebennack
ST 2021	7900271	Digitization in the Steel Industry			Nickel
ST 2021	7900326	Seminar in Operations Research (Bachelor)			Nickel
ST 2021	7900347	Seminar on Power Systems Optimization (Bachelor)			Rebennack

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

### 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: Modern OR and Innovative Logistics

2550491, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)  
Online

#### 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.

#### Organizational issues

wird auf der Homepage [dol.ior.kit.edu](http://dol.ior.kit.edu) bzw. auf dem WiWi-Portal bekannt gegeben

#### Literature

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.



### Seminar on Methodical Foundations of Operations Research (B)

2550131, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)



**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 Seminarvorbesprechung 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**

2550491, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)

**Seminar (S)**

**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.

**Organizational issues**

wird auf der Homepage bekannt gegeben

**Literature**

Die Literatur und die relevanten Quellen werden zu Beginn des Seminars bekannt gegeben.

T

**6.138 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	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2021	2550560	<a href="#">Spezielle Themen der Datenanalyse und Statistik</a>	2 SWS	Seminar /	Grothe, Kaplan, Kächele
WT 21/22	2521310	<a href="#">Topics in Econometrics</a>	2 SWS	Seminar	Schienle, Rüter, Görden
Exams					
ST 2021	7900250	<a href="#">Data Mining and Applications (Projectseminar)</a>			Nakhaeizadeh

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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 21/22, 2 SWS, Language: German, [Open in study portal](#)

Seminar (S)

**Organizational issues**

Blockveranstaltung, Termine werden auf Homepage und über Ilias bekannt gegeben

**6.139 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	Grading scale	Version
Examination of another type	3	Grade to a third	1

Events					
ST 2021	2400011	Hot Topics in Bioinformatics	2 SWS	Seminar /	Stamatakis
ST 2021	2400072	Seminar: Service-oriented Architectures		Seminar /	Abeck, Schneider, Sanger
ST 2021	2400075	Undergraduate Seminar Software Disasters	2 SWS	Proseminar (/	Reussner
ST 2021	2400076	Proseminar Software Requirements and Design	2 SWS	Proseminar (/	Koziolak
ST 2021	2400086	Proseminar Algorithms for NP-hard Problems	2 SWS	Proseminar (/	Ueckerdt, Wolf
ST 2021	2400129	Internet of Things		Seminar /	Faghih, Salamin, Zervakis, Bauer, Henkel
ST 2021	2400137	Embedded Machine Learning		Seminar /	Rapp, Pfeiffer, Faghih, Zervakis, Khdr, Henkel
ST 2021	2400144	Can Statistics Prove Cause and Effect?	2 SWS	Seminar /	Janzing
ST 2021	2400148	Embedded Systems: Architectures and Technologies		Seminar /	Hussain, Rapp, Nassar, Bauer, Khdr, Henkel, Gonzalez, Hizzani
ST 2021	24336	Robotics and Medicine	2 SWS	Seminar /	Mathis-Ullrich
ST 2021	24344	Advanced Methods of Information Fusion	2 SWS	Seminar /	Hanebeck, Radtke
ST 2021	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar /	Madche
ST 2021	2540553	Interactive Analytics Seminar	2 SWS	Seminar /	Madche, Beigl, Toreini, Pescara
ST 2021	2540557	Information Systems and Service Design Seminar	3 SWS	Seminar /	Madche
WT 21/22	2400060	Data in Software-Intensive Technical Systems – Modeling – Analysis – Protection	2 SWS	Seminar	Reussner, Raabe, Werner, Muller-Quade
WT 21/22	2400078	Seminar: Neuronale Netze und kunstliche Intelligenz		Seminar	Waibel, Asfour, Retkowski
WT 21/22	2400092	Internet of Things		Seminar /	Faghih, Salamin, Zervakis, Bauer, Henkel
WT 21/22	2400137	Embedded Machine Learning		Seminar /	Rapp, Sikal, Zervakis, Khdr, Henkel
WT 21/22	2400148	Embedded Security and Architectures		Seminar /	Hussain, Rapp, Nassar, Bauer, Khdr, Gonzalez, Hizzani, Sikal, Henkel
WT 21/22	24344	Advanced Methods of Information Fusion	2 SWS	Seminar /	Hanebeck, Radtke
WT 21/22	24844	Seminar: Ubiquitous Systems	2 SWS	Seminar	Beigl, Pescara
WT 21/22	2500125	Current Topics in Digital Transformation Seminar	3 SWS	Seminar /	Madche

WT 21/22	2513214	Seminar Information security and Data protection (Bachelor)	2 SWS	Seminar	Oberweis, Volkamer, Raabe, Alpers, Düzgün, Dietmann, Hennig, Schiefer, Wagner
<b>Exams</b>					
ST 2021	7500013	Advanced Methods of Information Fusion			Hanebeck
ST 2021	7500014	Seminar: Hot Topics in Bioinformatics			Stamatakis
ST 2021	7500040	Seminar Information Systems			Böhm
ST 2021	750006	Seminar Robotics and Medicine			Mathis-Ullrich
ST 2021	7500106	Title not available			Bless, Hartenstein, Mädche, Zitterbart, Boehm, Sunyaev
ST 2021	7500148	Proseminar: Practical Seminar: Interactive Analytics			Beigl, Mädche
ST 2021	7500162	Seminar: Ubiquitous Systems			Beigl, Riedel
ST 2021	7500301	Seminar: Proofs from THE BOOK			Sanders
ST 2021	7500332	CES - Seminar: Internet of Things			Henkel
ST 2021	7500335	CES - Seminar: Machine Learning			Henkel
ST 2021	75104740	Seminar: Service-Oriented Architectures			Abeck
ST 2021	7900265	Interactive Analytics Seminar			Mädche
WT 21/22	7500021	Advanced Methods of Information Fusion			Hanebeck
WT 21/22	7500220	Seminar Ubiquitous Computing			Beigl

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

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

V

### Hot Topics in Bioinformatics

2400011, SS 2021, 2 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**Online**

#### 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 chose 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

#### Organizational issues

**IMPORTANT:** Register for the seminar mailing list by sending an email to [Alexandros.Stamatakis@h-its.org](mailto:Alexandros.Stamatakis@h-its.org).

All information on the seminar is provided at: [Seminar page](#) Information about how we will start virtually is also provided there. We will start in the first week of the summer term. For all further information, students are requested to regularly read their emails.

V

### Internet of Things

2400129, SS 2021, SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**Blended (On-Site/Online)**

**Content**

In our seminars, students learn about cutting-edge research in the research fields presented below. Students are offered topics by the supervisors, but also can suggest their own topics in these fields. The seminar is offered in both English and German.

**Security in Internet of Things (IoT)**

Welcome to the era of the Internet of Things (IoT), where millions of connected devices together in almost all aspects of our daily life, including our homes, offices, cars, and even our bodies, from TVs, fridges, and cars to health monitors and wearables. As a matter of fact, IoT is growing very fast and spreads very quickly. According to ARM, it is expected that the number of IoT devices will exceed 1 Trillion devices by 2025.

New applications and software always present new security threats; because it is developed very quickly and the developers cannot expect all threats, and it may need a decade to make these systems secure. For the IoT devices, these threats may have serious effects on our life; since Internet threats, today can steal credit cards, disable home security systems, personal data, webcam control, and even more.

Unfortunately, there is no “silver bullet” that can effectively mitigate every possible cyber threat. And these will open the need for improving the proposed security found in the IoT domain to keep malicious activity off and to cover personal privacy, financial transactions, and the threat of cyber theft to make IoT not only reliable but also safer.

**Kubernetes for Edge and IoT**

Kubernetes, originally developed by Google, is an open-source orchestration system for automating the deployment, scaling, monitoring, and management of containerized workloads/applications/services. Kubernetes was first announced by Google in mid-2014 and quickly became the industry standard for container orchestration. Kubernetes initially targeted on-premises, hybrid, or public cloud environments. Edge computing is gaining a lot of attraction lately with the need for mission-critical decisions to be made in real-time at the edge, the ML-powered IoT devices, and the move towards 5G. Hence, due to the increasing need to embrace cloud-native technology and containers, Kubernetes was quickly adopted in Edge/IoT environments opening up a new ecosystem for Edge Computing. However, to achieve this transition and enable leveraging Kubernetes on Edge an IoT, we have to overcome several challenges such as footprint of Kubernetes, energy constrained execution, scalability outside of the confines of data centers etc.

Kubernetes for Edge and IoT is offered only in English.

**Organizational issues**

Bitte im ILIAS zur Teilnahme anmelden.

**Embedded Machine Learning**

2400137, SS 2021, SWS, Language: German/English, [Open in study portal](#)

Seminar (S)  
Blended (On-Site/Online)

**Content**

In our seminars, students learn about cutting-edge research in the research fields presented below. Students are offered topics by the supervisors, but also can suggest their own topics in these fields. The seminar is offered in both English and German.

**Machine learning on on-chip systems**

Machine learning and on-chip systems form a symbiosis where each research area benefits from advances in the other. In this seminar, students review cutting-edge research on both areas.

Machine learning (ML) gains importance in all aspects of information systems. From high-level algorithms like image recognition to lower-level intelligent CPU management - ML is ubiquitous. On-chip systems also benefit from advances in ML techniques. Examples include adaptive resource management or workload prediction. However, ML techniques also benefit from advances in on-chip systems. A prominent example is acceleration of neural networks in recent desktop GPUs and even smartphone chips.

In this seminar, students will review cutting-edge state-of-the-art research (publications) on a specific topic related to ML on on-chip systems. The findings will be summarized in a seminar report and presented to the other members of the course. Students are welcome to suggest their own topics, but this is not required. The seminar can be held in English or German.

**Approximate Computing for Efficient Machine Learning**

Nowadays, energy efficiency is a first-class design constraint in the ICT sector. Approximate computing emerges as a new design paradigm for generating energy efficient computing systems. There is a large body of resource-hungry applications (eg, image processing and machine learning) that exhibit an intrinsic resilience to errors and produce outputs that are useful and of acceptable quality for the users despite their underlying computations being performed in an approximate manner. By exploiting this inherent error tolerance of such applications, approximate computing trades computational accuracy for savings in other metrics, eg, energy consumption and performance. Machine learning, a very common and top trending workload of both data centers and embedded systems, is a perfect candidate for approximate computing application since, by definition, it delivers approximate results. Performance as well as energy efficiency (especially in the case of embedded systems) are crucial for machine learning applications and thus, approximate computing techniques are widely adopted in machine learning (eg, TPU) to improve its energy profile as well as performance.

**Machine Learning methods for DNN compilation and mapping**

Deep neural networks have achieved great success in challenging tasks such as image classification and object detection. There is a great demand for deploying these networks in different devices, ranging from cloud servers to embedded devices.

Mapping DNNs to these devices is a challenging task since each of these devices has different characteristics in terms of memory organization, compute units, etc. . There have been efforts to automate the process of mapping/compiling DNNs to hardware with different characteristics.

In this seminar, we will discuss the efforts that have been done in mapping/compiling DNNs over hardware using machine learning methods.

**Organizational issues**

Please register in ILIAS to participate.

**Embedded Systems: Architectures and Technologies**

2400148, SS 2021, SWS, Language: German/English, [Open in study portal](#)

Seminar (S)  
Blended (On-Site/Online)

**Content**

In our seminars, students learn about cutting-edge research in the research fields presented below. Students are offered topics by the supervisors, but also can suggest their own topics in these fields. The seminar is offered in both English and German.

**Dependability for Reconfigurable Architectures**

Dependability has become one of the prime concerns in recent nano-era. Reliability (the ability of system to deliver services as specified) and Security (the ability of the system to protect itself against deliberate or accidental intrusion) are the two crucial attributes of dependable systems. Among the other reliability threats due to physical limits of CMOS technology, radiation induced soft-errors or transient faults are also the most challenging threat to be handled. During this seminar, we will explore state-of-the-art for the power-efficient Soft-error reliability and study different research solutions to improve soft-error resiliency in power efficient manner leveraging power-performance-reliability trade-offs. During this seminar, the students will also be able to understand hardware security in reconfigurable architectures, and learn the ways to insert Trojan in an FPGA design/IP and explore different techniques to detect such stealthy Trojans, such as bitstream reverse engineering using Open Source Tool flow.

**Thermal and Power Aware Embedded Systems**

Power densities are continuously increasing along with technology scaling and the integration of more transistors into smaller areas, potentially resulting in thermal emergencies on the chip. To mitigate such emergencies, power and thermal management techniques are employed. The state-of-the-art power and thermal management techniques can be classified into several categories, such as reactive and proactive techniques, centralized and distributed ones. Recently, machine learning algorithms are employed in power and thermal management techniques to make them more proactive and adaptive. Those various categories of the state-of-the-art techniques need to be reviewed in this seminar to demonstrate the advantage and disadvantage of each of them.

**Security of Reconfigurable Embedded Systems**

Various types of (re)configurable systems have emerged in recent years. The spectrum ranges from one-time configurable systems that are programmed at the design time for product-specific requirements, to reconfigurable systems that can also be adapted after commissioning, to dynamically reconfigurable systems whose configuration can be changed at runtime and their ability to dynamic reconfiguration is an important part of their system functionality.

This seminar focuses on the runtime reconfigurable systems, their security aspects and methods. It investigates the current state of research for securing the runtime reconfigurable systems, as well as the feasibility of using the security measures from general processing architectures to runtime reconfigurable systems.

**Run-time Resource Management for Operating Systems**

As the complexity of multi/many-core architectures increases, operating systems must evolve to adapt to the diversity of computing, memory and communication on-chip resources, as well the as the emerging goals and requirements of these complex systems. In this scenario, run-time (dynamic) resource management has been established as an effective technique to improve and balance critical metrics, such as performance, reliability, efficiency and quality of service (QoS). In this seminar, students will study the background and current trends in on-chip resource management, by identifying the nature of the chip's resources, the relevant metrics on high-end systems, and the state-the-art techniques to manage those resources, varying from models and heuristics to machine learning approaches.

**Organizational issues**

Bitte im ILIAS zur Teilnahme anmelden.

**Advanced Methods of Information Fusion**

24344, SS 2021, 2 SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**Online**

**Content**

The growing spread and performance of modern information and communication technologies produces an ever-increasing amount 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.

**Information Systems and Service Design Seminar**

2540557, SS 2021, 3 SWS, Language: English, [Open in study portal](#)

**Seminar (S)**  
**Online**

**Content**

With this seminar, we aim to provide students with the possibility to independently work on state-of-the-art research topics in addition to the knowledge gained in the lectures of the research group ISSD (Prof. Mädche). The research group "Information Systems & Service Design" (ISSD) headed by Prof. Mädche focuses in research, education, and innovation on designing interactive intelligent systems. It is positioned at the intersection of Information Systems and Human-Computer Interaction (HCI).

In the seminar, participants will get deeper insights in a contemporary research topic in the field of information systems, specifically interactive intelligent systems.

The actual seminar topics will be derived from current research activities of the research group. Our research assistants offer a rich set of topics from our research clusters (digital experience and participation, intelligent enterprise systems, or digital services design & innovation). Students can select among these topics individually depending on their personal interests. The seminar is carried out in the form of a literature-based thesis project. In the seminar, students will acquire the important methodological skills of running a systematic literature review.

**Learning Objectives**

- focus on a contemporary topic at the intersection of Information Systems and Human-Computer Interaction (HCI), specifically interactive intelligent systems
- carry out a structured literature search for a given topic
- aggregate the collected information in a suitable way to present and extract knowledge
- write a seminar thesis following academic writing standards
- deliver a presentation in a scientific context in front of an auditorium

**Prerequisites**

No specific prerequisites are required for the seminar.

**Literature**

Further literature will be made available in the seminar.

**Organizational issues**

Termine werden bekannt gegeben

**Seminar: Neuronale Netze und künstliche Intelligenz**

2400078, WS 21/22, 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

**Internet of Things**

2400092, WS 21/22, SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)  
Blended (On-Site/Online)**



**Content**

In our seminars, students learn about cutting-edge research in the research fields presented below. Students are offered topics by the supervisors, but also can suggest their own topics in these fields. The seminar is offered in both English and German.

**Security in Internet of Things (IoT)**

Welcome to the era of the Internet of Things (IoT), where millions of connected devices together in almost all aspects of our daily life, including our homes, offices, cars, and even our bodies, from TVs, fridges, and cars to health monitors and wearables. As a matter of fact, IoT is growing very fast and spreads very quickly. According to ARM, it is expected that the number of IoT devices will exceed 1 Trillion devices by 2025.

New applications and software always present new security threats; because it is developed very quickly and the developers cannot expect all threats, and it may need a decade to make these systems secure. For the IoT devices, these threats may have serious effects on our life; since Internet threats, today can steal credit cards, disable home security systems, personal data, webcam control, and even more.

Unfortunately, there is no "silver bullet" that can effectively mitigate every possible cyber threat. And these will open the need for improving the proposed security found in the IoT domain to keep malicious activity off and to cover personal privacy, financial transactions, and the threat of cyber theft to make IoT not only reliable but also safer.

**Kubernetes for Edge and IoT**

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Kubernetes for Edge and IoT is offered only in English.

**Organizational issues**

Bitte im ILIAS zur Teilnahme anmelden.

**Embedded Machine Learning**

2400137, WS 21/22, SWS, Language: German/English, [Open in study portal](#)

**Seminar (S)**  
**Blended (On-Site/Online)**

**Content**

In our seminars, students learn about cutting-edge research in the research fields presented below. Students are offered topics by the supervisors, but also can suggest their own topics in these fields. The seminar is offered in both English and German.

**Machine Learning on On-Chip Systems**

Machine learning and on-chip systems form a symbiosis where each research area benefits from advances in the other. In this seminar, students review cutting-edge research on both areas.

Machine learning (ML) gains importance in all aspects of information systems. From high-level algorithms like image recognition to lower-level intelligent CPU management - ML is ubiquitous. On-chip systems also benefit from advances in ML techniques. Examples include adaptive resource management or workload prediction. However, ML techniques also benefit from advances in on-chip systems. A prominent example is acceleration of neural networks in recent desktop GPUs and even smartphone chips.

In this seminar, students will review cutting-edge state-of-the-art research (publications) to a specific topic related to ML on on-chip systems. The findings will be summarized in a seminar report and presented to the other members of the course. Students are welcome to suggest own topics, but this is not required. The seminar can be held in English or German.

**Approximate Computing for Efficient Machine Learning**

Nowadays, energy efficiency is a first-class design constraint in the ICT sector. Approximate computing emerges as a new design paradigm for generating energy efficient computing systems. There is a large body of resource-hungry applications (e.g., image processing and machine learning) that exhibit an intrinsic resilience to errors and produce outputs that are useful and of acceptable quality for the users despite their underlying computations being performed in an approximate manner. By exploiting this inherent error tolerance of such applications, approximate computing trades computational accuracy for savings in other metrics, e.g., energy consumption and performance. Machine learning, a very common and top trending workload of both data centers and embedded systems, is a perfect candidate for approximate computing application since, by definition, it delivers approximate results. Performance as well as energy efficiency (especially in the case of embedded systems) are crucial for machine learning applications and thus, approximate computing techniques are widely adopted in machine learning (e.g., TPU) to improve its energy profile as well as performance.

**Organizational issues**

Bitte im ILIAS zur Teilnahme anmelden.

**Embedded Security and Architectures**2400148, WS 21/22, SWS, Language: German/English, [Open in study portal](#)**Seminar (S)**  
**Blended (On-Site/Online)****Content**

In our seminars, students learn about cutting-edge research in the research fields presented below. Students are offered topics by the supervisors, but also can suggest their own topics in these fields. The seminar is offered in both English and German.

**Dependability for Reconfigurable Architectures**

Dependability has become one of the prime concerns in recent nano-era. Reliability (the ability of the system to deliver services as specified) and Security (the ability of the system to protect itself against deliberate or accidental intrusion) are the two crucial attributes of dependable systems. Among the other reliability threats due to physical limits of CMOS technology, radiation induced soft errors or transient faults are also the most challenging threat to be handled. During this seminar, we will explore state-of-the-art for the power-efficient soft-error reliability and study different research solutions to improve soft-error resiliency in power efficient manner leveraging power-performance-reliability trade-offs. During this seminar, the students will also be able to understand hardware security in reconfigurable architectures,

**Thermal and Power Aware Embedded Systems**

Power densities are continuously increasing along with technology scaling and the integration of more transistors into smaller areas, potentially resulting in thermal emergencies on the chip. To mitigate such emergencies, power and thermal management techniques are employed. The state-of-the-art power and thermal management techniques can be classified into several categories, such as reactive and proactive techniques, centralized and distributed ones. Recently, machine learning algorithms are employed in power and thermal management techniques to make them more proactive and adaptive. Those various categories of the state-of-the-art techniques need to be reviewed in this seminar to demonstrate the advantage and disadvantage of each of them.

**Security of Reconfigurable Embedded Systems**

Various types of (re) configurable systems have emerged in recent years. The spectrum ranges from one-time configurable systems that are programmed at the design time for product-specific requirements, to reconfigurable systems that can also be adapted after commissioning, to dynamically reconfigurable systems whose configuration can be changed at runtime and their ability to dynamic reconfiguration is an important part of their system functionality.

This seminar focuses on the runtime reconfigurable systems, their security aspects and methods. It investigates the current state of research for securing the runtime reconfigurable systems, as well as the feasibility of using the security measures from general processing architectures to runtime reconfigurable systems.

**Security in Resource Management**

Efficient resource management in many-core systems (ie, systems with more than 100 cores, not only a dozen) has become a research challenge in the last years. As complexity and the demand for scalability increase, this new paradigm should also consider new security features to avoid or mitigate the effects of malicious applications both on critical information and the system as a whole.

In this seminar, we will focus on the state-of-the-art of security attacks such as Side Channel Attacks (SCA), Covert channel attacks, as well as other similar resource-based attacks and their effects on other critical applications running on many-core systems. During this seminar, student will dive into the security aspects of resource management, while investigating answers to the following research questions:

- How do these attacks work?
- Which are the associated vulnerabilities? What resources are vulnerable?
- What's their impact on critical information or other resources?
- What are the current countermeasures for the attacks?

**Organizational issues**

Please register in ILIAS to participate.

**Advanced Methods of Information Fusion**24344, WS 21/22, 2 SWS, Language: German, [Open in study portal](#)**Seminar (S)**  
**Blended (On-Site/Online)****Content**

The growing spread and performance of modern information and communication technologies produces an ever-increasing amount 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.

**6.140 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	Grading scale	Recurrence	Version
Examination of another type	3	Grade to a third	Each term	1

Events					
ST 2021	2400041	Governance, Risk & Compliance	2 SWS	Seminar /	Herzig
ST 2021	2400061	Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung	2 SWS	Seminar /	Bless, Boehm, Hartenstein, Mädche, Sunyaev, Zitterbart, Volkamer
ST 2021	2400065	"Die Corona-Krise aus der Sicht des Verfassungsrechts"	2 SWS	Seminar /	Eichenhofer
ST 2021	2400082	"Verfassungsrechtliche Fragen staatlicher Öffentlichkeitsarbeit"	2 SWS	Seminar /	Eichenhofer
ST 2021	2400127	Aktuelle Probleme des Datenschutzrechts		Seminar /	Eichenhofer
ST 2021	2400153	Technische Aspekte der DSGVO und deren Umsetzung in der Praxis	2 SWS	Seminar /	Boehm, Dimitrova
ST 2021	24820	Current Issues in Patent Law	2 SWS	Seminar /	Melullis
Exams					
ST 2021	7500106	Title not available			Bless, Hartenstein, Mädche, Zitterbart, Boehm, Sunyaev
ST 2021	7500140	Seminar: Legal Studies I			Dreier, Boehm, Melullis, Matz
ST 2021	7500159	Seminar: Legal Studies I			Eichenhofer
WT 21/22	7500182	Seminar: Legal Studies II			Dreier, Boehm, Raabe

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

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

**Internet und Gesellschaft - gesellschaftliche Werte und technische Umsetzung**

2400061, SS 2021, 2 SWS, [Open in study portal](#)

Seminar (S)  
Online

**Content**

- Registration via <https://portal.wiwi.kit.edu/ys/4516>

**Organizational issues**

nach Vereinbarung

T


## 6.141 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	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each summer term	1

Events					
ST 2021	24518	<a href="#">Softwaretechnik I</a>	4 SWS	Lecture / Practice (/  )	Tichy, Gerking, Hey
Exams					
ST 2021	7500152	<a href="#">Software Engineering I</a>			Tichy
ST 2021	7500153	<a href="#">Software Engineering I</a>			Tichy


Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled





T

## 6.142 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	Grading scale	Recurrence	Version
Completed coursework	0	pass/fail	Each summer term	1

Events					
ST 2021	24518	<a href="#">Softwaretechnik I</a>	4 SWS	Lecture / Practice (/ 	Tichy, Gerking, Hey
Exams					
ST 2021	7500250	<a href="#">Software Engineering I Pass</a>			Tichy

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T


## 6.143 Course: Software Engineering II [T-INFO-101370]

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

**Organisation:** KIT Department of Informatics

**Part of:** [M-INFO-100833 - Software Engineering II](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each winter term	1

Events					
WT 21/22	24076	<a href="#">Software Engineering II</a>	4 SWS	Lecture / 	Reussner
Exams					
ST 2021	7500235	<a href="#">Software Engineering II</a>			Reussner
WT 21/22	7500054	<a href="#">Software Engineering II</a>			Reussner

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

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

V

## Software Engineering II

24076, WS 21/22, 4 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
On-Site

## Literature

Craig Larman, Applying UML and Patterns, 3rd edition, Prentice Hall, 2004. Weitere Literaturhinweise werden in der Vorlesung gegeben.



## 6.144 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	Grading scale	Recurrence	Version
Examination of another type	4,5	Grade to a third	Each term	2

Exams				
ST 2021	7900224	<a href="#">Special Topics in Information Systems</a>		Weinhardt
WT 21/22	7900263	<a href="#">Special Topics in Information Systems</a>		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](http://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 Systems" 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

## 6.145 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](#)  
[M-WIWI-105414 - Statistics and Econometrics II](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each winter term	1

Events					
WT 21/22	2521350	<a href="#">Statistical Modeling of Generalized Regression Models</a>	2 SWS	Lecture	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 21/22, 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



T


**6.146 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	Grading scale	Recurrence	Version
Written examination	5	Grade to a third	Each summer term	1

Events					
ST 2021	2600008	<a href="#">Statistics I</a>	4 SWS	Lecture / 	Schienle
Exams					
ST 2021	7900222	<a href="#">Statistics I</a>			Schienle
ST 2021	7900371	<a href="#">Statistics I</a>			Schienle

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**Competence Certificate**

Depending on further pandemic developments, the examination will be offered either as a 120-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

**Prerequisites**

None

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

V

**Statistics I**

2600008, SS 2021, 4 SWS, Language: German, [Open in study portal](#)

Lecture (V)  
Online

**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.

**6.147 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	Grading scale	Recurrence	Version
Written examination	5	Grade to a third	Each winter term	1

Events					
WT 21/22	2610020	<a href="#">Statistics II</a>	4 SWS	Lecture /	Schienle
WT 21/22	2610021		2 SWS	Tutorial (	Schienle, Lerch, Ritschel
WT 21/22	2610022	<a href="#">PC-Praktikum zu Statistik II</a>	2 SWS		Schienle, Lerch, Görden

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**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 21/22, 4 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
Online**

**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

**6.148 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	Grading scale	Recurrence	Version
Written examination	1,5	Grade to a third	Each summer term	1

Exams			
ST 2021	7900268	<a href="#">Strategic Finance and Technoloy Change</a>	Ruckes
WT 21/22	7900219	<a href="#">Strategic Finance and Technoloy Change</a>	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

**6.149 Course: Supplement Applied Informatics [T-WIWI-110711]**

**Responsible:** Professorenschaft des Instituts AIFB  
**Organisation:** KIT Department of Economics and Management  
**Part of:** [M-WIWI-101476 - Business Processes and Information Systems](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each term	1

**Competence Certificate**

The assessment of this course is a written or (if necessary) oral examination.

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

## 6.150 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**  
Oral examination

**Credits**  
5

**Grading scale**  
Grade to a third

**Recurrence**  
Each winter term

**Version**  
1

Events					
ST 2021	2400152	<a href="#">Flächen im CAD</a>		Lecture / 	Prautzsch
Exams					
ST 2021	7500315	<a href="#">Surfaces for Computer aided Design</a>			Prautzsch

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**T 6.151 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	Each summer term	3

Events					
ST 2021	2550486	<a href="#">Taktisches und operatives SCM</a>	2 SWS	Lecture /	Nickel
ST 2021	2550487	<a href="#">Übungen zu Taktisches und operatives SCM</a>	1 SWS	Practice /	Pomes, Bakker
Exams					
ST 2021	7900312	<a href="#">Tactical and Operational Supply Chain Management</a>			Nickel
WT 21/22	7900174	<a href="#">Tactical and Operational Supply Chain Management</a>			Nickel

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

Depending on further pandemic developments, the exam will be offered either as an open-book exam, or as a written exam (60 min).

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 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:

<b>V</b>	<b>Taktisches und operatives SCM</b> 2550486, SS 2021, 2 SWS, Language: German, <a href="#">Open in study portal</a>	<b>Lecture (V)</b> <b>Online</b>
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**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


## 6.152 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	Grading scale	Recurrence	Version
Examination of another type	8	Grade to a third	Each term	2

Events					
ST 2021	2400003	<a href="#">Team Project Software Development</a>		Practical course / 	Abeck, Schneider, Reussner, Burger, Koziolk, Mädche, Oberweis, Zöllner, Fritsch, Kurzer, Feine
Exams					
ST 2021	7500305	<a href="#">Team Project Software Development: Digitalization of Business Processes</a>			Abeck

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**6.153 Course: Telematics [T-INFO-101338]**

**Responsible:** Prof. Dr. Martina Zitterbart  
**Organisation:** KIT Department of Informatics  
**Part of:** [M-INFO-100801 - Telematics](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each winter term	1

Events					
WT 21/22	24128	<a href="#">Telematics</a>	3 SWS	Lecture	Heseding, König, Kopmann, Zitterbart
Exams					
ST 2021	7500115	<a href="#">Telematics</a>			Zitterbart
WT 21/22	7500166	<a href="#">Telematics</a>			Zitterbart

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

**Telematics**

24128, WS 21/22, 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


## 6.154 Course: Theoretical Foundations of Computer Science [T-INFO-103235]


**Responsible:** Dr. rer. nat. Torsten Ueckerdt  
Prof. Dr. Dorothea Wagner

**Organisation:** KIT Department of Informatics

**Part of:** [M-INFO-101189 - Theoretical Informatics](#)

Type	Credits	Grading scale	Recurrence	Version
Written examination	6	Grade to a third	Each winter term	1

Events					
WT 21/22	24005	<a href="#">Theoretical Foundations of Computer Science</a>	3/1 SWS	Lecture / Practice (/  )	Sauer, Ueckerdt, Merker
Exams					
ST 2021	7500314	<a href="#">Theoretical Foundations of Computer Science</a>			Ueckerdt

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

T

## 6.155 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	Grading scale	Recurrence	Version
Oral examination	4	Grade to a third	Each winter term	1

Events					
WT 21/22	24153	<a href="#">Web Applications and Service-oriented Architectures (I)</a>	2 SWS	Lecture / 	Abeck, Schneider, Sanger, Throner

Legend:  Online,  Blended (On-Site/Online),  On-Site,  Cancelled

**6.156 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	Grading scale	Recurrence	Version
Written examination	4,5	Grade to a third	see Annotations	3

Events					
ST 2021	2520517	<a href="#">Welfare Economics</a>	2 SWS	Lecture /	Puppe, Rollmann
ST 2021	2520518	<a href="#">Übung zur Wohlfahrtstheorie</a>	1 SWS	Practice /	Puppe, Rollmann
Exams					
ST 2021	7900286	<a href="#">Welfare Economics</a>			Puppe
ST 2021	7900291	<a href="#">Welfare Economics</a>			Puppe

Legend: Online, Blended (On-Site/Online), On-Site, Cancelled

**Competence Certificate**

Depending on further pandemic developments, the examination will be offered either as a 60-minute written examination (written examination according to SPO § 4 Abs. 2, Pkt. 1) or as an open-book examination (alternative exam assessment according to SPO § 4 Abs. 2, Pkt. 3).

**Prerequisites**

The course *Economics I: Microeconomics* [2610012] has to be completed beforehand.

**Recommendation**

None

**Annotation**

The course only takes place every second summer semester, the next course is planned for summer semester 2021.

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

**Welfare Economics**

2520517, SS 2021, 2 SWS, Language: German, [Open in study portal](#)

**Lecture (V)  
Online**

**Content**

The lecture "Welfare economics" deals with the question of efficiency and distributional properties of economic allocations, in particular allocations of market equilibria. The lecture is based on the two welfare theorems: The first welfare theorem (under weak preconditions) says that every competitive equilibrium is efficient.

According to the second welfare theorem (under stronger preconditions), every efficient allocation can be preserved as a competitive equilibrium through adequate choices of initial endowments. Afterwards, the terms and definitions of envy-freeness and the related concept of egalitarian equivalence in the context of the general theory of equilibrium will be discussed.

The second part of the lecture deals with the principle of "social justice" (i.e. distributional justice). The fundamental principles of utilitarianism, Rawl's theory of justice as well as John Roemer's theory of equality of opportunity are explained and critically analyzed.

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).

The course will be held every two years in the summer.

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

**Elective literature:**

- J. Rawls: *A Theory of Justice*. Harvard University Press (1971)
- J. Roemer: *Theories of Distributive Justice*. Harvard University Press (1996)

**Literature**

**Weiterführende Literatur:**

- J. Rawls: *A Theory of Justice*. Harvard University Press (1971)
- J. Roemer: *Theories of Distributive Justice*. Harvard University Press (1996)